



Investing in rural people

**India**

---

## **Fostering Climate Resilient Upland Farming Systems in the Northeast (FOCUS)**

### **Design completion report**

Main report

Document Date: 23 August 2017

Project No. [Insert project number]

Report No: [Insert report number][If not final PDR delete line]

Asia and the Pacific Division  
Programme Management Department



## Contents

Currency equivalents	iv
Weights and measures	iv
Abbreviations and acronyms	v
Map of the project area	vii
Executive Summary	viii
Logical Framework – Nagaland and Mizoram combined	xi
I. Strategic context and rationale	1
A. Country and rural development context	1
II. Project description	10
A. Project Area and Target Groups	10
B. Development objective and impact indicators	11
C. Outcomes/Components - Nagaland	12
D. Outcomes/Components - Mizoram	19
E. Lessons learned and adherence to IFAD policies	26
III. Project implementation	27
A. Approach	27
B. Organizational Framework	28
C. Planning, M&E, learning and knowledge management	32
D. Financial management, procurement and governance	34
4. Procurement arrangements	40
E. Supervision	41
F. Risk identification and mitigation	41
IV. Project costs, financing, benefits and sustainability	42
H. Sustainability	47
I. Assurances	47

## List of Tables

Table 1: Summary of FM risks and mitigating actions	35
Table 2: Risks and Risk Mitigation	41
Table 3: Project Cost Summary (amount in million)	43
Table 4: Project financing plans by Components by Financiers (Nagaland State)	44
Table 5: Project financing plans by Components by Financiers (Mizoram State)	44
Table 6: Project financing by Components and Financiers (Combined)	44
Table 7: Number of Benefited Households, cumulative - Nagaland	45
Table 8: Sensitivity of NPV, IRR and BCR to varying scenarios - Nagaland	45
Table 9: Number of Benefited Households, cumulative - Mizoram	46
Table 10: Sensitivity of NPV, IRR and BCR to varying scenarios - Mizoram	46

## Currency equivalents

Currency Unit	=	Indian Rupees (INR)
USD 1.0	=	INR 68

## Weights and measures

1 kilogram	=	1000 g
1 000 kg	=	2.204 lb.
1 kilometre (km)	=	0.62 mile
1 metre	=	1.09 yards
1 square metre	=	10.76 square feet
1 acre	=	0.405 hectare
1 hectare	=	2.47 acres

## Abbreviations and acronyms

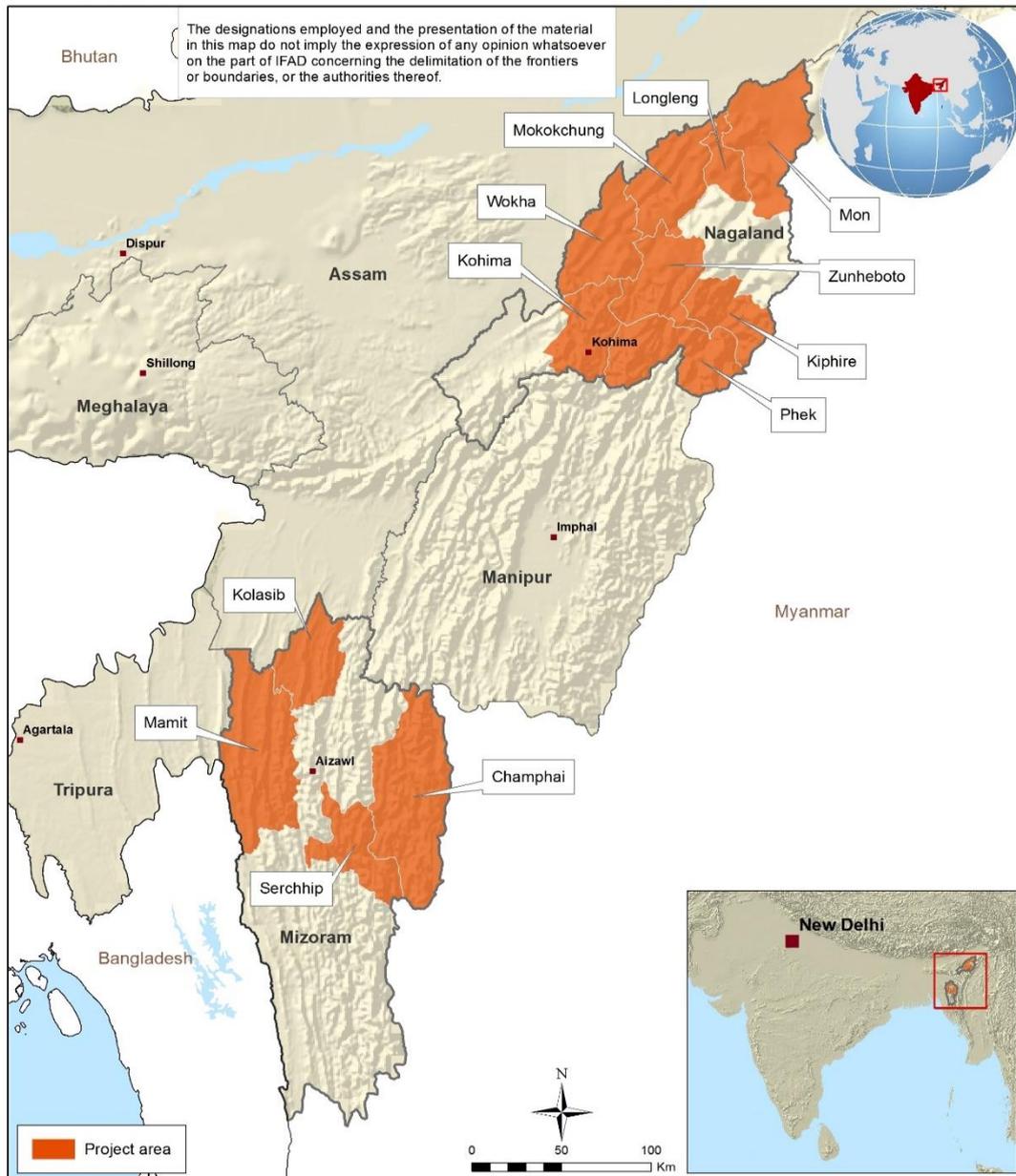
AG	Auditor General
AO	Accounts Officer
AOS	Annual Outcome Survey
APC	Agriculture Production Commissioner
APDMP	Andhra Pradesh Drought Mitigation Project
APMC	Agriculture Producers' Marketing Committee
ATMA	Agriculture Technology Management Agency
AWP&B	Annual Work plan and Budget
BPPC	Block Project Coordination Committee
CAG	Comptroller and Auditor General
CAHW	Community animal health worker
CAIM	Convergence of Agricultural Interventions Programme in Maharashtra
CPE	Country Programme Evaluation
CRPs	Community Resource Persons
CSSs	Centrally Sponsored Schemes
DAHV	Department of Animal Husbandry and Veterinary Services
DEA	Department of Economic Affairs
DMU	District Project Management Unit
DoA	Department of Agriculture
DPCC	District Project Coordination Committee
FAS	Finance and Accounts Specialist
F&AO	Finance and Accounts Officer
FAO	Food and Agriculture Organization of the United Nations
FIGs	Farmer Interest Groups
FOCUS	Fostering Climate Resilient Upland Farming Systems in the Northeast
FPO	Farmer Producer Organization
GEF	Global Environment Facility
GoI	Government of India
GoM	Government of Mizoram
GoN	Government of Nagaland
HH	Household
ICAR	Indian Council of Agricultural Research
ICEF	India-Canada Environment Facility
ILRI	International Livestock Research Institute
ILSP	Integrated Livelihoods Support Programme
JRMC	<i>Jhum</i> Resource Management Committee
JTDP	Jharkhand Tribal Development Programme
JTELP	Jharkhand Tribal Empowerment and Livelihoods Programme
M&E	Monitoring and Evaluation
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
Ministry of DoNER	Ministry of Development of Northeast Region
MIS	Management Information System
MoU	Memorandum of Understanding
MOVCD	Mission on Organic Value Chain Development

NAPCC	National Action Plan on Climate Change
NEPED	Nagaland Environment Protection and Economic Development through People's Action
NER	Northeast Region
NERCOMP	Northeast Region Community Resource Management Project for Upland Areas
NGO	Non-governmental Organization
NLUP	New Land Use Policy
OPELIP	Orissa PTG Empowerment and Livelihoods Improvement Programme
OTELP	Orissa Tribal Empowerment and Livelihoods Programme
SPD	State Project Director
PEFA	Public Expenditure Financial Accountability Assessment
PFM	Public Finance Management
PFS	Project Financial Statements
PLUP	Participatory Land Use Planning
PMC	Project Management Committee
PMKSY	Pradhan Mantri Krishi Sinchayi Yojana
PMU	State Project Management Unit
PSC	Project Steering Committee
PTSLP	Post Tsunami Sustainable Livelihoods Project
PWD	Public Works Department
RIMs	Results and Impact Management System
RKVY	Rashtriya Krishi Vikas Yojana
SAABs	Site Allotment Advisory Boards
SCRAM	Society for Climate Resilient Agriculture in Mizoram
SoCRAN	Society for Climate Resilient Agriculture in Nagaland
SHG	Self Help Group
SLEM	Sustainable Land and Ecosystem Management
SoE	Statement of Expenditure
SRI	System of Rice Intensification
SSI	Sustainable Spice Initiative
SWCAs	Soil and water conservation Assistants
TA	Technical Assistance
ToR	Terms of reference
ToT	Training of Trainers
TRC	Terrace Rice Cultivation
TRWEP	Tejaswini Rural Women's Empowerment Project
UC	Utilization certificate
UNDP	United Nations Development Programme
USD	United States Dollar
VC	Village Council
VFAs	Veterinary Field Assistants
WRC	Wet Rice Cultivation

## Map of the project area

[To insert map click the link **IFAD maps** below. Open picture and copy/paste here.]

[IFAD maps](#)



Map compiled by IFAD | 28-02-2017

## Executive Summary<sup>1</sup>

1. **Background and rationale.** Nagaland and Mizoram are two of the eight states in the North Eastern Region (NER) of India, a biodiversity hotspot where climate change adaptation is of critical importance for the largely rural population. With a hilly terrain, low population density, shallow soils and high rainfall, farmers have adopted a shifting cultivation system known as *jhum*. This largely self-sufficient system has adequately met the various needs of rural communities, including food, fibre and energy, but is now getting disrupted due to shortening *jhum* cycles as a result of increasing population, focus on high value crops for cash income, soil fertility degradation and top soil erosion on account of decreased fallow cycles. Changing climate patterns is further exacerbating these disruptive trends.

2. In Nagaland the *jhum* system covers 60 percent of the area under food grain cultivation, and about half of rural households are engaged in *jhum* cultivation, with about 100,000 ha of forest being cleared for cultivation each year. In Mizoram about 60 percent of the people are engaged in agriculture with *jhum* being the main land use and 20,000 ha are being cleared each year for *jhum* cultivation. In both states, rice is the main staple food, and upland paddy is the main *jhum* crop, grown mixed with other crops. *Jhum* land and forest-fallows also meet most community firewood and timber needs, and are also sources of wild foods and medicinal plants, as well as catchment areas of local streams.

3. *Jhum* is a way of farming poor upland soils by utilising fertility accumulated in the forest-fallow period. The practice of burning controls weeds and disease pathogens. Almost no external inputs are used, and the system is naturally organic. The mixed cropping with traditional varieties reduces risk and supports traditional food habits linked to distinctive local cultures. On the other hand, *jhum* is widely held to be a destructive farming system, causing severe soil erosion, atmospheric pollution, damage to soil biology and loss of biodiversity. The system is increasingly becoming unsustainable as *jhum* cycles are becoming shorter, with less time to restore soil fertility and biodiversity. *Jhuming* is labour-intensive, with no potential for mechanisation, and most work is done by women. With low crop yields, not much is produced per day worked, and production usually does not meet household food needs or generate much needed cash income.

4. **Approach.** The project will address the issues facing *jhum* cultivation through: (i) better *jhum* cultivation practices that will be both more productive and more sustainable creating an ecological balance; and (ii) supporting *jhumia* households to adopt alternative farming systems, particularly, sedentary farming. Both of these approaches, along with more productive wet rice fields, better plantation crops, improved livestock systems and increased off-farm income, will enhance farmer's income and reduce pressure on natural resources and increase resilience to climate change. As farmers move to more market-orientated production, the project will support improved market access and value chain development.

5. **Targeting:** Virtually all households in both these states are members of tribal ethnic groups. In Nagaland, the project would cover eight out of the state's 11 districts, and in Mizoram, four out of eight districts. The criteria used by the respective states to identify these districts are (i) high prevalence of shifting cultivation (ii) prevention of an overlap with another large donor funded project and (iii) focusing only on hill states and not the plains. In Nagaland the project would cover 650 villages (about two-thirds of all villages), with clusters being selected on the grounds of high levels of *jhum* cultivation and shortening *jhum* cycles, along with potential for high value crops. In Mizoram, all 272 rural villages in the four districts would be covered. In the selected villages all agricultural households would be covered (137,000 in Nagaland and 64,500 in Mizoram), with support for disadvantaged households, women and youth. In total 201,500 households with 1,007,500 persons will be reached by the project.

---

<sup>1</sup>Mission composition: Shreekantha Shetty (Mission Leader); A. M. Alam (Economist); Antonio Rota (Lead Adviser, IFAD, Rome); V.P. Singh (Agronomist and Agroforestry Specialist); Venkatesh Tagat (NRM Specialist); A.B. Negi, (Livestock Specialist); Pratul Dube (Financial Management Specialist); Mahendra Chhetri (Farm Road Engineer); Meera Mishra (Country Coordinator, IFAD-ICO); and Sankarasubramaniam Sriram (Programme Support Analyst – Procurement Specialist, IFAD-ICO).

6. **Scaling up:** FOCUS will build on current and recent initiatives in the two states that have demonstrated the effectiveness of a twin approach of promoting better management of *jhum* on the one hand and gradually shifting towards sedentary agriculture on the other. In Nagaland these are: (i) NEPED<sup>2</sup>, funded by the India-Canada Environmental Facility (ICEF) during 1995-2006; and (ii) Sustainable Land and Ecosystem Management in shifting cultivation areas of Nagaland for ecological and livelihood security (SLEM) project funded by UNDP-GEF. In Mizoram, the New Land Use Policy (NLUP) promotes sedentary agriculture. Additionally, the North Eastern Region Community Resource Management Project for Upland Areas (NERCORMP), a project supported by IFAD in Manipur, Meghalaya and the hill districts of Assam, demonstrated community planning and implementation for more sustainable land use systems.

7. **Objective:** The overall goal of the project is to increase agricultural income of 201,500 households, and to enhance their resilience to climate change. This would be achieved through the development objective of increasing the environmental sustainability and profitability of farming systems practiced by highland farmers.

8. **Components:** The project will have three components: (i) Improved *jhum* management; (ii) value chain and market access; and (iii) project management and knowledge services

Component 1: Improved *Jhum* Management will aim to promote proven and emerging climate resilient best practices.

1.1 – Better *jhum* and conservation will support: (i) capacity building of staff, lead farmers and farmers; (ii) land use planning to develop rational and sustainable systems for village land utilisation; (iii) better *jhum* management through introduction of a package of improved practices for soil and fertility management, crop production, agro-forestry and fallow management; and (iv) community forest conservation with re-vegetation and soil conservation. The project in total will support 25,300 ha of better *jhum*, 29,850 ha fallow management in *jhum*, and 18,440 ha of community/village forests.

1.2 - Settled agriculture will support: (i) existing rice cultivation on the lowlands through short duration seeds, fertility improvement techniques and improved cropping intensity; and (ii) existing orchards and plantation through demonstration of soil and water conservation works, improved planting materials and planting of high value trees. In Mizoram, the poorest households in each village will be supported to get access to land for settled agriculture. The project in total will support 15,190 ha of existing terrace cultivation, 15,190 ha of upland settled agriculture and 2,720 ha of settled agriculture to landless.

Component 2: Value chain and market access

2.1 - Value chain development will support: (i) production support for clusters of market-orientated spices (chilli, turmeric and ginger in Mizoram and large cardamom, chilli and ginger in Nagaland), including supply of planting materials and training; (ii) marketing support for a range of cash crops (chilli, ginger, turmeric, cardamom, oranges, other fruit, bamboo and other *jhum* crops with marketable volume); (iii) livestock support largely covering pigs with support for breeding, feed improvement, and animal health; and (iv) innovation support for testing and dissemination of innovative technologies and approaches for agriculture, livestock and marketing. The project will support 3,600 ha and 4,000 ha of spice production support in Mizoram and Nagaland respectively.

2.2 - Market access infrastructure will support construction of market infrastructure using climate resilient building techniques. The project will support building agriculture link roads in Mizoram and cross drain structures in Nagaland.

Component 3: Project Management and Knowledge Services: The project will be implemented by new societies to be established within the Agriculture Production Commissioner's Office (APC's Office) in

---

<sup>2</sup> Implemented in two phases, the first phase (1995-2001) was called Nagaland Environment Protection and Economic Development through People's Action and the second phase (2001-06) was called Nagaland Empowerment of People through Economic Development. [https://www.nagaland.gov.in/Nagaland/GovernmentAndPrivateBodies/Department\\_of\\_NEPED.html](https://www.nagaland.gov.in/Nagaland/GovernmentAndPrivateBodies/Department_of_NEPED.html)

Nagaland and within the Department of Agriculture (DoA) in Mizoram. As this project covers two states, it will be a testing ground for improved *jhum* practices for the north-eastern region. To facilitate cross learning, the project in each state, will engage Indian Council of Agricultural Research (ICAR) to generate knowledge on upland farming systems and their response to climate change and to create a learning platform for other states in NER. In addition, IFAD will provide a grant to both states for the engagement of FAO for capacity building and provision of technical assistance. FAO will be requested to contribute from its own resources for this technical assistance sub-project.

9. **Organisational Framework:** At the state level, the APC's office in Nagaland and DoA in Mizoram will be the nodal agencies, with the implementing agency being the two states' Society for Climate Resilient Agriculture. The Chief Executive Officer/Secretary of the Society would be the State Project Director (SPD), supported by a team of technical and administrative staff. The SPD would be reporting to the APC in Nagaland and to the Secretary, Agriculture / Director, Department of Agriculture, in Mizoram. At the district level, a District Management Unit (DMU) will be established within the office of District Agriculture Office. The District Agriculture Officer would be the District Project Manager, with a small team of professionals to facilitate project implementation.

10. **Project cost:** The project would be implemented over a six year period. Total cost is estimated at USD 168.47 million for the two states, which would be financed by an IFAD loan of USD 75.5 million, an IFAD grant of USD 1 million, parallel financing using Centrally Sponsored Scheme (CSS) funds of USD 27.51 million, state government contributions of USD 31.92 million, convergence funding of USD 26.27 million, and a beneficiary contribution of USD 6.27 million.

11. **Benefits and beneficiaries:** A total of 201,500 households (137,000 households in Nagaland and 64,500 households in Mizoram) would directly benefit from the project. Wider benefits will accrue from the generation and dissemination of knowledge, and from the institution building of organisations at the village level.

1. **Economic Internal Rate of Return and Sensitivity Analysis:** The project investment in Nagaland has an overall Economic Internal Rate of Return of 29 percent, Benefit cost ratio of 1.78 and Net Present Value of INR 6,593 million (discount rate of 10 percent). The project investment in Mizoram has an overall Economic Internal Rate of Return of 25 percent, Benefit cost ratio of 1.51 and Net Present Value of INR 3,141 million (discount rate of 10 percent). A switching value analysis demonstrates that costs would have to increase by 78% or benefits to decrease by 44% for the NPV to be zero in case of Nagaland. Similarly costs would have to increase by 51% or benefits to decrease by 34% for the NPV to be zero in case of Mizoram.

12. **Sustainability.** Project interventions should be sustainable. Improved agricultural practices, if found by farmers to be useful and profitable, will be sustained provided inputs and markets are available. Interventions in the market access and value chain component (largely in the private sector) will aim to ensure this. The project will build capacity of local service providers at the village level and will establish village level suppliers of inputs. All of these will be operated by local people and groups, and be financially viable and so sustainable after the project is completed.

13. **Adherence to IFAD policies.** The project is fully in line with IFAD's Strategic Framework (2016-2025), and adheres to IFAD policies for targeting and gender mainstreaming, climate change and social, environmental assessment, engagement with indigenous peoples, nutrition sensitive agriculture, and scaling up. It is also aligned to the India COSOP. The environmental and social category is considered to be B, while the climate risk classification is deemed to be Moderate.

## Logical Framework –combined

Results Hierarchy	Name	Indicators			Means of Verification			Assumptions (A) / Risks (R)
		Baseline	Mid-Term	Endline	Source	Frequency	Responsibility	
<b>Outreach</b>	-Number of persons receiving services promoted by the project	0	402,000	1,007,500	Project MIS	Yearly	M&E Unit	
	-Number of youth receiving services promoted by the project	0	24,180	60,450				
	Number of HH reached	0	81,400	201,500				
<b>Goal:</b> Income of 201,500 farm households in hill areas of Nagaland and Mizoram increased and their resilience to climate change enhanced	% of HH <i>jhum</i> - farming for 3 or more years continuously on single plot	0		70%	Impact assessment	Baseline End-line	M&E Unit Commissioned Study	(A) economic growth and social stability
	Number of HH reporting increase of >100% in household incomes	0	61,050	151,125	Impact assessment	Baseline End-line	M&E Unit Commissioned Study	
<b>Development Objective:</b> Environmental sustainability and profitability of <i>the</i> farming systems in hill areas enhanced	% soil carbon			4%	Soil carbon test	Baseline Annual	M&E Unit	(R) Climate change and/or better non-farm opportunities makes farming unattractive.
	Real increase in net farm income (in 2017 prices) in million INR	0	3,151.2	4,754.6	TOS	Baseline MTR End-line	M&E Unit Commissioned Study	
	Number of trees increased at least 20 per ha in <i>jhum</i> plot	0	10 #/ha	20#/ha	TOS	Baseline MTR End-line	M&E Unit Commissioned Study	
<b>Outcome 1:</b> Improved farmers' capacities to manage upland farming sustainably	Number of HH reporting adoption of environmentally sustainable and climate resilient technologies and practices <sup>3</sup>	0	81,400	201,500	Project MIS	Yearly	M&E unit	(A) Producers are able to finance the continued investments required to climate proof their farms
<b>Outputs:</b>								
a. Participatory Land Use Planning conducted	No of VC with completed PLUP and land suitability maps	0	922	922	Project MIS	Yearly	M&E unit	(A) Access to reliable technical advice and planting material is secured
b. improved <i>jhum</i> management	No farmers trained (W/M) on better <i>jhum</i> and fallow management	0	101,800	290,800	Project MIS	Yearly	M&E unit	

<sup>3</sup>Climate resilient technologies and practices refer to agro-forestry, soil and water conservation, improved planting material, integration with livestock

Results Hierarchy	Name	Indicators			Means of Verification			Assumptions (A) / Risks (R)	
		Baseline	Mid-Term	Endline	Source	Frequency	Responsibility		
	No farmers trained (W/M) on settled agriculture	0	35,000	105,200	Project MIS	Yearly	M&E unit	(A) Effective convergence with Govt programme to build the assets of the poorer HH	
	Area in ha under SWC, by <i>jhum</i> , <i>jhum</i> fallow, settled agriculture	0	58,240	88,250	Project MIS	Yearly	M&E unit		
c. Village forest conserved	Area under CCA managed by VC	0	10,600	18,440	Project MIS	Yearly	M&E unit		
d. Access of poorest households	No of HH benefitting from support to landless	0	5440	10,880	Project MIS	Yearly	M&E unit		
<b>Outcome 2:</b> Increased volume of marketed crops and livestock, with improved returns to producers	Gross returns from spices (million INR)	0	289.9	947.0	Project MIS	Yearly	M&E Unit Commissioned Study	(R) High transaction cost due to small volume and remote location (R) Implementation of APMC Act prevents new types of market linkages and reduces farm-gate prices.	
	Gross returns from livestock (million INR)	0	295.8	584.4					
<b>Outputs:</b> a. Spice producers are integrated in national and international spice markets	No participating HH in organized spice value chain	0	6800	15,200	AOS	Annual	M&E unit		
b. Increased productivity of pig production	Pig off-take number	0	27,000	55,000	AOS	Annual	M&E unit		
c. value-chain clusters developed	Number of clusters	0	35	80	AOS	Annual	M&E unit		
<b>Outcome 3:</b> Improved access to markets	<u>Number of farmers reporting improved physical access to markets</u>	0	20,000	48,000	AOS	Annual	M&E unit		
<b>Outputs:</b> a. Rural roads rehabilitated	<u>Length and type of access road rehabilitated in km</u>	0	300	800	Project MIS	Quarterly	M&E unit		(A) Operation and maintenance by communities and Govt is effective.

Underlined indicators are IFAD RIMS indicators

## I. Strategic context and rationale

### A. Country and rural development context

#### 1. India's economic and agricultural development

2. **Poverty:** with over 250 million poor people, India remains home to the largest population of the poor in the world. Despite being the third largest economy in the world in terms of purchasing power parity (PPP) and the fastest growing large economy, reducing poverty remains a key challenge for the country. Headcount poverty in the country declined from 37.2 percent (rural 41.8 percent) in 2004-05 to 21.90 percent (rural 25.70 percent) in 2011-12. India also achieved Millennium Development Goal 1 of reducing extreme poverty by half. Even so, removing poverty continues to be a key development priority for the country and is important globally for the achievement of SDG 1.

3. **Agriculture:** India's agricultural performance has been remarkable over the past decades, transforming the nation from chronic dependence on grain imports into net exporter of food, particularly of rice, cotton, sugar and beef. Nevertheless, with faster growth in other sectors, the share of agriculture in India's economy has declined to less than 17 percent. Agriculture continues to be a key livelihood source and an economic anchor for a majority of people in the country. Growth and stability of the farm sector therefore is critical to impact poverty as rural areas account for over 71 percent<sup>4</sup> of poor people in the country. About 60 percent of agriculture in India continues to be rain-fed and therefore highly sensitive to climate variability. Even a modest deficit in monsoon, delay in its arrival or its erratic performance can adversely impact the main *kharif* crop, food production, food prices, incomes and food security.

4. **Climate change:** the Government of India (GoI) has been alive to the challenges of climate change and has taken initiatives to address climate risks. The ratification of the Paris Treaty on Climate Change in October 2016 whereby India committed to reduce greenhouse gases, promote use of renewable sources of energy and increase forest cover is an example of India's conscious efforts to tackle the issue of climate change. Earlier in 2008, India released its National Action Plan on Climate Change (NAPCC), focused on adaptation to climate change. Protection of the poor and vulnerable sections of society through sustainable development strategies is a key priority in the plan. There are eight missions under the NAPCC, of which four directly relate to adaptation, including the National Water Mission, National Mission for sustaining the Himalayan Ecosystem, National Mission for a Green India and National Mission for Sustainable Agriculture. A detailed mission document has been prepared for each mission, outlining the key challenges, proposed strategies and actions, specific activities and implementing agencies. All the missions have been approved by the Prime Minister's Council on Climate Change.

5. **Policies and programmes:** GoI has put in place several rural development schemes with important policies, strategies and acts that provide the framework for agriculture, forestry, rural development and growth, and which are central to IFAD's efforts in India. The GoI has over the years, implemented flagship programmes across the country to increase the livelihood potential, especially in rural areas. Among these, the Mahatma Gandhi National Rural Employment Guarantee Scheme, the National Rural Livelihood Mission, and the Food Security Program under the National Food Security Act and the National Mission for Sustainable Agriculture are the main ones.

#### 2. North-Eastern India: Climate change and agriculture

6. The North Eastern Region (NER) of the country is one of the 12 bio-diversity hotspots, being home to more than one-third of the country's bio-diversity. Climate change adaptation for North Eastern Region is critical as more than 81 percent of the population in the region is rural (Census 2011) and dependent on

---

<sup>4</sup>As per the Rangarajan Committee report ([http://planningcommission.nic.in/reports/genrep/pov\\_rep0707.pdf](http://planningcommission.nic.in/reports/genrep/pov_rep0707.pdf)), of the 363 million poor people in India in 2011-12, approximately 260.5 million were rural. The estimates as per the Tendulkar Committee ([http://planningcommission.nic.in/reports/genrep/pov\\_rep0707.pdf](http://planningcommission.nic.in/reports/genrep/pov_rep0707.pdf)) for the same year were 270 million total and 217 rural.

climate sensitive production systems and natural resources. With a hilly and mountainous terrain, relatively low population density, shallow soils, high rainfall and physical isolation from the main land mass of India, the natural resource management practices, livelihood systems and food habits of people in the hill states of NER have evolved around a shifting cultivation system known as *jhum*. This largely self-sufficient system has adequately met the various needs of rural communities, including food, fibre and energy, but is now getting disrupted due to shortening *jhum* cycles as a result of increasing population and conversion of land to permanent plantation and other crops. Changing climate patterns is further exacerbating these disruptive trends.

7. Conscious of these challenges, Nagaland and Mizoram, two of the eight NER States, are seeking to restore the balance between the ecological imperatives of their complex highland ecology and growing human needs by integrating modern scientific and technological knowledge with traditional know-how, experience and locally evolved systems of resource governance with embedded cultural practices. This calls for a flexible, deliberative and multi-disciplinary approach of engaging with village communities towards sustainable intensification of *jhum* with the end goal of promoting climate resilient practices through the twin approaches of systematically aligning *jhum* cycles to the natural regeneration cycle of forests and simultaneously encouraging sedentary agriculture where possible. Government of Nagaland (GoN) and Government of Mizoram (GoM) have sought IFAD support as the latter has carried out successful programming in the area of community-based natural resources development in the NER and elsewhere.

8. In Nagaland the *jhum* based upland farming system covers 60 percent of the total agricultural area under food grain cultivation and half of the state's production of food grains. About half of rural households in the state are engaged in *jhum* cultivation, with about 100,000 ha of forest being cleared for cultivation each year. In Mizoram, about 60 percent of the people are engaged in agricultural pursuits and the main agricultural land use is *jhum*, with about 20,000 ha being cleared each year. In both states, rice is the main staple food, and upland paddy is the main *jhum* crop. The hilly topography of both states limits the area of wetland paddy that can be grown, meaning that neither state is able to meet its needs for rice from domestic production.

9. Alongside upland paddy, other cereals, root and tuber crops, pulses, oilseed, vegetables and spices are grown on *jhum* land. Cultivated *jhum* land and forest-fallows also meet most of community firewood and timber needs, and are sources of a variety of wild fruits, berries and medicinal plants, as well as being the catchment areas of local springs and streams. Governments in both states have made efforts to promote settled agriculture in upland areas, with plantation crops such as oranges, tea and oil palm, being most suited to the hilly topography.

10. **Rural Poverty in the project area.** In Nagaland, the poverty analysis conducted as part of the preparatory activities for the project design, shows that poverty has multiple dimensions in the rural areas of the state, namely in terms of access to basic services, connectivity and low incomes. It is closely associated with the agriculture and natural resources based livelihoods of the rural households: the low productivity, the high inputs of family labour for agriculture, the limited options to diversify livelihoods, and the high cost of living in the State, trap households in poverty and render them vulnerable to price shocks on the one hand and to climate change on the other. As per census data, the incidence of rural poverty in the state has doubled from 2004 to 2012 and stood at 19.9% in 2011-2012 equivalent to 280,000 persons. The qualitative wealth ranking exercise conducted in sample villages suggests that on average 16% of rural households earn less than 75,000 INR/year which puts them close to or below the poverty line. The poor rely on a production system comprised of *jhum* cultivation, terrace cultivation and livestock rearing, and their landholdings are typically less than 1 ha of *jhum* and 1 ha of terrace cultivation. Landlessness is less than 10% of rural households.

11. In Mizoram, poverty and under development is primarily linked to the continued subsistence mode of farm production with over 85% of rural households dependent on some kind of farming including *jhum*. Nearly 93% of self-employed population in agriculture are considered as poor primarily due to several factors negatively impacting performance of agriculture including small, unproductive land holding with traditional *jhum* farming, acidic soil with low fertility and overall less sunlight affecting better growth, low productivity of food grains per unit area, challenges of access to credit and agricultural input services, difficulties in marketing even where there is surplus production, low skills of agricultural labourer for high technology, etc. The incidence of poverty increased during the period 2003/04 to 2009/10, from 23% to 31% and this put the number of rural poor at 160,000 persons. The qualitative wealth ranking conducted as part of the preparatory study for the design of the project suggests that 35% of rural households earn less than 5,000 INR/month/HH which is less than the state poverty line. More than half of agricultural holding (54.65%) are marginal holdings (below 1 ha). The highest percentage of youths (18-35 years) are engaged in household agricultural activities (53.7%), followed by casual labour (detailed analysis of poverty, gender and youth in Appendix 2).

12. **Nutrition** indicators for the states in the north-east of India are varied. However, both Nagaland and Mizoram fare better than the national average in terms of all key major indicators of underweight, stunting and wasting in children aged under 5 years. For example, whereas the national average for prevalence of underweight in under 5 children is 29.4 percent, the prevalence in Nagaland is 19.5 percent and for Mizoram it is 14.8 percent. In terms of prevalence of wasting, again Nagaland (11.8 percent) and Mizoram (14.3 percent) are lower than the national average of 15.1 percent. Similarly, against the national average of 38.7 percent for stunting, the percent prevalence in Nagaland and Mizoram are 29.1 and 26.9 respectively. In terms of low birth weight of children under 3, Nagaland is slightly lower than the national average whereas Mizoram is the best in the country<sup>5</sup>. The two states also fare better than the national average in terms of prevalence of anaemia.

## **B. Rationale**

### **1. The problems to be addressed**

13. In the hilly tracts of Northeast India, *jhum* agriculture is the dominant economic activity and over 86 per cent of the people living in hills are dependent on it. With increasing population, the area under *jhum* increased from 1,326,000 hectares in 1980 to 1,685,000 hectares in 1990, although there has been a decline in recent years. Shifting cultivation usually involves the following steps: (i) selection of forested hilly land; (ii) cutting down trees and shrubs; (iii) allowing this vegetation to dry before burning; (iv) traditional rituals; (v) broadcasting and dibbling seeds, tubers and cuttings; (vi) weeding and protection of crops; (vii) harvesting and threshing; and (viii) post-harvest festivals.

14. Land is usually cultivated for between one and two years, although cultivation can sometimes extend to three or four years, before the land is abandoned to naturally regenerate and return to forest for a number of years. The choice of crop is consumption-oriented with a mixture of crops being grown on the same plot, however the need for cash means that there is increased cultivation of crops for sale, such as ginger and chilli. The length of the *jhum* cycle (the total period of cultivation plus fallow-forest period) is influenced by population pressure, nature and density of forest re-growth, terrain, angle of slope, texture of soil and rainfall. Areas of sparse population generally have longer *jhum* cycle (15-25 years), while areas with high density of population have shorter *jhum* cycle (5-10 years).

15. The practice of *jhum* has many arguments in favour and against. Those in favour believe that it is built on the forest's natural cycle of regeneration, causing only temporary loss of forest cover which regenerates itself quickly after the farmers abandon *jhum* land. *Jhuming* is a way of farming thin and infertile upland soils, where normal sedentary agriculture is not possible, by utilising the fertility that

---

<sup>5</sup> India Health Report- Nutrition (2015). [http://www.indiaenvironmentportal.org.in/files/file/INDIA-HEALTH-REPORT-NUTRITION\\_2015.pdf](http://www.indiaenvironmentportal.org.in/files/file/INDIA-HEALTH-REPORT-NUTRITION_2015.pdf)

accumulates in organic matter during the forest-fallow period. Unlike permanent crops and plantations, forest loss is only temporary, and in this way bio-diversity is deemed to be maintained. The practice of burning controls weeds and disease pathogens. Almost no external inputs are used, and the system is naturally organic. The mixed cropping system using traditional crop varieties reduces risk and supports rich and diversified traditional food habits linked to distinctive local cultures. This argument in favour of *jhum* however does not take into account the distortions that have crept into *jhum* farming system including reduced *jhum* cycle resulting in inadequate time for regeneration, and cultivation of cash crops such as ginger which leads to extensive top soil disturbance leading to top soil erosion.

16. The arguments against *jhum* centre on it being a destructive and unsustainable farming system. It is said that this is the major cause of land degradation in the north-east<sup>6</sup>. *Jhuming* is often carried out on very steep slopes, and can result in severe soil erosion<sup>7</sup>. Burning vegetation creates pollution and adds to atmospheric CO<sub>2</sub>, as well as destroying soil microbes and organic matter, and resulting in a loss of organic carbon and nitrogen from the soil (although it may enhance phosphorus and add potash). The destruction of forest is also believed to negatively impact biodiversity. In particular, the system is increasingly unsustainable as *jhum* cycles become shorter, with less time for fertility to recover and biodiversity to be restored. *Jhuming* is labour-intensive, with almost no potential for mechanisation, and most work is done by women<sup>8</sup>. With low and declining crop yields, not much is produced per day worked, and *jhum* production usually does not meet household food needs, or generate much in the way of cash income. *Jhuming* is also vulnerable to weather variations – as crops rely entirely on rainfall and there is little scope for effective measures to increase infiltration of water. At the same time, early rains can delay the burning of vegetation, so preventing timely planting of crops. In both states population growth and other demands on land, mean that the *jhum* cycle is becoming shorter and the system less productive and sustainable. This is visible in Nagaland with *jhum* cycles coming down to less than seven years in one-third of the villages, and in some places to only 5 to 6 years. As *jhum* cycles shorten, the soil does not get adequate time to recoup and a downward spiral of degradation, leading to lower yields, resulting in an expansion of *jhum* area to meet household needs, and even shorter cycles set in. The situation in Mizoram is not much better with *jhum* cycles reduced to 5 years in many villages.

## 2. Approach and logic behind project interventions

### Support for traditional practices and culture

17. The design of this project is in consonance with the following nine principles of engagement espoused in the IFAD Policy on Engagement with Indigenous Peoples: (i) cultural heritage and identity; (ii) free, prior and informed consent; (iii) community driven development; (iv) equitable access to land and resources; (v) building on indigenous knowledge; (vi) environmental issues and climate change; (vii) access to markets; (viii) empowerment; and (ix) gender equality.

18. *Jhum* cultivation and the traditional foods that it produces are the cornerstones of the tribal *cultural heritage and identity* in Mizoram and Nagaland, and the project is focused on making this system more productive and sustainable. Village livestock also have an important role in traditions and food - often being consumed at festivals. The participatory planning process through elected Village Councils will ensure *free, prior and informed consent*, and a *community driven development* approach. There are no land tenure issues in Nagaland and households largely have *access to land resources for jhuming*. Three types of land ownership pattern exist in Nagaland. They include: (i) private lands which are used for both *jhuming* and also for terraced rice cultivation; (ii) clan lands which are owned by a clan collectively and used for fuel wood collection; and (iii) community lands owned collectively by the entire village which is

---

<sup>6</sup>Task Force on Shifting Cultivation, Ministry of Agriculture, New Delhi. Thoughts on Rural Development in North-East India in the 21st Century', Journal of North- Eastern Council, Shillong, May 1995

<sup>7</sup>Soil loss on steep slopes can be as high as 40.9 ton/ha, with corresponding loss of soil

nutrients. [https://www.researchgate.net/publication/258386412\\_Soil\\_Health\\_Management\\_under\\_Hill\\_Agroecosystem\\_of\\_North\\_East\\_India](https://www.researchgate.net/publication/258386412_Soil_Health_Management_under_Hill_Agroecosystem_of_North_East_India)

<sup>8</sup> 75% of *jhum* work is done by women, NEPED (2007). Adding Value to Shifting Cultivation in Nagaland, India.

largely used as conservation forests and for fuel wood collection. There are generally three ways of *jhuming* on private lands excluding terrace rice fields: (i) *Jhum* land is in 8-15 blocks depending upon the *jhum* cycle and majority of the households own a parcel of land in each block and undertake *jhum* cultivation collectively; (ii) *jhum* land is in 8-15 blocks depending upon the *jhum* cycle and some (not majority) of the households own a parcel of land in each block and only those who own land undertake *jhum* cultivation in that *jhum* cycle while others do not take up *jhuming* or use land owned by others for *jhuming*; and (iii) *jhum* land are divided into blocks owned by individual households and the households practice *jhum* on their private land individually. The first scenario where *jhum* land is divided into 8-15 blocks in which majority of the members own land is the most common scenario. However, the land ownership is *de jure* as there are no land records and title documents. The mechanism for resolving disputes is vested with the village council *recognizing the cultural heritage and identity* of the indigenous people. Land in Mizoram is generally community managed with traditional free access to all households living in the villages. GoM holds these lands in trust on behalf of the community. On the recommendation of Village Councils, the state government is issuing title deeds for up to eight hectares to persons taking up settled agriculture, but this can effectively exclude households who lack the resources to invest in settled agriculture. FOCUS will address this issue to ensure *equitable access to land resources*.

19. *Building on indigenous knowledge* will be a key to improving both *jhum* cultivation and settled agriculture. There are a number of examples of traditional practices for more productive *jhum* management in Nagaland and Mizoram which provide the basis for the improved practices to be supported by FOCUS<sup>9</sup>. Wetland rice cultivation in Nagaland is based around the traditional *zabo* system of rainwater harvesting. Representation of women is already mandated by state policy and laws in the Village Council (VC), the principal local governance institution at the village level. Women are already fully involved in production and marketing of farm produce, as well as in credit group. The project will build on this to ensure *empowerment and gender equality*, with full participation in project institutions, capacity building for women, and reduction in their often excessive workload.

#### Improving *jhum* cultivation

20. The project will address the issues facing *jhum* cultivation through: (i) better *jhum* cultivation practices that will be both more productive and more sustainable, with an ecological balance being created; and (ii) gradually shifting *jhumia* households to sedentary farming. Both of these approaches, along with more productive wet rice fields, better plantation crops, improved livestock systems and increased off-farm income, will enhance farmer's income and reduce pressure on land and enhance adaptation to climate change. As farmers seek to increase their income via more market-orientated production, they will need support for marketing, including orientation of production towards what the market needs in terms of volume, quality and price.

21. More productive and sustainable *jhuming* ("better *jhum*") requires a judicious combination of modern scientific knowledge, agricultural technologies and practices in natural resource management with the traditional wisdom and adaptive practices of the highland communities. For instance, farmers already practice certain measures to conserve soils, such as placing logs along contours; and this can be augmented by a ground cover of nitrogen-fixing legumes to add fertility, conserve moisture and suppress weeds. Such measures will enable communities to cultivate a *jhum* field for a longer period, thereby restoring the *jhum* cycles to the earlier, sustainable levels of 15 to 20 years. A virtuous cycle can thus be created. Similarly, planting of carefully selected indigenous species of trees and shrubs on *jhum* fallows can reduce soil degradation and increase the biomass for soil fertility restoration and as firewood and timber. This, together with better planting material for *jhum* crops (and judicious introduction of new crops

---

<sup>9</sup> For example "The Alder Managers, the cultural ecology of a village in Nagaland", Malcolm Cairns, PhD thesis, 2007. Also see Building upon Traditional Agriculture in Nagaland, IIRR, 1999. In Mizoram there is the indigenous Changkham technology - see [https://www.cinram.umn.edu/sites/cinram.umn.edu/files/purama\\_may\\_28\\_2015.pdf](https://www.cinram.umn.edu/sites/cinram.umn.edu/files/purama_may_28_2015.pdf).

and varieties), will increase household food production and also enable additional sales of surplus cash crops.

22. The communitarian systems of resource governance embedded in the cultural ethos and customs of the highland communities in the two States provide an ideal setting to introduce such changes, and the project will support participatory land use planning in each village to enable communities to come up with a rational plan for equitable and sustainable use of natural resources, including reservation of steeper slopes for trees and the establishment of community conservation areas which will be reserved for traditional timber and non-timber forest products.

#### More productive and sustainable settled agriculture

23. As farmers become able to cultivate more productive *jhum* plots for a longer period, and as they invest in planting trees and soil conservation methods, they will be less inclined to shift their cultivation plots and *jhum* will evolve into sedentary farming. *Jhum* farming is highly labour intensive (and a real burden for women), and improvements to enhance the productivity and income generation from settled agricultural and livestock enterprises, will mean that households will earn considerably more from non-*jhum* activities and so reduce the amount of *jhum* they cultivate<sup>10</sup>. The design mission saw examples of this – such as a village in Nagaland that had given up *jhum* in favour of pig production. With only a limited area of terraces for wetland paddy cultivation (the topography means it is difficult to create more terraces), settled agriculture on sloping land means, to a large extent, a move to permanent tree and plantation crops which are produced for sale rather than meeting subsistence food production. The approach to support settled agriculture will be to improve the productivity of land and provide access to better planting materials (with village level plant nurseries and local seed systems) and other inputs, along with training. Where possible, intercropping with annual crops will contribute to food security and also ensure the continued production of the traditional crops that were previously grown in *jhum*.

24. Particular attention will be paid to the poorest households who may otherwise lack the resources to invest in settled agriculture. In Mizoram, where there is greater emphasis on conversion of *jhum* to settled agriculture, these households will be identified and provided with land titles for a specific area of *jhum* land for conversion to settled agriculture. The project will then provide support for these households for land development and the establishment of permanent crops. In Nagaland, where much less land has so far been converted, the project will support *jhum* conversion via physical and vegetative soil and water conservation methods (including narrow bench terraces for wet rice cultivation) to make sloping land agriculture productive and sustainable.

25. The technologies and methods used in production of these relatively new commercial crops are often out of date and crops are nowhere near as productive as they should be. Up to now the emphasis for government support has been on getting these crops established rather than on improving productivity. Standards of crop husbandry are often poor, and pests and diseases are not effectively controlled. In some cases farmers are using dangerous pesticides such as Furadan and DDT, and it may well be possible to reduce production costs as well as increase productivity.

26. Household food security will not be overlooked. There is a major opportunity to increase the productivity of wetland rice through integrated soil fertility management, improved irrigation, better seed and improved crop varieties (although care will be taken to preserve traditional varieties, many of which fetch premium prices in local markets). Pulses, oilseeds and maize can be sown after paddy has been harvested to utilise residual soil moisture and produce fodder. There are also opportunities to grow food crops, especially the local vegetables and grains found in traditional *jhum*, as intercrops in orchards and in homestead vegetable gardens.

#### Access to value chains

---

<sup>10</sup> Not only does settled agriculture require less labour, but a higher share of this labour comes from men.

27. This shift from subsistence to commercial production can result in a major increase in household income and improvement in living standards. However more engagement with markets has risks and needs to be accompanied by improved access to markets and better value chain management. If this does not happen, households may revert to *jhum* cultivation<sup>11</sup>. FOCUS value chain support will aim to address bottlenecks in the production and marketing system, to ensure that farmers are able to produce products for specific market opportunities. It will complement and support better *jhum* and the expansion of settled agriculture.

28. There is potential to capitalise on *jhum* products as being traditional varieties produced under natural conditions (they are effectively organic by default). Markets for such products exist within the state<sup>12</sup>, however to access larger and more distant markets may need some form of certification - such as organic. FOCUS will enable partnerships with external agribusiness and trade organisations to enable access to such markets<sup>13</sup>. Processing of products adds value and can reduce the volume and increase shelf life to make access to external markets easier. There are opportunities to produce ground and packaged spices for local markets and semi-processed (cleaned, sliced and dried) spices for markets outside of the state (providing new opportunities for local youth). Drying is not so easy due to the amount of rainfall at the time of harvesting some crops, but there is potential to support the development of new approaches and drying technologies - which would also be useful for paddy and maize as well as spices.

29. FOCUS will develop value chains for selected products. A value chain study<sup>14</sup> carried out as part of the project design process, has identified a number of sub-sectors with potential for value chain interventions. These are spices (large cardamom, ginger, chilli, and turmeric), oranges, areca nut, bamboo, vegetables, and pineapple. Based on the potential benefits from improving market linkages, the project will initially focus on cardamom, ginger and chilli in Nagaland, and turmeric, ginger and chilli in Mizoram - once dried these are non-perishable, low volume and high value products that can withstand transport to more distant markets. At the same time, the project will provide marketing support for widely growing cash crops, such as ginger and oranges, as well as bamboo, including support for aggregation and producer organisations, and links with the private sector. The project will support the establishment of small marketing units in the Horticulture Department of Mizoram and in the State Agriculture Marketing Board of Nagaland to provide support on policy, market intelligence and planning issues.

30. Market access is also hindered by poor road infrastructure. In Nagaland the road network is not well developed, although around 80% of villages are connected by a road, only about 20% have an all-weather bitumen road. Many villages are connected by little more than a farm track, which gets very muddy and may be prone to landslides, making it impassable during the rains. In Mizoram almost all villages are now connected by all-weather roads, these tend to run along the ridges where settlements are located. Much of the land with good potential for the development of plantation and other permanent crops are in lower valleys, which lack any road access. In response to these needs in Mizoram the project will invest in access roads and in Nagaland the emphasis will be on building cross drain structures to make the roads usable during rainy season. In both states, funds will be provided to support innovative sub-projects to be implemented by selected government agencies, universities and NGOs.

### Supporting village livestock development

---

<sup>11</sup> The design mission saw an example of this in Mizoram, where farmers had taken up grape cultivation for winemaking. This had done well while the state prohibited the sale of other alcoholic drinks, but relaxation of this policy to allow sales of liquor from outside of the state has meant a big drop in demand for locally produced wine. In Hnahlan village, the number of *jhum* households had fallen to only 40 (out of 730 in the village) with the growth in grape production. However, with problems in marketing wine over the last two years, the number of *jhum* households has now increased to 350. The village Grape Growers Association is actively looking for other opportunities such as grape juice, while some farmers are moving into oranges.

<sup>12</sup>[http://www.in.undp.org/content/india/en/home/library/environment\\_energy/market-development-assessment-for-organic-agri-horticulture-prod/](http://www.in.undp.org/content/india/en/home/library/environment_energy/market-development-assessment-for-organic-agri-horticulture-prod/)

<sup>13</sup> Contact has already been made with this spices initiative: <https://www.idhsustainabletrade.com/sectors/spices/>

<sup>14</sup>Value Chain Analysis Report for Mizoram and Nagaland, Sanjay Kumar Gupta (Value Chain Consultant)

31. The project will also support livestock production in project villages. Livestock are an integral part of rural livelihoods and traditions, and in both states most village households keep a few pigs and/or chickens. Cattle and goat rearing are also significant in some locations, and in some areas mithun (*gayal - Bosfrontalis*) are kept. Mithun have a special place in the culture of north-east India. Poultry contribute to household food security, while pigs represent a form of savings which can be sold for a significant lump sum (INR15,000 to INR 20,000) at times of need. Pigs and poultry are, to a large degree, fed on domestic food waste and crop by-products, but manufactured feeds are also used. Support for pigs will enable project interventions to reach most of the households in project villages.

32. The rationale to include livestock in the project is to increase household income, reduce dependence on *jhum* cultivation, utilize crop by-products, and to realize new opportunities through improved production technologies, both for livestock and feed production. Villages do not allow pigs to roam, and all pigs are housed, generating a significant volume of manure. However almost no use is made of pig manure and there is an opportunity to demonstrate improved composting systems, which households can be shown how to use to make compost that could be utilized in homestead vegetable gardens and on areas of permanent cropping.

33. The approach to livestock development will be based on the successful “Pashu Sakhi” model<sup>15</sup>. This involves having a trained Community Animal Health Worker (CAHW) in each village who will provide preventive health services and first aid, as well as providing advice and information on improved husbandry practices including feeding and housing. The CAHW will act as a link between livestock producers and the Department of Animal Husbandry – with the project also providing support to DAHV. CAHW will be expected to charge for their services and become self-sustaining during the project period. In each village, the CAHW would be selected from the village community and it is expected that a great majority of them would be women, particularly younger women.

34. Although the project will focus primarily on pigs and to a lesser extent on poultry, there will also be opportunities in specific villages to undertake pilot initiatives to support goats and mithun, and to develop dairy production and marketing groups which the states may decide to scale up later. .

### **3. Theory of change**

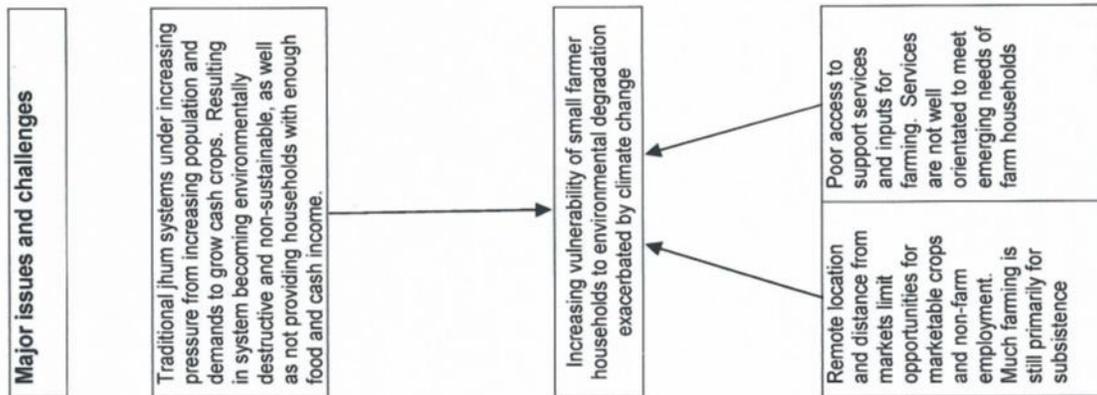
35. The governments of both states look upon this project as a means of developing and showcasing methodologies to foster climate resilient development of the traditional highland farming systems based on *jhum*, and to initiate value chains around selected spices, horticultural crops and livestock to diversify livelihoods and enhance incomes of their rural population.

36. The project's overall theory of change is shown in the figure below. This shows how the increasing pressure on *jhum* systems, combined with limited market opportunities and poor support services are increasing the vulnerability of small farmers to environmental degradation and climate change. The project will respond to these needs through: (i) promoting more rational systems for planning sustainable land use; (ii) more sustainable and productive *jhum* cultivation systems; (iii) land conversion from *jhum* to permanent cropping (reducing adverse environmental impacts and the workload for women); (iv) more productive permanent cropping systems for food and cash crops; (v) increased and less risky livestock production; and (vi) improved access to, and integration with, input and output markets leading to better returns and new opportunities for producers.

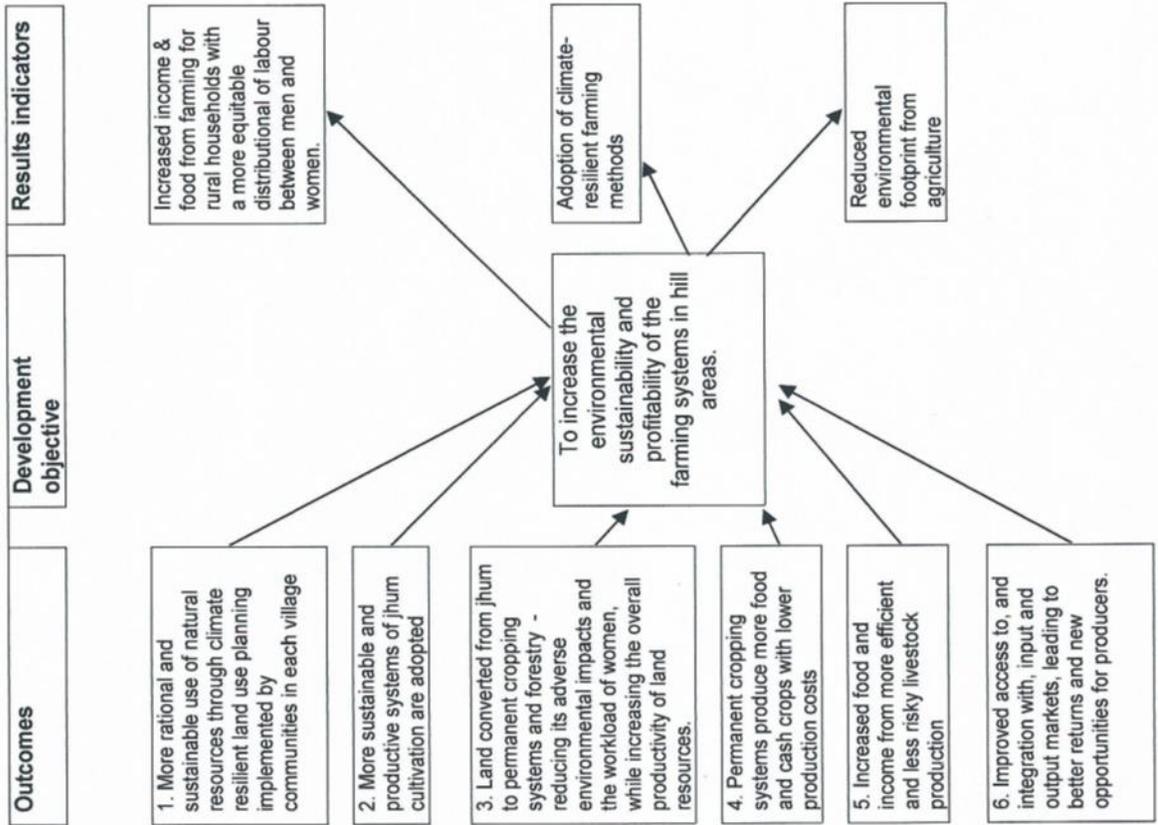
---

<sup>15</sup> The Pashu Sakhi model has been successfully used by IFAD-supported project in India (MPOWER, Tejaswini MP) as well as other development programmes. See [www.goatrust.org](http://www.goatrust.org) for further details.

### Theory of change



<p><b>Main risks</b></p> <p><b>Economic risks</b></p> <ul style="list-style-type: none"> <li>Growth of the non-farm and urban sectors may mean that fewer households than anticipated may work in farming and/or wish to participate in project activities.</li> <li>Difficult production conditions (such as topography, soils, remoteness) make it more difficult for producers to compete with products from more favoured parts of India - both for products for consumption within the state and for sale outside of the state.</li> </ul> <p><b>Technical risks</b></p> <ul style="list-style-type: none"> <li>Climate change, especially more extreme and less predictable weather, further weakens the competitive position of agriculture</li> <li>Local and traditional knowledge needs to be available to innovate and adapt technologies and production systems.</li> </ul> <p><b>Institutional and policy risks</b></p> <ul style="list-style-type: none"> <li>As traditional jhum declines, village institutions may be captured by powerful individuals to get additional land for cash crop production, so excluding poorer households from access to land.</li> <li>Policies for agricultural marketing may inadvertently result in less market competition and lower producer prices.</li> <li>Increasing provision of staple food at subsidised prices limits incentives for local production.</li> <li>Previous government programmes targeted at rural households may have led to the expectation that inputs and services will be provided free of cost. This means project interventions may not be replicated or sustained.</li> </ul> <p><b>Social risks</b></p> <ul style="list-style-type: none"> <li>Reducing jhum cultivation can mean lower production of traditional food items important for the distinctive tribal cultures.</li> </ul>
--



## II. Project description

### A. Project Area and Target Groups

37. **Project area and target group:** The criteria used by the respective states to identify the districts where the project would be implemented are (i) high prevalence of shifting cultivation (ii) prevention of an overlap with another large donor funded project and (iii) focusing only on hill states and not the plains. Accordingly, in Nagaland, the project would focus on eight out of 11 districts namely, Mon, Longleng, Zunheboto, Wokha, Kiphire, Phek, Mokokchung and Kohima. Dimapur district is not being considered as it is largely situated in the plains. Tuensang and Peren districts are not included as these are covered under the World Bank supported North East Rural Livelihoods Programme (NERLP). The eight selected districts have approximately 200,000<sup>16</sup> rural households.

38. In Mizoram, the project would be implemented in the four out of eight districts namely, Champhai, Mamit, Serchhip and Kolasib. The remaining four districts of the state, namely Aizawl, Lunglei, Lawngtlai and Saiha, have not been considered due to the on-going implementation of other major projects. The four selected districts have approximately 83,254<sup>17</sup> households.

39. **The target group:** The population of the state of Nagaland is largely tribal<sup>18</sup> with about 16 recognized tribes. Mizoram is also a predominantly tribal state<sup>19</sup>; majority of the population are Mizo, but there are also some Maras, Chakmas, Riangs and Bru. The project's target group would be entirely tribal and would include all farmers in the project villages who are dependent on *jhum* cultivation. As the project would involve participatory land use planning for the entire village and seek to create community conserved areas and firewood forests besides *jhum* improvement, low land rice cultivation, upland orchard/plantation crop cultivation and value chain development, the project will largely target all farming households in selected villages.

40. **Targeting Approach:** The project would adopt a two stage targeting strategy. First, the project would adopt geographic targeting by excluding the districts with other major development projects. The project area in a district will be selected primarily based on high levels of *jhum* cultivation with an aim to increase the *jhum* cycle and at the same time increase the number of years of *jhum* cultivation to make a gradual shift towards settled agriculture. Second, the project would adopt a social targeting approach by excluding the households with permanent government jobs. The target group categories would therefore include all tribal households involved in *jhum* farming and those unable to take up *jhum* cultivation on account of labour shortages and other vulnerable households having persons with disability and other challenges. Women are the main contributors to both agriculture and livestock activities and therefore gender would be mainstreamed into the project activities so that women have access and control over resources both in terms of targeting of project activities and also their participation in various committees of the project.

41. Similarly youth would be engaged in various project activities which include training them in pig value chain which is a low risk investment and providing them with capital, and engaging them as the main grassroots level project facilitators in the form of Lead Farmers, Community Resource Persons (CRPs) and CAHWs. Youth associations in both the states would be supported to participate in the innovation fund related activities in both the states.

42. In Nagaland, the project would select a cluster villages in each district depending on the size of the district after excluding the clusters allocated the proposed JICA project. A cluster approach would be followed in order to be ensure ease of delivery of project services and to promote economies of scale in

---

<sup>16</sup> 196,827 as per Census 2011

<sup>17</sup> As per state statistics assuming growth rate of 13.5% between the 2011 census and 2017.

<sup>18</sup> 89% in Nagaland as per 2001 Census

<sup>19</sup> 94% in Mizoram as per 2001 census

selected commodities to facilitate aggregation of both inputs and output for enhancing marketability to outside markets and also reduction in transaction costs. The main village clusters selection criteria include: (i) at least 75% of the villages with high levels of *jhum* cultivation with more than 60% of the households undertaking *jhum* cultivation; (ii) more than 50% of the *jhum* cultivating villages have a *jhum* cycle of eight years and less; (iii) one cluster per district covering the blocks falling in the cluster in their entirety to ensure that the cluster boundary is in consonance with the administrative boundaries for ease of management; (iv) existence of access roads; and (v) potential for cultivating high value crops on *jhum* land. In total the project would cover a total of 650 villages (69% of all villages in the eight districts with approximately 137,000 rural households) - covering a population of 685,000 persons. A saturation approach will be followed within each cluster to ensure comprehensive land use planning for the entire village landscape.

43. In Mizoram, the project would cover all the villages of the four project districts. A saturation approach will be followed to ensure comprehensive land use planning for the entire village landscape and provision of support services to address the needs of 77% of the households who are involved in farm activities. In total the project would cover all 272 villages in the four project districts and would support 64,500 households comprising a population of 322,500 persons in these districts.

44. Based on the profile of the households activities related *jhum* improvement, settled agriculture, value chains and livestock development would be targeted. In case of land use planning, village/community forest conservation marketing support and market access promotion, the project would generate benefits to all the households in project.

45. **Scaling up:** The project will scale up a number of current and recent efforts for *jhum* improvement and conversion. In Nagaland these are: (i) NEPED<sup>20</sup>, funded by the India-Canada Environmental Facility (ICEF) during 1995-2006; and (ii) Sustainable Land and Ecosystem Management in shifting cultivation areas of Nagaland for ecological and livelihood security (SLEM) project funded by UNDP-GEF. In Mizoram the New Land Use Policy (NLUP) promotes sedentary agriculture. Additionally, the North Eastern Region Community Resource Management Project for Upland Areas (NERCORMP), a project supported by IFAD in Manipur, Meghalaya and the hill districts of Assam demonstrated community planning and implementation for more sustainable land use systems. Details of lessons learned from these projects can be found in the Appendices 3 and 12.

46. Regarding livestock, the project will build on lessons from pig production interventions in the north-east, especially in Nagaland, sponsored by Tata Trusts with support from ILRI. These include improved feeding systems, as well as low cost pig housing and breed improvement. Other innovations that could be scaled up include the use of azolla as a protein supplement, silage from sweet potato plants (an idea from Nagaland), and chopped and fermented banana plant stalks (an idea from Mizoram). Mithun development can be based on the approach adopted in Nagaland by Entrepreneurs Associates (EA), an NGO, with funding from Tata Trusts. This involves fencing of forest areas for grazing and the introduction of improved husbandry practices.

## **B. Development objective and impact indicators**

47. The overall goal of the project is to increase household agricultural income of 137,000 rural highland households in Nagaland and 64,500 households in Mizoram and to enhance their resilience to climate change. This goal would be achieved through the development objective of increasing the environmental sustainability and profitability of farming systems practiced by highland farmers. The project will strengthen the capacities of state agencies and community based institutions to develop and

---

<sup>20</sup> Implemented in two phases, the first phase (1995-2001) was called Nagaland Environment Protection and Economic Development through People's Action and the second phase (2001-06) was called Nagaland Empowerment of People through Economic Development. [https://www.nagaland.gov.in//Nagaland/GovernmentAndPrivateBodies/Department\\_of\\_NEPED.html](https://www.nagaland.gov.in//Nagaland/GovernmentAndPrivateBodies/Department_of_NEPED.html)

implement climate resilient resource management systems, soil and water conservation, *jhum* improvement, existing settled agriculture improvement, diversification of land use/farming systems, crop productivity enhancement and development of climate resilient and equitable farm based value chains.

48. Key combined indicators at the goal level will include: (i) 70% of the *jhum* households farming for three or more years on the single plot; and (ii) 75% of the households (151,125 households) reporting increase of more than 100% in household income. Development objective level indicators to be measured include: (i) Soil carbon percentage of at least 4% on *jhum* land; (ii) Real increase in net annual farm income (in 2017 prices) to INR 4,754.6 million; and (iii) number of trees per ha of *jhum* land increased to 20. These require data to be collected on an annual basis. The tracking of results from outputs to outcomes and impact would enable the project to attribute the results to project interventions and generate useful lessons on what worked best and what did not work and why.

## **C. Outcomes/Components - Nagaland**

### **1. Outcomes and outputs**

49. One of the most important outcomes of this project will be the gradual transition from current form of *jhum* cultivation to more sedentary cultivation practice along with adoption of climate resilient farming practices and a resultant increase in net farm income. The major outcomes of this project will include: (i) 137,000 households reporting adoption of environment friendly sustainable and climate resilient technologies (use of agro-forestry, soil and water conservation, improved planting material and integration with livestock; (iii) gross returns from spices increased to INR 669.1 million; and (iv) gross returns from livestock increased to INR 316.5 million.

50. The major outputs of this project will include (i) 100% of the villages (650) with completed participatory land use plans; (ii) 182,000 farmers trained on better *jhum* and fallow management; (iii) 78,000 farmers trained on settled agriculture; (iv) 47,450 ha under SWC by *jhum*, fallow and settled agriculture; (v) 13,000 ha under community conservation areas; (vi) 8,000 households participating in organized spice value chain; (vii) 30,000 households benefitting from pig rearing; (viii) 75,000 households reporting improved access to markets; and (ix) 400 km of farm link road improved.

### **2. Components**

51. The project will have three components: (i) Improved *jhum* management; (ii) Value chain and market access; and (iii) Project management and knowledge services.

#### **i. Component 1: Improved *Jhum* Management**

52. Agriculture in Nagaland is practiced on hill slopes and valley lands. Normally farmers have been farming on the slopes of the hills by clearing forests and preparing the cleared land for rain-fed mixed cropping systems for few years, generally for 1-2 years. They leave the land as fallows and return after 8-10 years to cultivate it the same way for another 1-2 years. They also cultivate wet land rice on the terraced lowlands, called terraced rice cultivation (TRC) year after year. The *jhum* cycle in Nagaland has been decreasing and in some places it has come down to just 5-6 years.

53. The project intends to introduce agricultural interventions by taking into account climate change and its impact on food production and livelihoods and promote proven and emerging climate resilient best practices. These include: (i) use of remote sensing capacities to facilitate Village Councils to identify lands appropriate for cultivation and to avoid using steeply sloping lands for *jhum* cultivation, as is prevalent currently; (ii) introduction of fertility management practices using both biological measures and also possibly through the introduction of “nano-nutrient delivery systems”; (iii) use of traditional knowledge in erosion control for ensuring extension of cultivation period from currently one year to at least three years; and (iv) use of better agronomic practices, introduction of agro-forestry, linear planting, cereal and pulse

cultivation to build synergy between crops to maintain soil health on one hand and improved farmer income on the other.

### **Sub-component 1.1 – Better *jhum* and conservation**

54. **Capacity building:** The project will train PMU staff who in turn will train all the district level /Block/Circle level staff to explain the project concept, project components and step-wise implementation modalities including the process of village level micro-plan preparation. Village level workers will be trained thereafter. The project will initially conduct a workshop at the district level by inviting all the Chairpersons of Village Councils (VCs) and Secretaries of *Jhum* Resource Management Committee (JRMCs) in the project area to orient them on project goal and activities with deliberations on the impact of the project. Subsequently a meeting of the Village Assembly will be held to deliberate on village's interest to participate in the project with view to comply with free prior informed consent requirements. Based on the willingness of the community, the project implementation will proceed. The project will identify a Lead Farmer from each village and train them in better agronomic practices. These Lead Farmers will be the focal points for implementing village level activities and will be supported by Block/Circle level line department officers and village level workers.

55. **Land use planning:** The project will engage Nagaland GIS and Remote Sensing Application Centre (NaRSAC) to assist in the preparation of land use maps and land suitability maps for the eight project districts. A PLUP for each village will be finalised after validation from the Village Council. Based on the PLUP and also land suitability classification maps, Village Councils will be trained to: (i) identify lands suitable for growing various crops based on the slope, altitude and soil texture, and to allocate land based on this scientific information for *jhum*, settled agriculture and community forest conservation areas; (ii) fix boundaries for land allocated for settled agriculture; and (iii) decide on the crops to be cultivated to ensure development of economies of scale required for accessing markets.

56. **Better *Jhum*:** *Jhum* system has two phases: (i) crop production phase; and (ii) fallow phase. The fallow phase is also known as *jhum* cycle in Nagaland. The duration of both, cultivated and *jhum* fallow varies according to the fertility and productivity status of the land. Usually in *jhum* system, many crops of different duration, such as rice, chillies, ginger, vegetables, etc. are grown in the same piece of land and in an inter-spread (non-linear) manner. The project will focus on improving current *jhum* and improved management of *jhum* fallows, which will give two-fold results. First, it will increase the productivity and second it will lengthen *jhum* cycle, resulting in increased fallows. The project will promote Farmer Interest Groups (FIGs) to take up activities related to current *jhum* improvement and fallow *jhum* management. Each FIG will comprise of 10-20 farmers and each member of the FIG will be connected to 20 *jhum* families and these 20 households will be the associates of FIG members. The project will train FIG members and provide project support for implementation of activities.

57. **Current *Jhum* Improvement:** FIGs comprising *jhum* farmers will be encouraged to earmark the ridge and steep slopes for permanent tree farming, and side slopes for crop farming along with trees, including fruit trees. All *jhum* farmers will be covered and each *jhum* farmer will get support for about 25% of their *jhum* plot (estimated at 0.13 ha per *jhum* farmer). The project will support the construction of water harvesting ponds, low cost bunds, and trenches that will improve the availability of moisture. This will be complemented by planting of the leguminous crops on contour bunds (perpendicular to the incline), such as, *Leucaena* (*Leucaena leucocephala*), Alder (*Alnus nepalensis*), Neel (*Indigo fertyctoria*), perennial pigeon pea and *Gliricidia* (*Gliricidia sepium*). In current *jhum* fields, wild sunflower (*Tithonia diversifolia*) and stylo (*Stylosanthes hamata*) may also be grown and chopped off before sowing of the main crops.<sup>21</sup> The project will also support introduction of nano-nutrient delivery systems. Crops/commodities such as, rice, maize, sesame, cowpea, vegetables and other pulses will also be promoted for consumption

---

<sup>21</sup>B. Jama, C. A. Palm, R.J. Buresh, A. Niang, C. Gachengo, G. Nziguheba, and B. Amadalo (2000). *Tithoniadiversifolia* as a green manure for soil fertility improvement in western Kenya: A review. *Agroforestry Systems*, 49: 201-221

purposes to add to dietary diversity and to improve nutritional security in addition to fodder trees, tubers, etc, for use as animal fodder and feed.

58. The project will promote linear manner planting (proper row and plant spacing) to increase the possibility of using farm implements and to control weed growth. Mulching using local materials, use of nano-nutrients, planting leguminous plants on the upper edge of the bunds and cereals on the lower edge of the bund to improve farm productivity and income of the farmers in the short and medium term will be promoted. These interventions are climate resilient as there will be reduction in erosion and improved fertility reducing the need to slash and burn and shift to another *jhum* plot. The project support will be spread over three years to ensure continued cultivation on the same plot with better practices. The project will support current *jhum* improvement in a total of 65,000 ha with direct support in 11,700 ha covering 91,000 households.

59. *Fallow Jhum Management*: Fallow *jhum* management gives benefits for both, in-situ and downstream areas. The project will support low cost contour bunding, trenching, creating terraces using vegetative strips of fast growing plant/tree species and grasses, such as *Leucaena*, *Gliricidia*, *Alder*, *Indigo/ neel*, *perennial pigeon pea* and vetiver. The project will support seeding the fallows with both, annual and perennial legume cover crops, such as the *perennial pigeon pea*, wild sunflower (*Tithonia diversifolia*), *Sesbania species (speciosa and aculeate)*, *Trifolium alexandrinum*, *Indigofertinctoria*, stylo (*Stylosanthes hamata*), etc. The project will support fallow *jhum* management in all project villages covering a total of 65,000 ha, out of which direct project support will be for 16,250 ha covering some 91,000 households. Each household will get support for about 0.18 ha of fallow *jhum*.

60. Community Conservation Area: The community forests remain the vital community asset for protecting water sources, supply of non-timber forest produce (NTFP), and controlling forest fires. The project will fund contour bunding, contour trenching and water harvesting structures and biological measures, including seeding the area with leguminous plants, such as the wild sunflower, glyricidia and stylo, and perennial pigeon pea. Protection of water sources, raising nurseries and supplying planting material of locally preferred species such as, Tree bean (*Parkia timoriana*, *Parkia speciosa*, Badrang / Indian Pepper (*Xanthozylum rhetsa*, *Champa (Michella champaka)*, Gamar (*Gmelina arborea*), Cotton tree (*Bombax ceiba*), etc. Non-structural vegetative measures will also be promoted to recharge springs after mapping of the geology, vegetation and data on water availability.<sup>22</sup> The project will support this activity in 20 ha of community forest per village covering in total 13,000 ha.

### **Sub-component 1.2 – Support to Settled Agriculture**

61. The project does not directly promote settled agriculture. Many farmers have made the transition from *jhum* only system to *jhum* and settled agriculture mixed system. The project will support two aspects related to settled agriculture: (i) the existing terrace rice cultivation; and (ii) orchards and plantations in sloping uplands.

62. Support to existing terrace rice cultivation: The project will support farmers undertaking terraced rice cultivation to increase soil fertility, productivity and cropping intensity, and stabilize productivity. 1-2 FIGs in each village, comprising of about 10-20 members will be established and supported by the selected Lead Farmer and trained on better agro-techniques. Farmers will be encouraged to grow *Sesbaniarostrata*, and *azolla* as green manure before transplanting of paddy in the lowland rice fields.<sup>23</sup> The project will select short duration improved local paddy varieties in consultation with

---

<sup>22</sup> ICIMOD -2016- Spring recharge interventions in Nepal

<sup>23</sup> S.Kannaiyanand K. Kumar (2005). Azolla Biofertilizer for Sustainable Rice Production. <https://books.google.co.in/books?isbn=8170353564>

KVKs/ATARI. The possibility of two crops of decent productivity with first crop of low land short duration rice and a second crop of pulses/ginger/ onion after rice cultivation will be explored.<sup>24</sup>

63. The project will also support sustained low cost water supply, better seeds and better practices (seed selection, management and replacement, row planting, and crop rotation) in terraced lands. Introduction of ducks or fish into the rice cultivation areas<sup>25</sup>, development of supplementary irrigation system such as lift irrigation, and water harvesting ponds for rice cultivation and also micro-irrigation will be supported. The project will support 39,000 households covering 9,750 ha. Each household will get support for 0.25 Ha of terrace rice cultivation.

64. Support for upland settled agriculture: In Nagaland, transition from *jhum* to settled agriculture is taking place on medium slopes situated close to the village. These are being converted into vegetable gardening, fruit orchards and spice cultivation plots. In such villages, the project will establish a FIG comprising of about 10-20 members with support from the Lead Farmer. Each FIG member will be linked to 20 associate members. The FIG members will be provided training on soil and water conservation, improved farming systems and better agro-techniques. The project will also support soil and water conservation works such as contour bunding and trenching as demonstrations. Construction of water harvesting ponds will be taken up, wherever feasible to provide for protective irrigation.

65. The project will support construction of low cost terraces wherever feasible.<sup>26</sup> Better agronomic practices will be supported which includes compost pits, *azolla* pits, and legume, fodder trees and multi-purpose tree planting, such as *Buteamonosperma*, *Albizialebbc*, and *Gliricidia* on bunds. The treated area will be utilized for planting high value trees like *Meliacomposita*, *Alnusnepalensis*, and other locally available tree crops.<sup>27</sup> Commercially important trees like walnut (*Juglans regia*), chestnut (*Castanea dentata*), bay leaf (*Laurus Nobilis*), cinnamon (*Cinnamomum tamala*), large cardamom (*Amomum Sabulatom*) and chillies (*Capsicum chinense* and *Capsicum frutescens*) and other species will be supported.<sup>28</sup> The project will support *transition to settled agriculture covering 9,750 ha covering 39,000 households*. Each selected household will get support for 0.25 Ha of upland settled agriculture.

## ii. Component 2: Value Chain and Market Access

66. *Jhum* improvement, settled agriculture and value chain and market access are clearly interlinked. Many farmers have both *jhum* and settled agriculture (mainly plantations, spice cultivation, and lowland rice). The shift to settled agriculture is on account of labour shortage for taking up labour intensive *jhum* cultivation; disinterest of youth to take up *jhum* cultivation and also the need to cultivate high value crops to generate cash income. The beneficiaries under Value Chain and Market access will be a subset of beneficiaries under better *jhum* and settled agriculture. Livestock support will also target a subset farmers undertaking *jhum* to increase their income so as to reduce their dependence on *jhum*.

67. A cluster approach for promotion of select value chain commodities will be adopted wherein on an average four villages form a cluster, which ensures economies of scale in terms availability of a minimum truck load of produce for marketing players to get into business partnership with value chain farmers.

---

<sup>24</sup> Singh V P, Singh RK, Sastri ASRAS, Baghel SS, Chaudhary JL.1999. Rice growing environments in Eastern India: An agro-climatic analysis. Indira Gandhi Agril. Univ. and the International Rice Research Institute. Pub. Pp 76.

<sup>25</sup> Singh VP, Early AC, Wickham TH. 1979. Rice agronomy in relation to rice-cum-fish culture. Pp.15-36. In Proc. International conference on integrated systems. ICLARM / SEARCA, Manila, Philippines.

<sup>26</sup> Early AC, Singh VP, Tabbal DF, Wickham TH. 1979. Land evaluation criteria for irrigated lowland rice. Report of an expert consultation. In Land Evaluation Criteria for Irrigation. World Soil Resources. Food and Agriculture Organization of the United Nations, Rome, Italy, 50:114-144.

<sup>27</sup>V.P. Singh, (2007). Agro- horti- silviculture in hill slopes for enhanced and sustained production and hill conservation. Pp 70-73 In: Islam, Z., Hossain, M., Paris, T., Hardy, B., and Gorsuch, J. (Eds) Technologies for Improving Rural Livelihoods in Rainfed Systems in South Asia. IRRI, Los Banos, Laguna, Philippines. Pp 124.

<sup>28</sup>A.K. Singh, G.C. Munda, S.V. Ngachan, A.S. Panwar, P.K. Ghosh, Anup Das, D.P. Patel, B.U. Choudhury, A.K. Tripathi and K.P. Mohapatra. 2012.

Clusters ensure collective procurement of agriculture inputs and business development services i.e. transportation and logistics services to make these service economical.

**Sub-component 2.1 – Value chain development:**

68. Production Support: The project will support activities for enhancing production of Naga-chillies, large cardamom and ginger using a cluster approach. The clusters / villages will be selected based on the suitability (soil, climate, water, etc.) of soils and slopes, interest and ability of farmers to invest in labour to cultivate selected crops and ability to allocate a separate plot of about 0.5 ha either in current *jhum* or in fallow *jhum* to grow only the selected crops. Once the clusters are identified, the project will identify and train two CRPs for each cluster in various aspects of nursery management, planting material selection and in micro-propagation techniques for rapid multiplication of quality planting material and package of practices. The project will identify and support 100 CRPs in the project districts with about 2 CRPs per cluster.

69. The project will promote FIGs comprising 20 farmers per group in respect of three spice crops namely Naga-chill, ginger and cardamom in 50 clusters covering about 4 villages per cluster. The FIG members will be provided access to improved planting material of Naga-chilli, ginger and cardamom, and bio-fungicide such as *Trichoderma* for cardamom and trained in better package of practices which will help in increasing survival of plants and better application of nutrients (organic) and management of pests and diseases.<sup>29</sup> In total about 400 FIGs will be supported. CRPs will support FIGs by providing quality planting materials. The project in total intends to support 8,000 households and expand production in 1,000 ha for Naga-chilli, 1,000 ha for ginger and 2,000 ha for cardamom.

70. The project plans to introduce an innovative modality for digital delivery of extension and monitoring of production practices, input use and expected production. This can be accessed by market players across the world to support their procurement decisions by identifying number of farmers cultivating a particular crop, quantity of produce expected, and package of practices used. This would reduce the need for face to face interaction required to access market players, increase the reliability quotient and enable the farmers to make a quick progression into organic certification.

71. Marketing Support: The major constraints to value chain development of traditional spice, and agricultural and horticultural crops are mainly issues related to marketing. They include: (i) limited aggregation for achieving economies of scale required for cost effective collection, transportation and storage; (ii) insufficient investment in post-harvest management practices, including primary processing to add value and also to reduce volume for transportation; (iii) inadequate data on marketable quantity to feed into supply chain, (iv) inadequate linkage with premium markets on account of issues related compliance to certification and quality standards; and (iv) limited access to market players from outside the state.<sup>30</sup>

72. The project's marketing efforts will be directed towards both the project promoted commodities (Naga-chilli, ginger and Cardamom) and also other commodities and crops promoted under *jhum* improvement and settled agriculture, including commodities such as turmeric, orange, passion fruit and pineapple, which are grown in sufficient quantities for market entry to be viable. The project will support aggregation and primary processing and will support establishment of market linkages, common facility centres and collection centres. In addition, the project will also support extraction of oleoresins, capsanoids, natural plant based dyes, etc. The project will support value addition to bamboo in terms of manufacture of handicrafts and incense sticks and partial processing such as flattening including better designs.

---

<sup>29</sup> ATMA and Horticulture Mission for NE states and Himalayas- <http://tmnehs.gov.in>

<sup>30</sup> Livelihood based Agri-business and Market studies for North East Rural Livelihoods Project, MART, 2011

73. In order to facilitate production based on market needs and to identify market linkage partners, the project will support establishment of a marketing unit within the State Agriculture Marketing Board. The marketing unit will establish contacts with agencies, such as Sresta Organics, Patanjali, and other agencies to develop contract farming modalities for the FIGs promoted under the project. Patanjali has shown interest to buy dried turmeric, tulsi, aloe vera, etc. The marketing unit will analyse all market interests and explore the possibility of entering into contract farming arrangements. Collaboration with IDH India and its Sustainable Spice Initiative will be formalized to attract private sector participation into marketing of farm produce. The project will support construction of common facility /collection centres, participation in trade fairs and exhibitions, and will also organize buyer-seller meets. The project will also prepare plans to attract private sector from outside the state to establish processing and value addition of select crops. The project will also support progression of farmers into organic production.

74. Livestock support services: The project will train a CAHW, in all the 650 project villages. With women having a major role in livestock, about 50% CAHWs will be women and remaining will be men folk committed to serve the community and stay in the village. The project envisages immunizing the pigs and poultry in the project area and the pigs will also be de-wormed on a limited scale during the first three years of the project. The project will focus mainly on the pig sub-sector by developing support services related to breed improvement, feed improvement, and animal health. The project will demonstrate and promote feed crops cultivation (e.g. sweet potato, tapioca, colocasia, cow-pea, maize, azolla, etc.) in the backyard and create awareness among the farmers about the nutrient requirement of pigs. The project will encourage existing retail outlets to sell fish meal, soya bean meal and oil cakes and mineral and vitamin mixture. Small feed grinding units will be established to utilise locally produced maize, dried cassava, etc.

75. The project will support establishment of 148 small pig breeding units (6:1 unit) to be operated by progressive/ experienced farmers, distribution of about 30,000 improved piglets for individual households on 50% cost basis, and demonstration of improved pig housing and compost production from pig manure. Existing artificial insemination services for pigs will be expanded by strengthening the existing boar stations under DAHV. The project will aim to raise awareness of the quality threats among the pig slaughterers, retailers and transporters through information campaign and imparting training on hygienic slaughtering including provision of slaughter slabs, handling, displaying and selling of pork.

76. Innovation Fund: FOCUS will fund the testing and dissemination of innovative technologies and approaches to improving settled agriculture, livestock and marketing. Several organizations, such as Entrepreneurs Associates have started training youth and providing them with credit for starting enterprise and Mithun rearing as a biodiversity initiative.<sup>31</sup> Similarly, The Green Caravan has started aggregation of local produce and marketing these products outside the state and also value addition of local pork through smoking to market outside the state.<sup>32</sup> These, and other similar efforts need a funding mechanism for expansion. Fragmented pockets of production, high cost of production, limited value addition efforts and limited aggregation efforts to ascertain volume and transaction costs to test market viability constrain production scaling up and higher value realization. Innovative aggregation and marketing efforts need funding support. In order to address these issues, the project will set up an innovation fund that will provide flexibility to fund any emerging innovation.

77. Development of entrepreneurial skills of youth remains a challenge. Skill development and financing challenges mainly constrain young entrepreneurs.<sup>33</sup> The project will prioritize the needs of youth while approving sub-projects funded by the Innovation Fund. Sub-projects of youth taking up enterprise

---

<sup>31</sup><https://www.eanagaland.com/>

<sup>32</sup><https://www.facebook.com/TheGreenCaravanNagaland/>

<sup>33</sup> Rural Entrepreneurship in India: Challenge and Problems; Brijesh Patel, Kirit Chavda, G. H. Patel Institute of Business Management, Vallabh Vidhyanagar Sardar Patel University, Gujarat, India

related to aggregation and value addition will be funded on a priority and capacity building aspects will be built into this. In addition, the project will actively identify agencies that have capacity to submit sub-projects that train youth in specific vocations and provide funding for enterprise establishment coupled with technical backstopping. Such agencies will be funded using Innovation Fund.

### **Sub-component 2.2 - Market access infrastructure**

78. A major constraint for the development of market-orientated agriculture is poor road access to production areas. Although almost all villages are now connected by all-weather roads, these tend to run along the ridges where settlements are located. Much of the land with good potential for the development of plantation and other permanent crops are in valley bottoms and on the lesser steep-slopes. However, such areas often have no road access, making it difficult to supply inputs and extract crops. Farm link roads are therefore a major priority of the government. However, many of the roads that have been built, either by DoA or using village labour funded via MGNREGS have been constructed without proper survey and design resulting in poor quality, high gradient and largely unpaved; they are not resilient to intense monsoon seasons or extreme events exacerbated by climate change.

79. IFAD loan funds In Nagaland will be only allocated for construction of critical gaps in the existing road infrastructure such as bridges, culverts and other cross drainage structure. The plan is to construct a total of around 200 km of earth road (with proper side slopes and cross drainage and base course) using convergence funds (MGNREGS). In addition, the project will build 600 cross drainage structure using IFAD funds which will result in improvements to 200 km of existing gravel roads.

### **iii. Component 3: Project Management and Knowledge Services**

80. A new society has been established headed by the Chief Secretary which will be the lead implementing agency. The APC will chair the Project Management Committee and has been appointed as the Mission Director. An Indian Administrative Services officer has been appointed as the Chief Executive Officer, who will be the Secretary of the society. The details regarding project management, implementation arrangements are described in Appendix 5.

81. Knowledge Management: The project will develop a Knowledge Management strategy and action plan for knowledge generation and dissemination. This will include internal learning through regular progress review meetings, and participatory M&E at the community level. Information will be shared at the village level. Knowledge will also be shared with external stakeholders and the wider development community through generation of knowledge products. A project website will be established as a knowledge sharing tool, with information on good practices and innovations shared with NITI Ayog, DEA and Ministry of DoNER, and also displayed on the IFAD Asia website.

82. Capacity building and knowledge generation: The project will be working on both *jhum* improvement and settled agriculture. In order to generate concurrent impact data and to demonstrate the effectiveness of these approaches, the project will engage the ICAR, Regional Centre in Barapani and the Regional Agriculture Technology Application Research Institute (ATARI). Both these institutions come under the Deputy Director General (Extension), ICAR, GoI. An agreement will be signed between GoN and ICAR detailing the terms of engagement.

83. The project with assistance from ICAR will aim to be a platform for learning for the other states in NER wherever *jhum* is being practiced. The project has allocated USD 260,000 to generate knowledge on the evolution and sustainability of upland farming systems and their capacity to respond to climate change.

84. Technical Assistance: IFAD will provide a grant of about USD 550,000 to GoN for capacity building. Capacity building will cover *jhum* improvement, settled agriculture, value chain development and monitoring and evaluation. The major activities envisaged under technical assistance includes; (i) preparation of training materials and conducting training of all Veterinary Doctors in animal production

related issues covering pigs, cattle, goats and poultry; (ii) preparation of training materials for establishment of private nurseries for nut trees, timber trees, and fuel wood trees and conducting TOT for Agriculture Research Station staff on nursery management; (iii) preparation of training materials for spice production and training of trainers; (iv) engagement of specialist consultants in Highland farming systems, Agroforestry and Soil and Water Conservation, and for ongoing technical support to the PMU; (v) prepare a long term weather data based agro-climatic atlas for Nagaland; (vi) development of a computerised MIS and training of MIS staff in its management; and (vii) support for project monitoring and evaluation including assessment of outcomes and impact. GoN will engage Food and Agriculture Organization of the United Nations (FAO) to implement these activities. FAO will also be requested to contribute from its own resources into this technical assistance sub-project. A technical assistance agreement will be signed between GoN and FAO detailing the terms of this engagement.

## **D. Outcomes/Components - Mizoram**

### **1. Outcomes and outputs**

85. One of the most important outcomes of this project will be the gradual transition from current form of *jhum* cultivation to more sedentary cultivation practice along with adoption of climate resilient farming practices and a resultant increase in net farm income. The major outcomes of this project will include: (i) 64,500 households reporting adoption of environment friendly sustainable and climate resilient technologies (use of agro-forestry, soil and water conservation, improved planting material and integration with livestock; (iii) Gross returns from spices increased to INR 277 million; and (iv) Gross returns from livestock increased to INR 267.9 million.

86. The major outputs of this project will include (i) 100% of the villages (272) with completed participatory land use plans; (ii) 108,800 farmers trained on better *jhum* and fallow management; (ii) 27,200 farmers trained on settled agriculture; (iii) 40,800 ha under SWC by *jhum*, fallow and settled agriculture; (iv) 5,440 ha under community conservation areas; (v) 10,880 households benefitting from landless support; (vi) 7,200 households participating in organized spice value chain; (vii) 25,000 households benefitting from pig rearing; (viii) 48,000 households reporting improved access to markets; and (ix) 400 km of farm link road rehabilitated.

### **2. Components**

87. The project will have three components: (i) Improved *jhum* management; (ii) Value chain and market access; and (iii) Project management and knowledge services.

#### **i. Component 1: Improved *Jhum* Management**

88. Agriculture in Mizoram state is practised on hill slopes and terraced low lands. The forest cover has been reduced from over 90% to 88% during the last 25 years due to the practice of shifting cultivation (locally called *jhum*). The quality of forest also depleted during this period. Normally farmers have been farming on hill slopes by clearing forests and preparing the cleared land for rain-fed mixed cropping systems for 1-2 years in Mizoram. They leave the land as fallows and return after 8-10 years to cultivate it the same way for 1-2 years. However, they continue to cultivate wet land rice on the terraced lowlands years after year. The farmers cultivate wet land rice on terraced lowlands called wet rice cultivation (WRC).

89. The project intends to implement agricultural interventions by taking into account climate change and its impact on food production and livelihoods and proven and emerging climate resilient best practices. These include: (i) use of remote sensing capacities to facilitate Village Councils to identify lands appropriate for cultivation and to avoid using steeply sloping lands for *jhum* cultivation, as is prevalent currently; (ii) introduction of fertility management practices using both biological measures and also possibly through the introduction of “nano-nutrient delivery systems”; (iii) use of traditional knowledge

in erosion control for ensuring extension of cultivation period from currently one year to at least three years; and (iv) use of better agronomic practices to introduce agroforestry, linear planting, cereal and pulse cultivation to build synergy between crops to maintain soil health on one hand and improved farmer income on the other.

### **Sub-component 1.1 – Better *Jhum* and Conservation**

90. Capacity building: The project will train PMU staff who in turn will train all the district level /Block/Circle level staff to explain the project concept, project components and step-wise implementation modalities including the process of village level micro-plan preparation. Village level workers will be trained thereafter. The project will initially conduct a workshop at the district level by inviting all the Chairpersons and Secretaries of Village Councils (VCs) in the project area to orient them on project goal and activities with deliberations on the impact of the project. Subsequently a meeting of the Village Assembly will be held to deliberate on village's interest to participate in the project with view to comply with free prior informed consent requirements. Based on the willingness of the community, the project implementation will proceed. The project will identify a Lead Farmer from each village and train them in better agronomic practices. These Lead Farmers will be the focal points for implementing village level activities and will be supported by Block/Circle level line department officers and village level workers.

91. Land Use Planning: The project will engage Mizoram Remote Sensing Application Centre (MiRSAC) to assist in the preparation of land use maps and land suitability maps for the four project districts. The project will also prepare land suitability classification maps for each village to enable the project to identify clusters for development of value chains and also crops/plantation suitable to the area. Based on the land use maps and also land suitability classification maps, Village Councils and Site Allotment Advisory Boards (SAAB) will be trained to: (i) identify lands suitable for growing various crops based on the slope, altitude and soil texture, and to allocate land based on this scientific information for *jhum*, settled agriculture and village forest conservation; (ii) fix boundaries for land allocated for settled agriculture; and (iii) decide on the crops to be cultivated to ensure development of economies of scale required for accessing markets.

92. Better *Jhum*: *Jhum* system has two phases: (i) crop production phase; and (ii) fallow phase. The fallow phase is also known as *jhum* cycle in Nagaland. The duration of both, cultivated and *jhum* fallow varies according to the fertility and productivity status of the land. Usually in *jhum* system many crops of different duration, such as rice, chillies, ginger, vegetables, etc. are grown in the same piece of land and in an inter-spread (non-linear) manner. The project will focus on improving current *jhum* and improved management of *jhum* fallows, which will give two-fold results. First, it will increase the productivity and second it will lengthen *jhum* cycle, resulting in increased fallows. The project will promote FIGs to take up activities related to current *jhum* improvement and fallow *jhum* management. Each FIG will comprise of 10-20 farmers and each member of the FIG will be connected to 20 *jhum* families and these 20 households will be the associates of FIG members. The project will train FIG members and provide project support for implementation of activities.

93. Current *Jhum* Improvement: FIGs comprising farmers will be encouraged to earmark the ridge and steep slopes for permanent tree farming, and side slopes for crop farming along with trees, including fruit trees. All *jhum* farmers will be covered and each *jhum* farmer will get support for about 25% of their *jhum* plot (estimated at 0.25 ha per *jhum* farmer). The project will support construction of low cost bunds and trenches and water harvesting structures that will improve the availability of moisture. Planting of the leguminous crops on contour bunds, such as *Flemingia macrophylla*, *Flemingia semilata*, *Tephrosia candida*, and *Gliricidia maculate* will contribute to improved soil fertility and moisture conservation through leaf fall and mulch. This help in stabilizing and improving productivity. Crops/commodities such as, rice, maize, sesame, cowpea, vegetables and other pulses will also be promoted for consumption purposes to add to dietary diversity.

94. The project will promote linear manner planting (proper row and plant spacing) to increase the possibility of using farm implements and to control weed growth. Mulching using local materials, use of nano-nutrients, and planting leguminous plants and the upper edge of the bunds and cereals on the lower edge of the bund to improve farm productivity and income of the farmers will be promoted. The project support will be spread over 3 years to ensure continued cultivation on the same plot with better practices. The project will support current *jhum* improvement in total 54,400 ha out, of which direct project support will be for 13,600 ha covering some 54,400 households.

95. **Fallow Jhum Management:** Fallow *jhum* management gives benefits for both, in-situ and downstream areas. The emphasis will be to grow the soil erosion controlling and nutrient building species rather than allowing the scrubby growth during the fallow periods. The project will support low cost contour bunding, including log wood bunding, trenching, creating terraces using vegetative strips of fast growing tree species and grasses, such as *Gliricidia*, *Tephrosia*, *Flemingia*, and vetiver / lemongrass. The project will also support seeding the fallows with both, annual and perennial legume cover crops, such as the perennial pigeon pea, *Sesbania speciosa*, *Trifolium alexandrinum*, *Indigo feratinctoria*, and this is expected to stabilize the land and improve soil fertility. The project will support in total 13,600 ha covering 54,400 households. Each household will get support for 0.25 Ha for fallow management.

96. **Village Forest Conservation:** The village forests remain the vital community asset for protecting water sources, supply of non-timber forest produce (NTFP), and controlling forest fires. Only the dry wood is allowed to be removed from the village forests and no commercialization is allowed for the NTFPs. The project will support the restoration / conservation of village forests, which will involve re-demarcating the village forest boundaries, constructing contours, construction of check dams, protection of water sources, and protection of water sources, raising nurseries and supplying planting material of locally preferred species. Non-structural vegetative measures will also be promoted to recharge springs in the village forests after mapping of the geology, vegetation and data on water availability.<sup>34</sup> The project will support raising nursery and planting of locally preferred species such as, *Parkia timoriana*, *Michella champaka*, *Gamar (Gmelina arborea)*, *Bombax ceiba*, etc. Village Councils will implement this activity. This activity will cover 5,440 ha (20 ha per village).

### **Sub-component 1.2 – Support to settled agriculture**

97. The project does not directly promote settled agriculture. Many farmers have made the transition from *jhum* only system to *jhum* and settled agriculture mixed system. The project will support two aspects related to settled agriculture: (i) the existing settled agriculture comprising terrace rice cultivation in terraces and orchards and plantations in sloping uplands; and (ii) the landless households - households that have access to *jhum* land but not to land with tenurial security.

98. **Support to existing terrace rice cultivation:** The project will support farmers undertaking terraced rice cultivation. The main aim of this will be to increase soil fertility, productivity and cropping intensity, and stabilize productivity. The project will form FIGs and train them on improved crop husbandry. The project will also promote additional measures for improving soil fertility by growing *Sesbaniastrata* and *Azollapinnata* under rice cultivation systems.<sup>35</sup> This apart, developing supplementary irrigation system such as lift irrigation, water harvesting ponds for rice cultivation in low land areas will also be supported. The project will select short duration improved local paddy varieties in consultation with KVKs/ATARI. In addition, the project will also support introduction of second crop (pulses/ginger/ onion) after rice cultivation, rice-fish cultivation and fish farming in ponds in each of the selected villages. The project will support 10,880 households covering 2,720 ha. Each household with terrace rice cultivation will get support for 0.25 Ha.

---

<sup>34</sup>ICIMOD -2016- Spring recharge interventions in Nepal

<sup>35</sup>Effects of *Sesbaniastrata* and *Azollamicrophylla* incorporation on transformation of applied zinc and copper in lateritic rice soils with different flooding regimes, B. Mandal, K. Bhattacharya. P. K. Mete and L. N. Mandal. *Biology and Fertility of Soils*, May 1997, Volume 24, [Issue 4](#), pp 394–39

99. Support to upland settled agriculture: The project will support existing settled agriculture in uplands by providing them with quality planting material for horticulture crops, such as banana, orange and pineapple, and spices such as black pepper, turmeric and Mizo-chilli to improve the farm productivity and income of the farmers in the short and medium term. High value timber tree species, such as *Mesua ferra*, *Duabanga grandiflora* and / or *Duabanga meluccana*, and *Cedrela toona* will be introduced in the system to add to the farmers' income. The results of agri-horti-silvicultural systems and other systems piloted by ICAR in the northeast region will be expanded.<sup>36</sup> The project will also support construction of water harvesting ponds and other measures. The possibility of two crops of decent productivity with first crop of lowland rice and an upland crop (e.g. onion, garlic, field pea, lentil, and other legumes) after rice will be explored through proper crop planning using water balance analysis and improved agronomic practices.<sup>37</sup> The project will support 5,440 households covering 2,720 ha. Each household with upland settled agriculture will get support for 0.5 Ha.

100. Support to the landless: The project will the poorest households to access land with tenurial rights. Households that are without tenurial land rights in each village will be identified and a FIG will be formed. The selection criteria will include household that: (i) have participated in *jhuming* for the last three years continuously; (ii) do not have temporary pass and land settlement certificate for any land other than residential plot; (iii) do not have any member working in the government sector; and (iv) households that are dependent on wage labour for 75% of their income. A FIG in each village comprising about 10-20 members will be established and supported by the Lead Farmer. A land parcel will be identified using the land use maps and temporary pass will be issued for at least 0.5 ha per member. This allocation will be made not individually but for a group as a whole. FIGs will be provided training on better agronomic practices and supported will be provided for soil and water conservation works in these selected areas. Measures such as contour bunds, contour trenches and construction of water harvesting ponds. The project will support promotion of integrated farming systems in these lands. The project will support 10,880 households covering 5,440 ha.

## ii. Component 2: Value Chain and Market Access

101. *Jhum* improvement, settled agriculture and value chain and market access are clearly interlinked. Many farmers have both *jhum* and settled agriculture (mainly plantations, and lowland rice). The shift is mainly on account of labour shortage for taking up labour intensive *jhum* cultivation, disinterest of you to take up *jhum* cultivation and also the need to cultivate high value crops to generate cash income. The beneficiaries under Value Chain and Market access will be a subset of beneficiaries under *jhum* improvement and settled agriculture. Livestock support will also target a subset farmers undertaking *jhum* to increase their income so as to reduce their dependence on *jhum*.

102. A cluster approach for promotion of select value chain commodities will be adopted wherein on an average four villages form a cluster, which ensures economies of scale in terms availability of a minimum of a truck load of produce for market players to get into business partnership with value chain farmers. Cluster ensures collective procurement of agriculture inputs and business development services i.e. transportation and logistics services to make these services economical.

### **Sub-component 2.1 – Value chain development**

103. Production Support: The project will support activities for enhancing production of: (i) Turmeric and Mizo-chilli in Kolasib district; (ii) Mizo-chilli and Turmeric in Mamit district; (iii) Mizo-chilli and Ginger in Serchhip district; and (iv) Mizo-chilli and Ginger in Champhai district. Non-availability of quality planting

---

<sup>36</sup> A.K. Singh et al 2012, Natural Resources Management for sustainable hill agriculture – need for a paradigm shift

<sup>37</sup> Singh V P, Singh RK, Sastri ASRAS, Baghel SS, Chaudhary JL.1999. Rice growing environments in Eastern India: An agro-climatic analysis. Indira Gandhi Agril. Univ. and the International Rice Research Institute. Pub. Pp 76.

material remains an issue. By supplying improved planting material, it is assumed that the productivity of these crops will increase by 30 to 50%.<sup>38</sup>

104. The project will identify 30 clusters (each cluster of about 4 villages) and support engagement of two CRP in each cluster to support the FIGs. The cluster selection for production support will depend on the suitability (soil, climate, water, etc.) of the area to produce these crops and access to roads. Interested farmers in these clusters will have to allocate a separate plot of about 0.5 ha either in current *jhum* or in fallow *jhum* to grow these selected crops. Appropriate training for the CRPs and FIGs will be provided by the project. The project will support promotion of FIGs of up to 20 farmers per group in respect of commodities/crops shortlisted for each district. The project will support 7,200 households covering 3,600 ha under spice production.

105. The project plans to introduce an innovative modality for digital delivery of extension and monitoring of production practices, input use and expected production. This can be accessed by market players across the world to support their procurement decisions reducing the need for face to face interaction required to access market players and increase the reliability quotient and enable the farmers to make a quick progression into organic certification.

106. Marketing Support: The major constraints to value chain development of traditional spice, and agricultural and horticultural crops are related to marketing. These include: (i) limited aggregation for achieving economies of scale in cost effective collection, transportation and storage; (ii) insufficient investment in post-harvest management practices, including primary processing to add value and to reduce volume for transportation; (iii) inadequate data on marketable quantity to feed into supply chain, (iv) inadequate linkage with premium markets on account of issues related to compliance of certification and quality standards; and (v) limited access to market players from outside the Mizoram state.<sup>39</sup>

107. The project's marketing efforts will be directed towards both the project promoted commodities (Mizo-Chilli, Ginger and Turmeric), and also other commodities and crops promoted under *jhum* improvement and settled agriculture, including , orange and passion fruit which are grown in sufficient quantities, to make them viable for market entry. The project will support aggregation and primary processing activities and will support market linkages. In addition, the project will also support next level of processing of spices such as extraction of oleoresins, capsanoids, natural plant based dyes, etc and value addition to bamboo.

108. In order to facilitate production based on market needs, the project will support establishment of a marketing unit within the horticulture department. The marketing unit will establish contacts with agencies, such as Sresta Organics, Patanjali, and other agencies to develop contract farming modalities. . Collaboration with IDH India and its Sustainable Spice Initiative will be formalized to attract private sector participation into marketing of farm produce. The project will support construction of common facility /collection centres, participation in trade fairs and exhibitions, and will also organize buyer-seller meets. The project will also prepare plans to attract private sector from outside the state to establish processing and value addition of select crops. The project will also support progression of farmers into organic production.

109. Livestock Support: The project will train a CAHW, in all the 272 project villages. With women having a major role in livestock, about 50% CAHWs will be women and remaining will be men folk committed to serve the community and stay in the village. The project envisages immunizing the pigs and poultry in the project area and the pigs will also be de-wormed on a limited scale during the first three years of the project. The project will focus mainly on the pig sub-sector by developing support services related to

---

<sup>38</sup> ICAR NE Hill Complex- <http://www.icarneh.ernet.in>

<sup>39</sup> Livelihood based Agri-business and Market studies for North East Rural Livelihoods Project, MART, 2011

breed improvement, feed improvement, and animal health. The project will demonstrate and promote feed crops cultivation (e.g. sweet potato, tapioca, colocasia, cow-pea, maize, azolla, etc.) in the backyard and create awareness among the farmers about the nutrient requirement of pigs. The project will encourage existing retail outlets to sell fish meal, soya bean meal and oil cakes and mineral and vitamin mixture. Small feed grinding units will be established to utilise locally produced maize, dried cassava, etc.

110. The project will support establishment of 64 small pig breeding units (6:1 unit) to be operated by progressive/ experienced farmers/CAHWs. In addition, the project will bear 50% cost of 25,000 improved piglets to 25,000 households. The project will also demonstrate/promote improved pig housing and compost production from pig manure. Existing artificial insemination services for pigs will be expanded by strengthening the existing boar stations (4) under DAHV and introducing cold chain facilities in each veterinary hospital of the project areas. The project will support other livestock related activities such as cattle, goat rearing and aquaculture. The project will aim to raise awareness of the quality threats among the pig slaughterers, retailers and transporters through information campaign and imparting training on hygienic slaughtering including provision of slaughter slabs, handling, displaying and selling of pork.

111. Innovation Fund: Several societies, associations, cooperatives, public sector companies, producer companies, local agro-enterprise and innovators operate in the state. These agencies and individuals operate in an environment of limited scale, inadequate capital and inability to access latest technologies and large scale markets. This apart, in order to realise the potential of the agricultural and allied sectors, a higher scale of operations is required to enter external markets on competitive terms and/or fetch a premium price for products produced in the states. The project's value chain support will facilitate expansion of production and marketing, and is envisaged to generate a new set of entrepreneurs with market linkages. In addition, higher level investment is required to establish extraction of oleoresins, capsanoids and tumerons. These need to be funded in a sub-project mode. Accordingly an innovation fund (IF) is proposed as a funding mechanism through which agencies from the public, private or social sectors would work with FOCUS to implement specific sub-projects involving innovative approaches that support the overall objectives of the project.

112. Project states being hilly regions, face high transportation costs for movement of agriculture commodities due to access difficulties on account of longer rainy periods, landslides, and land sinking. Limited entrepreneurship and marketing opportunities coupled with low volume high cost of transport and limited risk-taking ability constrain agri-business development. The IF is envisaged to overcome these constraints by supporting potential agencies who can offer innovative solutions to project target communities. Such sub-projects should, ideally, have potential to be scaled up, by FOCUS or other actors, so as to reach a larger number of households. Sub-projects funded by the IF will be established in strategic locations of project districts. Preference will be given to agencies/individuals planning to establish facilities within the project locations. Agencies/business entities registered in the state of Mizoram and Nagaland respectively will be preferred. In the event an outside agency intends to apply for IF, such agencies will be required to have a local partner. Funding pattern will be maximum 75% grant from FOCUS and minimum 25% contribution from applicant or beneficiary. The Fund would have two windows- one for local youth preferably setting up new enterprises where the grant element will be 75% and second for all other applicants from the region or outside with relatively lower grant element. Applicants bringing higher contribution would be preferred.

113. The project will prioritize the needs of youth while approving sub-projects funded by the Innovation Fund. Sub-projects of youth taking up enterprise related to aggregation and value addition will be funded on a priority and capacity building aspects will be built into this. In addition, the project will actively identify agencies that have capacity to submit sub-projects that train youth in specific vocations and provide funding for enterprise establishment coupled with technical backstopping.

### **Sub-component 2.2 - Market access infrastructure**

114. A major constraint for the development of market-orientated agriculture is poor road access to production areas. Although almost all villages are now connected by all-weather roads, these tend to run along the ridges where settlements are located. Much of the land with good potential for the development of plantation and other permanent crops are in valley bottoms and on the lesser steep slopes. However, such areas often have no road access, making it difficult to supply inputs and extract crops. Farm link roads are therefore a major priority of the government. However, many of the roads that have been built, either by DoA or using village labour funded via MGNREGS. These have been constructed without proper survey and design leading to poor quality, high gradient and largely unpaved; these are not resilient to intense monsoon seasons or extreme events exacerbated by climate change. Rural roads, therefore, often get washed away, buried, or become impassable depending on conditions.

115. The farm link roads to be built under the project will be of better quality, with proper side and cross drainage and climate resilient measures to connect to high potential agriculture areas, horticulture clusters and mithun villages. The project will rehabilitate and improve a total of around 200 km of earth road (with proper side slopes and cross drainage and base course) using the funding facilities available under CSS and upgrade 200 km of existing earth roads with base course to PMGSY and PWD gravel road standards using IFAD funds. These roads would be built with all climate resilient features such as protection of slopes, grass-turfing, adequate number of drainage crossings, side drains, etc.

#### **iii. Component 3: Project Management and Knowledge Services**

116. The Department of Agriculture will establish a society under the Chairmanship of the Chief Secretary, named Society for Climate Resilient Agriculture in Mizoram (SCRAM) which will be the lead implementing agency for the project. State budget allocations for the project and IFAD loan proceeds will flow through the Agricultural department. The Secretary, Agriculture will be co-chair of the society and the Director, Department of Agriculture will be the Mission Director. GoM will appoint a Joint Director level Officer from the technical department on a fulltime basis as the Chief Executive Officer and secretary of the society. The details regarding project management and implementation are described in Appendix 5.

117. Knowledge Management: The project will develop a Knowledge Management strategy and action plan. This will include internal learning through regular progress review meetings, and participatory M&E at the community level, Information will be shared at the village level via a village notice board, posters and leaflets. Knowledge will also be shared with external stakeholders and the wider development community through the generation of knowledge products. A project website will be established as a knowledge sharing tool, with information on good practices and innovations shared with NITI Ayog, DEA and Ministry of DoNER and also displayed on the IFAD Asia website.

118. Capacity Building and Knowledge Sharing: The project will be working on both *jhum* improvement and settled agriculture. In order to generate concurrent impact data and to demonstrate the effectiveness of these approaches, the project will engage the ICAR, Regional Centre in Barapani and the Regional Agriculture Technology Application Research Institute (ATARI). Both these institutions come under the Deputy Director General (Extension), ICAR, GoI. An agreement will be signed between GoN and ICAR detailing the terms of engagement.

119. The project with assistance from ICAR will aim to be a platform for learning for the other states in NER wherever *jhum* is being practiced. The project has allocated USD 260,000 to generate knowledge on the evolution and sustainability of upland farming systems and their capacity to respond to climate change.

120. Technical Assistance: IFAD will provide a grant of about USD 450,000 to GoM for identified areas of technical assistance for the project. The major activities envisaged in this include; (i) preparation of training materials and conducting training of Veterinary Officers in animal production related issues

covering pigs, cattle, goats and poultry; (ii) preparation of training materials and conducting ToT in implementing Sloping Agricultural Land Technology (SALT); (iii) preparation of training materials and conducting ToT related to terrace rice cultivation; (iv) preparation of training materials and conducting TOT for establishment of private nurseries of high quality planting materials; (v) engagement of Specialist Consultants in Highland farming systems, Agro-forestry, soil and water conservation, organic certification, animal production and to formulate policy reforms related to Agricultural Produce Marketing Committee Act; (vi) prepare a long term weather data based agro-climatic atlas for Mizoram; (vii) development of a computerised MIS and the support and training of MIS staff in its operation; and (viii) support for project monitoring and evaluation including baseline survey and end-line survey with impact assessment. GoM has agreed to engage Food and Agriculture Organization of United Nations (FAO) to implement these activities in view of its well established expertise in these fields. A FAO engaged consultant has joined the mission and is in the process of preparing a technical proposal including budget. FAO will submit the technical proposal to the state government which will review and submit to IFAD for approval. Thereafter GoN will enter into a TA Agreement which among other things will provide details on the activities, work plan, payment modalities and reporting requirements.

## **E. Lessons learned and adherence to IFAD policies**

121. A number of lessons have been learned from past and current projects regarding what has worked well, and what could be done better in future. Details of relevant lessons are in Annex 3. These lessons include:

122. Targeting: Overall, the intervention paradigm with disadvantaged groups is valid as IFAD-funded projects that focus on particularly disadvantaged groups among the rural poor, and include the scheduled tribes, scheduled castes, women and the landless as their target group. The targeting of disadvantaged groups in remote areas combined with a "saturation approach" is relevant to the design of the project. This approach of combining geographical targeting and saturation approach have been effectively used in all the IFAD project designs in India. This project combines both these aspects to avoid portfolio dispersion at the sub-state level to achieve greater management efficiencies.

123. Leveraging government resources through Parallel financing and Convergence: Strengthening the linkages with public programmes and collaboration with sub-state and local government entities (also known as "convergence") with public programmes is particularly relevant in a Middle Income Country like India where government investments for developmental activities are big and where IFAD finances play a catalytic role. All projects approved since the 2010 CPE have embedded this aspect in the design (ILSP, JTELP, LAMP, OPELIP, APDMP). The convergence approach has enhanced the policy engagement opportunities at different level from central to state government and boosted the scaling-up landscape. This project design has attempted to take the convergence approach to a new level by seeking flow of funds from the Centrally Sponsored Schemes (CSS) to the project implementing agency so that these funds are used in conjunction with the IFAD funds to achieve better results and to have larger coverage.

124. Focus on Rain-fed agriculture: IFAD projects in India have generated valuable body of knowledge to raise agricultural productivity and to improve viability of rain-fed agriculture. A particularly relevant example is of private sector partnership between cotton farmers of Vidarbha (in CAIM project) with Better Cotton Initiative; promotion of SRI and SWI techniques for enhancing production of rice and wheat; large scale adoption of the Broad Bed Furrow technique for soil and water conservation, etc. IFAD projects have also focussed both on diversifying crops by promoting high value, short duration crops as well as on off farm activities to help farmers deal with the weather shocks.

125. Settled Agriculture: NERCORMP results indicate that unproductive *jhum* fallows have been converted to commercial plantations, including agro-horticultural systems, resulting in productive use of land, higher incomes, reversal of resource degradation and improved local environment. Consequently,

*jhum* cultivation per household decreased to an average of 1.2 acre in 2016 from the baseline (2011) of nearly 2.1 ha. End line survey (2016) showed that the area under *jhum* decreased from 61 percent at baseline in 2011 to about 33 percent in 2016 due to *jhum* land development interventions of the project.<sup>40</sup>This project intends to focus on improving current *jhum* and improved management of *jhum* fallows through soil fertility improvement measures, better agronomic practices and tree and horticultural crops.

126. Soil and water conservation: Increase in water availability and control of soil erosion through physical and biological measures have been tested successfully in the tribal areas of Orissa and Jharkhand under OTELP and JTDP. The project will also invest in soil and water conservation activities especially suited to hill areas taking into account results of various pilot projects of the Indian Council of Agricultural Research.

127. Extension service delivery: The concept of village level extension service modality including provision of vaccination and first aid service coupled with a system of payment for services delivered has been well established by the TRWEP in Maharashtra and Madhya Pradesh states. This modality will be implemented in this project by including Lead Farmers for delivery of extension messages related to *jhum* improvement and settled agriculture and also CAHWs for delivery of animal husbandry related extension messages and also for carrying out vaccination and first aid for livestock. These grassroots level workers would be provided with structured training coupled with technical supervision by the staff of line departments.

128. Market access: The experience of TRWEP and CAIM in Maharashtra and PTSLP in Tamil Nadu shows considerable enhancement of impact at the household level when livelihood activities are taken up in a value chain mode. This project design lays significant stress on market access and value chain development. A detailed value chain analysis study was done prior to the project design and the interest of key private sector players has been explored.

129. Adherence to IFAD policies. The project is fully in line with IFAD's Strategic Framework (2016-2025), and adheres to IFAD policies for targeting and gender mainstreaming, environment and natural resource management, climate change and social, environmental and climate assessment, nutrition sensitive agriculture, and scaling up. The environmental and social category is considered to be B, while the climate risk classification is deemed to be Moderate. The approach used will be aligned with IFAD's Policy on Engagement with Indigenous Peoples: (i) cultural heritage and identity; (ii) free, prior, informed consent; (iii) community driven development; (iv) equitable access to land and resources; (v) building on indigenous knowledge; (vi) environmental issues and climate change; (vii) access to markets; (viii) empowerment; and (ix) gender equality.

130. Adherence to COSOP 2011-2017: FOCUS is fully aligned to the RB-COSOP 2011-2015 which has been extended to 2017. The two strategic objectives of the RB-COSOP namely, increased access to agricultural technologies and natural resources, as well as to financial services and markets are very relevant for the design of the project.

### **III. Project implementation**

#### **A. Approach**

131. Two broad principles would govern the management structure for this project. They include: (i) alignment to the existing government structure; and (ii) flexibility to make changes based on the requirements that may arise during implementation. The project would be aligned to the existing government structure by making the APC's Office as the state level nodal agency in Nagaland and the

---

<sup>40</sup>Project Completion Report, NERCORMP-II, para 87, page 19

Department of Agriculture as the state level nodal agency in Mizoram. The state level Project Management Unit would be located within the Society for Climate Resilient Agriculture to be established in both the states. The Chief Secretary of the respective states would be the Chairperson of the Society and the Project Steering Committee. The APC in Nagaland and the Secretary Agriculture in Mizoram would be the Chairperson of the Project Management Committee. The APC in Nagaland and the Director of Agriculture in Mizoram would be the Mission Director of the project. The Deputy Commissioners/District Collectors of the project districts would chair the District Project Coordination Committee.

132. Support Agencies: The project would be supported by the government structure at the district level and block/circle level. This strategy is adopted as there are no agencies with rural development expertise available within both the states. The agencies available are mostly rights based and social service oriented organizations. However, the project would implement its activities in coordination with the community based organizations such as Village Councils, SHGs, FIGs, Women Societies, Site Allotment Advisory Boards, Village Development Boards and JRMCS, many of which are traditional community level institutions

133. Period of Implementation: *Jhum* improvement requires a long term approach to enhance the *jhum* cycle and the project would be implemented over a six year period. Given the large number of villages (650 villages in Nagaland and 272 villages in Mizoram), in order that the benefits of the project reach to all the project villages, planning will be made to start up activities in all the villages. It is planned to undertake most of the preparatory activities during the pre-project period itself. During the first year of the project, activities related to capacity building, human resource engagement and launch of project activities in all the villages will be taken up. This strategy of front loading of the activities is planned to ensure that the project completes largely all the activities prior to the end of fifth project year and the impact on *jhum* intensification and transformation can be adequately assessed.

## **B. Organizational Framework**

### **1. Executing Agencies**

134. At the central level, the Department of Economic Affairs (DEA) would be the nodal agency for the project. At the state level, the APC's Office in Nagaland and the Department of Agriculture in Mizoram will be the nodal agency. In order to implement this project, both GoN has established a Society named Society for Climate Resilient Agriculture in Nagaland under the APC's Office. GoM would establish a Society named Society for Climate Resilient Agriculture in Mizoram under the Department of Agriculture. This strategy of establishing a separate Society allows it to bring in persons of repute as members of the Governing Council as well as facilitates fund management. This Society would be registered under the Societies Registration Act and would have its own bye laws and financial rules.

135. The society in Nagaland has been registered with the Chief Secretary as the Chairperson and the APC as the Vice Chair. In case of Mizoram, the Chief Secretary would be the Chairperson and the Secretary, Agriculture would be the co-chair. In addition, The Governing Council of the society would have the Principal Chief Conservator of Forests, Secretaries of Planning and Programme Implementation, Horticulture, Finance, Animal Husbandry and Veterinary Services, Soil and Water conservation and Rural Development and the Deputy Commissioners of project districts as the members. The Governing Council may co-opt additional members based on requirement. An officer from the Indian Administrative Service has been appointed as the Chief Executive Officer of the Society in Nagaland. A Joint Director or above level officer from the technical department would be appointed on a fulltime basis as the Chief Executive Officer of the Society in Mizoram. This person will be the Secretary of the Society and the SPD.

136. The Governing Council of the Society would be responsible for: (i) ensuring legal compliance and preparing, reviewing and approving overall policies of the Society including administrative, human resource and financial policies; (ii) providing direction and guidance for project implementation; (iii)

facilitating coordination and convergence between the project and other government programmes; (iv) reviewing and approving overall AWP&B of the project; and(v) reviewing implementation performance of the project.

## 2. Management Structure

137. The details of the project management structure and implementation arrangements are provided in Appendix 5 separately for Nagaland and Mizoram.

138. The state level Project Management Unit (PMU) would be housed within the Society for Climate Resilient Agriculture of each state vested with the project management responsibility. The Chief Executive Officer/Secretary of the Society would be the SPD. The SPD would be reporting to the APC in Nagaland and to the Secretary Agriculture / Director Agriculture in Mizoram. State budget allocations for the project, including parallel financing funds from Centrally Sponsored Schemes (CSSs), IFAD loan proceeds, IFAD grant, GoN counterpart funds for IFAD loan and the state share for CSS funding, would flow through the APC's office in Nagaland. All funds with the exception of CSS and state share for CSS funding will flow through the Agriculture Department in Mizoram by creating a separate line item in their respective annual budget.

139. PMU would be responsible for: (i) establishing District Management Units (DMUs) in each project district within the District Agriculture Office and recruiting staff for PMU and DMUs; (ii) conceptualizing, supervising and monitoring project activities and their progress towards achieving physical, financial and outcome related targets; (iii) organizing project coordination meeting; (iv) preparing and submitting AWP&B after consolidating AWP&Bs of districts and 18 month procurement plan for review by IFAD; (v) incorporating the budget requirements of the project into the overall budget of the state and ensuring flow of funds to the Society; (vi) ensuring release of funds to the DMUs and line departments for implementing project activities; (vii) evaluating bids, and finalizing and executing contracts with service providers and suppliers of goods and services for implementing various project activities; (viii) operating Project Accounts for timely release of funds to the districts, line departments and other partners; (ix) receiving statement of expenditure and supporting documents related to fund release and keeping an account of fund release and utilization; (x) preparing overall project financial statements; (xi) preparing and submitting withdrawal applications to Gol/CAAA for onward transmission to IFAD; (xii) preparing and submitting progress reports semi-annually and annually to IFAD; (xiii) establishing an effective MIS and M&E system to track project progress; (xiv) undertaking knowledge management activities; (xv) preparing RIMS data for submission to IFAD; (xvi) ensuring preparation and submission of annual audit reports and financial statements to IFAD and ensuring compliance to the audit observations; and (xvii) liaising with the State administration and line agencies to ensure coordination and convergence to facilitate project implementation. Overall, PMU will be responsible for compliance to the stipulation of the Financing Agreement signed between Gol and IFAD.

140. The society would be provided with full time senior technical staff of the rank of Deputy Directors on deputation. In addition, a Finance and Accounts Specialist, a Manager - Planning and M&E, a Manager – Knowledge Management, a Manager – Gender and Community Institutions, a Finance and Accounts Officer and other support staff would be engaged on contract basis. Staff appointments, except those on deputation, would be fixed term contracts of at least three years and the candidates would be recruited from the open-market based on professional competence and experience. The society while recruiting staff will give preference to women subject to other things being equal.

141. **District Management Units:** The project would establish a DMU in each district within the District Agriculture Office. The District Agriculture Officer would be the District Project Manager. A small team of professionals would be recruited to facilitate project implementation. DMUs would function as an outpost of society. DMU would be authorised to release funds based the sanctioned AWP&B.

142. The DMU would be responsible for: (i) coordinating with the Circle level officers and the FIGs to prepare AWP&B for the circle/block and incorporating the same into the district AWP&B; (ii) obtaining required sanctions for implementing activities; (iii) releasing funds to the FIGs and other implementation partners; (v) receiving utilization certificates from the FIGs and other implementation partners and reconciling their accounts; (vi) collecting, collating and analysing MIS and M&E data for the district for onward submission to PMU and for providing feedback to implementation partners; (vii) ensuring convergence between project activities and activities of other line departments in the project villages; (viii) conducting audit of books of accounts of FIGs and other implementation partners on a sample basis and submitting reports; (ix) maintaining books of accounts related to project expenditure of the district and prompt settlement of advances with PMU; and (x) ensuring compliance to audit observations.

143. A technical team comprising officers of mid-level seniority drawn from the Departments of Agriculture, Horticulture, Animal Husbandry and Soil and Water Conservation would be attached full time for this project. In addition, the project would also engage professionals at the state level on a contract basis. The project would also engage a Planning and Monitoring Officer, a Finance and Accounts Officer and the required junior professionals at the district level on a contract basis.

144. The project would fund capacity building of PMU and DMU staff, development of a computerised accounting system and a Management Information System. The project would allocate funds for engaging Specialist Organizations / Experts to help the project management in conceptualising various project interventions and to provide expert technical advice. The project would also fund contracting of specialist agencies for conducting baseline, impact evaluation and other surveys, and for preparation of a Project Completion Report.

### **3. Coordination**

145. The Governing Council of the society in both the states would also function as the state level Project Steering Committee (PSC). The Chief Secretary of the respective state would be the Chairperson of the PSC. The PSC would meet once in six months to review progress, provide overall guidance and policy support and to facilitate inter-departmental coordination specifically with regard to convergence. All the members of the Governing Council will be the members of the PSC. PSC will invite representatives from the National Bank for Agriculture and Rural Development (NABARD), Civil Society and Technical Experts of repute to participate in the PSC meetings. The SPD would be the member secretary of the PSC. PSC would be largely responsible for policy decisions with regard to statutory obligations and also for approving AWP&B before incorporation into the state budget.

146. The project in both the states would also establish a Project Management Committee (PMC) headed by the APC in Nagaland and the Secretary, Agriculture in Mizoram. The Directors of the relevant technical departments would be the members and the Chief Executive Officer of the Society would be the Secretary. The PMC would meet quarterly and would be largely responsible for resolving implementation issues, interdepartmental coordination and allocation of funds under convergence and centrally sponsored schemes.

147. The project would also establish a District Project Coordination Committee (DPCC) in each project district. The DPCC would meet quarterly to discuss the project implementation progress, constraints and remedies. The most important function of this committee would be to ensure flow of MGNREGS funds to the Village Councils/Village Development Boards for implementing Land and Water Resource Development activities. The DPCC would be chaired by the Deputy Commissioner / District Collector of the respective project district and the District Project Manager would be the Vice Chairperson. The members of the DPCC would be important district level officers. Based on the need, representatives of NABARD and Lead Bank would also be invited to participate in the DPCC meetings. A representative from PMU may attend any of the DPCC meetings if and when required.

148. A Block Project Coordination Committee (BPCC) would be established in each Block of the project area. The BPCC will meet bimonthly to discuss approval and review of the MGNREGS activities and their convergence with project activities. This committee would be chaired by the Block Development Officer and the Circle/Block Agriculture Officer would be the Member-Secretary. The members of BPCC would include: (i) Chairpersons of all project Village Councils; and (ii) All Block/Circle level officers.

#### **4. Implementation Arrangements**

149. The project would use a multi-pronged approach to implement project activities. The grassroots level implementation partners include community based organizations operating the villages and those that would be promoted under the project. These include the JRMCS, Site Allotment Advisory Committees, FIGs, SHGs and Societies. These community based organizations would be supported by Lead Farmers, CRPs and CAHWs. The project intends to identify and support these community level workers through training and establishment of demonstrations. Block/Circle level officers of the line departments would be the main link between the community level workers and the DMU for planning, implementation facilitation and supervision.

150. Capacity building: Capacity would be built at three levels. The project would engage FAO to prepare training curriculum and training materials and to train the trainers using a ToT modality. Once the trainers are trained, the project would train all the technical staff at the district and sub-district level. Thereafter, the project would identify the community level workers, build their capacity and support them in establishing demonstrations. These community level workers would be the focal points in the villages for implementing project activities

151. Land use Planning: The project would use the Remote Sensing Centres in each state to prepare land use maps and land suitability maps. These maps would be the basic documents for the community to plan *jhum* cultivation and other settled agriculture related activities taking into account the slope and other parameters. These maps would also facilitate the community to identify the boundaries of the community forests /community and to take up conservation related activities. These maps would also be used to identify the soil and water conservation activities in the community forests. The project would train the Lead farmers and members of community based organizations to use the land use maps.

152. Jhum Improvement and settled agriculture: Lead farmers would be the focal point for this intervention. Lead farmers would promote FIGs comprising members of *jhum* cultivating households. The FIGs would be the main vehicles for implementing this activity. These FIGs would be provided with project support for implementing activities related to soil fertility improvement, nursery establishment, soil and water conservation activities, and cultivation of plantation and tree crops.

153. Value chain Development- Production Support: The project would identify and train CRPs to act as focal points to start cultivation of identified crops in a cluster. CRPs would be provided with project support for nursery establishment and to deliver extension messages related to Good Agriculture Practices to the community. The project would introduce digital delivery of extension and using this software, a data base would be developed to facilitate the procurers from outside the state to get information on area under cultivation, expected yield and package of practices used. CRPs would also be responsible digital delivery of extension and also for entering data into the database.

154. Value chain development – Marketing Support: The project would support marketing support related activities such as buyer seller meets, trade fairs, exhibitions, etc. This activity would be implemented by the marketing unit to be established in the Horticulture Department in Mizoram and State Agriculture Marketing Board in Nagaland. These units would invite entrepreneurs from outside the state and link them up with local persons to establish a system of aggregation of produce.

155. Livestock Support: CAHWs would be the focal points for implementing this activity, supported by the Veterinary Field Assistants of the Animal Husbandry and Veterinary Department. These trained animal

health workers would provide universal vaccination services. The officials of PMU and DMU would implement the livestock related activities including demonstration using the CAHWs.

156. Market Access: The project would implement the market access activities using contractors. The community based organizations would be used to identify the infrastructure needs and the locations. Based on these initial assessments, PMU would engage contractors for construction of these roads under the supervision of Consulting Engineers.

157. Innovation Fund: PMU would take the lead in implementing this activity by seeking proposals from experienced agencies that have implemented innovative activities. The proposals received would be appraised by the PMU and selected proposals would be funded by the project.

158. Knowledge Generation and Sharing: The project would engage ICAR in both the states to generate knowledge on various aspects of upland agriculture through action research using local institutions. The knowledge generated would be shared through documentation and regional level workshops.

159. Technical Assistance: The project would engage FAO to provide technical assistance in both the states. It would involve training of trainers in new technologies related to soil and water conservation and settled agriculture including value chain promotion. Technical assistance would also cover provision for handholding and also M&E related functions.

### **C. Planning, M&E, learning and knowledge management**

160. Planning: The AWP&B is the key planning document for FOCUS and will serve as the instrument for identifying specific targets and activities and in relating these to project outcomes and objectives. Each year a draft AWP&B will be consolidated by the PMU with inputs from DMUs. Each DMU will consolidate proposals for activities that have come from project villages. The draft AWBP would then be approved by the PSC before submission to IFAD for its concurrence. If required, the PMU may propose adjustments or revision in the AWP&B during the project year. The approved AWP&B would be used as a key document when reviewing performance and progress during the supervision missions.

161. Monitoring and evaluation: The project's M&E system will measure performance against the project logframe as well as showing the contribution of project outcomes to the government's strategic objectives for the agricultural and rural sector. The M&E system will also provide evidence of the results in terms of IFAD's objectives at the country level, with data disaggregated by gender and by age to show impact on women and youth. The M&E system will also be a learning tool to provide information for critical reflection on project strategies and operations. It would support decision-making at various levels and be a basis for results-based management. More details on M&E are in Appendix 6.

162. Outline of a project M&E framework: The M&E framework is a system to collect, analyse and report on data at three different levels of project implementation: (i) outputs; (ii) outcomes; and (iii) impact.

163. Output monitoring will measure the progress of activities and achievement of outputs against annual targets in AWP&B for each project component. Information on the progress of the annual work plan will be measured against indicators in the plan, such as number of people trained, and area covered by various *jhum* development works. This can be linked to the financial expenditure on the concerned activities, and data may be stored and reported via a computerised MIS. Data would be collected by DMUs from partners involved in project implementation and directly from village level institutions. If needed information may come from the registers and accounts kept by community organisations.

164. Outcome monitoring measures the immediate changes coming about as a result of project interventions. In FOCUS this would include:

- Numbers of villages implementing land use plans.

- Number of farmers trained and adopting improved practices - such as planting high value trees on *jhum* land, using green manure on wet rice, and vaccination of livestock.
- Area under improved *jhum*, fallow management, terrace rice cultivation, upland orchards/plantation and livestock.
- Volumes of planting materials supplied by project-supported nurseries.
- Number of farmers linked to a spice value chain.

165. Information on indicators such as adoption and production are not easy for implementation staff to collect from every household, so M&E staff in the PMU (hiring enumerators if needed) unit would conduct Annual Outcome Surveys (AOS), interviewing a sample of 400 to 800 farmers/households to gather data on indicators such as those listed above. An AOS may also be carried out on a thematic basis in order to focus on a specific area of project intervention, such as the spice value chain.

166. Related to outcome monitoring is process monitoring, which involves monitoring the processes leading to outputs and outcomes. Specific areas where progress monitoring will be useful include: provision of animal health services by CAHW and the functioning of FPOs. Information on these may be gathered using Participatory M&E tools, as well as from the records of community organisations and service providers. Such tools are also useful in getting feedback from participating households on the delivery of project outputs and in empowering communities to take ownership of key processes.

167. Impact evaluation is the process which will assess achievement of the overall goal of the project. The main tool for impact evaluation will be baseline and end-of-project surveys. These surveys will be the responsibility of FAO. They will be conducted by engaging a reputed agency with specific expertise in such assessments. In addition biological surveys will be carried out into the vegetation in *jhum* fallows, and economic studies of farm households to calculate increases in farm income and household labour inputs.

168. RIMS indicators: The Results and Impact Monitoring System of IFAD generates annual report tables on a number of first and second level results indicators that correspond to the output and outcome indicators. IFAD has recently revised its list of these indicators, some which will apply to this project. Prior to mid-term review, the project will report on only the first level results (corresponding to outputs), but after the mid-term report it reports on second level indicators (corresponding to outcomes).

169. Management Information System (MIS): Project will establish an MIS system in the first year of project implementation. The MIS would generate, monthly, quarterly and annual progress reports on physical and financial progress and on project outputs and outcomes - and may have a GIS interface so that key data can be shown on maps. FAO will engage an agency to provide assistance in the process of drawing up a system specification and also also in developing a computerized management information system. It is likely that the system will need to be modified in the light of practical experience and emerging needs. Much of MIS data entered by the staff of partner line agencies, DMU staff including Block and Circle level officers.

170. As a part of computerized MIS, use of tablet computers for field data collection and monitoring will be piloted. If tablet computers are used down to the village level, then VCs, AFA, VFA and CAHW may all enter data. A major part of the job for the MIS staff at the district level will be helping these people enter accurate and complete data, and checking on data quality. FAO will employ a specialist to monitor the performance of the system, and take a lead in adapting and refining the system so that it works better and meets the needs of project management.

171. Reporting: The project will develop a reporting system, with some reports used internally and for reporting to its partner agencies within the states, and others to external stakeholders –GoN/GoM and IFAD. Progress reports for GoN/GoM and IFAD will be produced at six-monthly intervals.

172. Learning and Knowledge Management: The project will develop a Knowledge Management strategy and action plan. This will include internal learning through regular progress review meetings, and participatory M&E at the community level, Information will be shared at the village level via a village notice board, posters and leaflets. Knowledge will also be shared with external stakeholders and the wider development community through generation of knowledge products, such as newsletters, briefs, training materials, technical manuals, booklets, posters, videos, etc. The project will also aim to be a platform for learning for the other states in NER wherever *jhum* is being practiced. A project website will be established as a knowledge sharing tool, with information on good practices and innovations shared with NITI Ayog, DEA and Ministry of DoNER and also displayed on the IFAD Asia website.

173. Capacity building and knowledge sharing: This project is a part of a two state programme and ICAR will be engaged by the two states to conduct specific studies and to organize periodic learning events in the region to facilitate cross learning in the region, undertake documentation and dissemination. The project has allocated USD 250,000 for Mizoram and USD 260,00 for Nagaland to generate knowledge on the evolution and sustainability of upland farming systems and their capacity to respond to climate change. The details of the activities to be undertaken by ICAR and ATARI have been detailed under the section on components of each state.

## **D. Financial management, procurement and governance**

### **1. Financial Management Capacity**

174. The observations mentioned in the 2010 PEFA (Public expenditure and financial accountability assessment), are outlined also in the latest available report of the “Comptroller and Auditor General of India on States Finances of Nagaland and Mizoram State”, related to the year ended 31 March 2013 to the year ended 31 March 2016 which provides insights into PFM (Public Financial Management) at State level.

175. Nagaland: The PFM issues include:(i) poor financial management and control of finances at all levels, delay in sanction resulted in delay in release of funds, incorrect reporting and submission of Utilization certificates, delay in release of funds from 1 to 14 months by the State; (ii) a rush of expenditure during the last quarter of 2015-16 and in some cases in the month of March 2016 in which expenditure of more than 50% of the total annual expenditure was incurred; (iii) inadequate monitoring and internal control mechanism which needs to be strengthened; (iv) untimely submission of utilization certificates; (v) failure in exercising the statutory checks prescribed under various rules resulting in fraudulent withdrawals; (vi) non-submission of quarterly progress reports; (vii) excess/inadmissible payment of financial assistance due to improper classification of land holding; (viii) excess payment to a contractor by arbitrarily increasing the rates of items of work; (ix) diversion of amounts received under Govt Scheme to private bank accounts; (x) expenditure incurred without prior approval; and (xi) payment made without actual supply/ procurement of equipment and some items were not sanctioned by the Competent Authority.

176. Mizoram: The PFM issues include:(i) limited efforts to mobilize additional revenues to contain the deficit, expand the tax-base and reduce tax administration costs; (ii) limited efforts to ensure timely release of central assistance by taking timely action on required conditions for disbursement; (iii) inadequate focus on expenditure management to bring qualitative improvement in the public spending; (iv) limited prudence in expenditure pattern to maintain resource gap within manageable limits of the fiscal capability of the State; (v) increase in market borrowed funds put at risk debt sustainability; (vi) lack of a performance based system of accountability should be put in place in State owned enterprises as to ensure profitability and improve efficiency in services - loss-making companies should be restructured; (vii) lack of an effective mechanism to ensure financial discipline and prepare realistic budget with inadequate budgetary control in all Government departments where savings/excess persisted in the last

few years; (viii) limited compliance to procedures as well as its own instructions to honour Public Finance accountability norms- the heads of departments should ensure that departmental accounts are prepared and submitted for audit; and (ix) non-reconciliation of state expenditure- in 2014-15 only 72.29% of the total expenditure was reconciled and similarly, only 23.79% of total revenues was reconciled in 2015-16.

177. APC/ DoA Financial Management: Based the discussions with the APC/ DoA staff and also with the Auditor General in both the States it was found that financial management practices in APC/DoA are performed in a basic and fragmented way. The main issues include: (i) weak budget preparation; (ii) inadequate internal control systems; (iii) incomplete accounting covering only a part of the activities; (iv) no control on the reliability and completeness of the information provided by DoA to the Accountant General Office; (v) high levels of cash transactions; (vi) lack of regular bank reconciliations. As a result of the above mentioned shortcomings, the inherent fiduciary risk associated with the public financial management system at State and the APC/ DoA level is considered **high**.

178. Considering the weakness identified in the existing public entities, for project's implementation proposes an autonomous public Society governed by its by-laws, will be created. It will be staffed in its administrative/financial section with resources hired on the market. The use of the PFM is limited to external audit by the Auditor General (AG). The PIM will detail the procedures to be used for project's administration.

## 2. Control risks

179. Overall, the proposed project will be operating in a rather high inherent risk environment due to the persistence of some weaknesses in the public sector financial management systems as outlined in the PEFA analysis. The proposed financial management arrangements for the project incorporate a number of measures intended to reduce such risks to acceptable levels and ensure that: (i) the programme funds are used for intended purposes in an efficient and effective way; (ii) reliable and timely financial reports are prepared; and (iii) programme assets and resources are safeguarded from unauthorized or wasteful use. After mitigation, the overall programme fiduciary risk remains **high**.

**Table 1: Summary of FM risks and mitigating actions**

Summary of Programme Fiduciary Risk Assessment at Design			
	Initial Risk Assessment	Proposed Mitigation	Final Risk Assessment
<b>Inherent Risk</b>			
1. TI Index	<b>M</b> Index: <b>40</b> in 2016 (ranked <b>79</b> out of 176 surveyed countries)	-	<b>M</b>
2. RSP Score	<b>M</b> Score: <b>4.00</b> (2016) <sup>41</sup>	-	<b>M</b>
<b>Control Risks</b>			
1. Organization and Staffing	<b>H</b>	<ul style="list-style-type: none"> <li>The PMU currently does not exist in Mizoram where the society is to be formed. In Nagaland the society has been formed but so far the finance and accounts team is not recruited. To ensure to get deputation of adequate Govt Staff supplemented by contracted staff</li> <li>Ensure the recruitment process of contracted staff provides the project with qualified and experienced human resources</li> <li>Comprehensive, user-friendly PIM</li> </ul>	<b>M</b>
2. Budgeting	<b>H</b>	<ul style="list-style-type: none"> <li>A separate line item for the project will have to be ensured in the State budget.</li> </ul>	<b>M</b>

<sup>41</sup><http://www.ifad.org/operations/pbas/>

Summary of Programme Fiduciary Risk Assessment at Design			
	Initial Risk Assessment	Proposed Mitigation	Final Risk Assessment
		<ul style="list-style-type: none"> <li>The project budget will be prepared annually be way of a AWP&amp;B which will be compiled at the PMU based on inputs from the districts and the Cos</li> </ul>	
3. Funds flow and Disbursement Arrangements	H	<ul style="list-style-type: none"> <li>Ensure timely release of budget to the Society project account</li> <li>Support early release of the DA advance in RBI to the State</li> <li>Ensure timely release of counterpart funding</li> <li>The initial contribution of the Govt as endowment fund will act as a buffer and will be used in case of delay/irregularity in release of funds.</li> </ul>	H
4. Internal Controls	H	<ul style="list-style-type: none"> <li>Internal control mechanism has to be set up by disaggregation of duties, monthly reconciliations, reporting and quarterly internal audit of the project activities</li> <li>Periodic physical verification of assets</li> </ul>	H
5. Accounting Systems, Policies & Procedures	H	<ul style="list-style-type: none"> <li>Use of accounting software for the project is required. The current Govt. procedures uses manual accounting systems</li> <li>The hiring of a Finance and Accounts Manager and the Accounts Officer from the market and training them in the use of the software should mitigate reporting risks</li> <li>Regular back-ups of accounting records and reports</li> </ul>	M
6. Reporting and monitoring	H	<ul style="list-style-type: none"> <li>Project Implementation Manual (PIM) to detail reporting and monitoring requirements and rules</li> <li>To ensure finance staff contracted in the market has the means to fulfil IFAD reporting requirements</li> </ul>	H
7. Internal Audit	H	<ul style="list-style-type: none"> <li>An internal auditor will be engaged for the internal audit role</li> <li>Hiring of a dedicated staff to follow up on the implementation of internal audit recommendations</li> <li>Project management to act on internal audit findings and recommendations</li> </ul>	H
8. External Audit	M	<ul style="list-style-type: none"> <li>The AG/ CA firm will be appointed to conduct the audit of the project.</li> <li>AGs office will be requested to do the 'certification audit' of the project</li> <li>The project to ensure timely preparation of PFS for enabling timely submission of acceptable reports, timely submission of annual audits and informative management letters</li> </ul>	M
<b>Programme Fiduciary Risk @ Design</b>	<b>H</b>		<b>H</b>

### 3. Financial Management and disbursement arrangements

180. Finance unit organization of the Society at central and district level: The APC's Office in Nagaland and the DoA in Mizoram will be the Lead Programme Agency. A society under the Societies Registration Act, 1860 has been registered in Nagaland and a society is to be registered in Mizoram which will implement the project. The society in Nagaland is named as Society for Climate Resilient Agriculture in Nagaland (SoCRAN) and the proposed name in Mizoram is Society for Climate Resilient Agriculture in

Mizoram (SCRAM) which will implement the project in the respective state. The Society will have a Project Management Unit within the society in each state and District Management Units in the districts where the project will be implemented.

181. A Finance & Accounts Specialist (FAS) and a Finance and Accounts Officer (AO) shall be recruited by the project at the PMU for the project period. The incumbents will have a sound knowledge of accounting systems and preparation of financial statements. Computer literacy and experience in using an accounting software will be essential. They will be responsible for accounting, reporting and management of all disbursements to the districts and claims from IFAD and the Government. The FAS shall be responsible for the preparation of the project's consolidated financial statements, review of financial reports and getting audit completed within the stipulated time. The ToR for the FAS and the F&AO will be provided in the PIM. At the district level, an Accounts Officer shall be recruited by the project who will be in charge for the accounting and record keeping of all financial transactions at the district level and will be responsible for reporting to the PMU, management of all disbursements to the communities and claims to the PMU.

182. Budgeting: The PMU, after consultation with its district offices, shall prepare its annual budget linking all the planned activities at the head office and district level to the cost categories outlined in the schedule II of the Financing Agreement. The annual budget of the project will be included into the budget of the Directorate of Agriculture by creating a separate line in the State Government's budget. IFAD will provide an initial advance to the Government. The advance will serve as part of the counterpart funding from the Government. The Government will deposit a sum of INR 150 million towards as the endowment grant to the proposed society. The endowment is meant to be a buffer fund available with the society in case there are delays in release of funds or if funds are blocked in advances, the liquidation of which is delayed. The endowment fund will ideally be invested by the society in term deposits and it will be utilized only in case, regular funds as budgeted, are not available; as soon as the budgeted funds are available the endowment fund should be reinstated to the original amount by repaying the amount spent. The endowment may be used by the Govt as part of its counterpart funds during the last stages of the project period, if the financial situation of the state so demands.

183. Disbursement arrangements and Flow of Funds: The loan and grant funds from IFAD will be designated in USD and not SDR as has been the practice hitherto. DEA has provided its concurrence on the matter as per letter D.O. No 10/7/2016-FB-VII dated 14 June 2017. Two Designated Account in USD, one for each state, will be opened by the Government at Reserve Bank of India (RBI) in which funds will flow from IFAD. In India, generally the Government pre-finances IFAD funded projects and the amount of initial advance is managed by the CAAA. The advance funding from IFAD to the each Designated Account is fixed at USD 3 million. This is equivalent to about six months of projected allocation. Considering the weak fund position in Nagaland and Mizoram states, it is proposed that the two State Governments firm up the budget requirements for the domestic counterpart funding in accordance with extant rules and procedures on the subject.

184. Nagaland will transfer the estimated budget chargeable to the identified missions / centrally sponsored schemes (CSS) including state share to the Society in a timely manner in two instalments. It has been agreed upon that funds of 4 CSSs (RKVY, ATMA, PMKSY and MOVCD) in respect of the project districts will be deposited with the societies for project implementation. The society will utilize the amount in accordance with the AWP&B which will be dovetailed in accordance with such CSSs, account for such expenditure and report the same separately to the GoI. In case of Mizoram, the budget related to CSSs will flow directly to the respective line department. However, implementation planning will be undertaken jointly.

185. The societies will submit WAs for the IFAD financed eligible expenditures as per the procedures and formats agreed with IFAD to the Office of CAA&A, Ministry of Finance, GoI. A separate bank account

for the societies shall be opened at the PMU and all the districts. Since money will also flow to the proposed community groups, they will also be required to open separate bank accounts. The funds from the Societies account both from the PMU and the DMUs.

186. Disbursements to the district offices shall be made by the PMU. The funds from the district offices shall be advanced/disbursed to the communities through the FIGs/community organizations or directly depending on the activities. These organizations shall be required to provide utilization certificate for each quarter based on which further releases shall be made. The districts shall provide expenditure statements to the PMU every month based on which the PMU shall prepare and submit withdrawal applications every quarter after consolidating the actual expenditure incurred at the PMU and districts. The counterpart funds, other than salaries to the Govt staff, (which will be paid directly by the Govt), will also be made available by the respective Government to the PMU account from which expenditure will be incurred. Thus, there will be a single project account in all implementing units from which all funds would be spent. Details of expenditure incurred directly (salaries and allowances) towards the project will be provided, to enable consolidation and reporting of total expenditure of the project.

187. Internal controls: Procedures and record maintenance at all levels will be based on procedures of the government as well as other specific project's procedures documented in the PIM. The PIM shall include specific provisions in respect of internal controls, PFS preparation procedure, financial reporting arrangements between the districts and the PMU, contract management, financial reporting and audit requirements. The FAS shall play a pivotal role for the effective implementation of the overall internal control system. As far as possible all transactions will be by way of and through bank (cheques and direct transfers). There will be stringent limitations on cash transactions and it will be used only in exceptional cases with prior permission of the Competent Authority.

188. Accounting systems, policies, procedures and financial reporting: The project will follow a double entry cash system of accounting. The accounts will be computerized at all levels (PMUs and DMUs). The F&AOs at the DMUs will submit monthly reports based on which the FAS at the PMU shall be responsible for the preparation of consolidated quarterly financial reports, templates of which will be provided in the PIM. The FAS shall be also responsible for the preparation of the annual financial statements of the project which will be subject to external audit. The half yearly reports prepared by the FAS shall be submitted to the attention of the Project Steering Committee and forwarded to IFAD.

189. The financial statements of the project shall be prepared in accordance with the requirements of International Public Sector Accounting Standards-Cash (IPSAS). The PMUs shall prepare and deliver to IFAD such financial statements within three months of the end of each Fiscal Year. The aforesaid statements duly audited should be delivered to IFAD within six months of the end of each Fiscal Year.

190. Internal Audit: The Societies will appoint an independent Chartered Accountant or a firm of Chartered Accountants to undertake internal audit at all implementing levels (PMU/ DMUs/ COs) from the first year of its operations. The internal auditors will, besides the financial audit, review the systems of internal control and suggest improvements, if required, thereto. The internal audit should also include statutory compliances. The terms of reference for the internal audit are included in the Project Implementation Manual. The quality of internal audit reports submitted by the internal auditors in the first year of implementation will be reviewed by the Review Mission/ IFAD ICO and if these reports are found to lack quality, the PMUs may be requested to make alternate arrangements, acceptable to IFAD, for conducting the internal audit in later years.

191. External Financial Audit: The AGs office in Nagaland is not adequately staffed and it is possible that their performing the audit might delay submission of the report beyond the stipulated period of six months from the end of the fiscal year. It is therefore proposed that the Society in Nagaland shall appoint an external firm of Chartered Accountants to audit the accounts of the PMU and all district offices. However in Mizoram, it is proposed that the GoM shall engage the AG's office at Aizawl to perform the audit of the

project. This shall include the audit of the state level office and all district offices. The GoM is requested to write to the AG's office requesting them to undertake the audit of the project for which concurrence of the CAG, New Delhi will be required. The audit shall be in accordance with Article 9 of the IFAD's General conditions and the IFAD's *Guidelines on Project Audits (for Borrowers' Use)*. In Nagaland, since an independent auditor will be appointed, the appointment of the auditor shall be through a fair, transparent and competitive process. The terms of reference of the auditor shall follow IFAD approved Audit Terms of Reference. The auditors shall adopt the International Standards of Auditing while auditing and reporting on the Project Accounts. In case of Mizoram, the AG Mizoram may use national standards and not be obliged to use international ones. The TORs for the statutory audit by AG Mizoram will be reviewed by IFAD and the Fund may eventually request the availability of auditors to do some specific activities beyond the basic, statutory, ones.

192. The audit report shall contain a clear expression of the auditor's opinion regarding the financial statements. It should include a financial statements audit, a compliance audit and should include a Management Letter. It should also include a section on the project's compliance with loan covenants, particularly those dealing with financial matters. The auditor shall review the project accounts including the financial statements and the SOEs and give an opinion on the same. The audit of the Designated Account will be done by the Office of the Comptroller and Auditor General. Besides this, the AG office at Nagaland will perform a "certification audit" for external funded projects.

193. The audited statement of accounts along with the audit report and the Management Letter shall be furnished by the project to IFAD within six months of the end of each Fiscal Year. The project shall submit the reply to the management letter of the auditors within one month of receipt thereof.

194. The Project shall maintain an Audit Log in respect of the audit observations and get it validated by the auditor during the subsequent audit or earlier.

195. Taxes: The proceeds of the IFAD financing is not to be used to pay taxes which will be part of the contribution of GoI and the State Governments to the project. Social security benefits, if any, (employee's portion) and income tax (employee deductions) are eligible for IFAD financing. GST has become effective from July 2017. The project shall use a reimbursement percentage which takes into account the approximate tax applicable to the expenditure category.

**196. Recommendations for project's preparedness to be implemented before the loan negotiations**

Action	Responsibility
1 – <b>Organization</b> – To develop detailed TORs for the FAS and the AO to be contracted from the market. Ensure high level of qualification and experience for the FAM, a more junior profile for the AOs	IFAD – TORs prepared
2 – <b>Budgeting</b> – Ensure separate line item for the project under the APC/ DoA budget in the States of Nagaland and Mizoram.	DoA, Planning & Finance Secretaries, GoN/ GoM
3 – <b>Funds flow</b> – Obtain DEA clearance that (i) funding will be in USD and not SDR. (ii) the funds received from IFAD will be transferred to the GoM as soon as it is received from IFAD (iii) make arrangements for opening a Designated account at RBI. Ensure that the endowment fund of INR. 150 million is made available to the society on its registration; INR 20.00 million immediately after registration and the balance during 2018-19.	IFAD-ICO, GoN/ GoM
4 – <b>Internal Control</b> – Outline the fiduciary content of the PIM based on the formulation report.	IFAD, Mission team-completed
5 – <b>Accounting/ Reporting</b> – Set-up Chart of Accounts and reporting formats based on the cost components/ categories. Approach the software vendor for procurement of accounting software and customization during the second detailed design mission.	IFAD, Mission team and GoN/ GoM-Draft chart of accounts prepared
6 – <b>Internal Audit</b> – Prepare TOR of the internal auditor	IFAD, Mission Team-

	ToR prepared
7 – <b>External Audit</b> – Obtain DEA/ CAG concurrence for the appointment of AG-Mizoram to perform the audit and prepare the ToR for the same	IFAD ICO – Mission team

#### 4. Procurement arrangements

197. Procurement of goods, works and services under FOCUS financed from resources provided or administered by IFAD will be undertaken in accordance with IFAD’s Procurement Guidelines and Handbook (dated September 2010) and as amended from time to time as an exception to the provisions of the General Conditions. As the project will be directly implementing Central Sector Scheme funds in Nagaland, to maintain uniformity in processes and procedures, IFAD Procurement Guidelines will also apply for the procurement from CSS funds in Nagaland. In respect of Mizoram, procurements under CSS funding will follow the government procurement guidelines.

198. The nodal agencies at state level have limited prior experience in managing externally aided projects. This apart, there is inadequate staff capacity in these agencies to deal with the procurements. The CAG reports of both the states also indicate inherent risks in procurement. The lead implementing agency is yet to be created and capacity is to be built. Considering the complexities involved and capacity, the procurement risk assessment is **high**.

199. It is proposed to establish the following risk mitigation measures to address the High Risk assessment:

- a) Engaging one Procurement Consultant on a retainership basis from outside the State with the experience and skill sets of procurement and compliance to established procurement norms of international financial institutions. As the Procurement Consultant will be engaged from the market, it will be ensured that some of the Government staff should also be involved as counterpart staff to address the issues of attrition and continuity of capacity.
- b) Appropriate and regular on site and combined procurement training of selected procurement staff in “IFAD Procurement Guidelines” to enable efficient and effective project procurement actions.
- c) Procurement manual prepared consistent with IFAD Procurement Guidelines and Procurement Handbook which will require IFAD’s concurrence. Any changes/amendments /modifications in the approved Procurement Manual also requires IFAD’s no objection. The manual could be a stand-alone document or included in the Project Implementation Manual.
- d) Procurement plan for the initial 18 months of project implementation listing out all procurement activities to be taken up by the project consolidated at the State level to be prepared and submitted along with the first AWP&B. For the subsequent years of implementation, procurement covering the 12 month period will be sufficient. The procurement plan will be updated at least semi-annually or as required to reflect the actual project implementation needs. All procurement plans and its revisions will have to be approved by IFAD. Any procurement undertaken which is not as per the approved plan will not be eligible for IFAD financing.
- e) Putting in place an effective contract management system which includes all contracts and its administration. The Contract Management forms will be submitted to IFAD as part of the Withdrawal Applications for IFAD loan assistance.
- f) Use of model Bidding Documents and contracts approved by IFAD and included in the Procurement Manual/PIM; and maintain throughout the period of implementation of the Project, a full procurement documentation and record keeping system.
- g) During Supervision Missions, the post review procurements will be reviewed on a sample basis selected from the procurement plan, from the stage of preparation of bid documents till contract award and amendments to contract to identify areas of performance improvement.

200. After putting in place the above risk mitigation measures fully and effectively, the residual risk assessment is Medium.

201. Good governance framework: All procurement for goods, works and services financed from resources funded or administered by IFAD require bidding documents and the contracts to include a provision requiring suppliers, contractors and consultants, ensure compliance with IFAD zero tolerance anti-corruption policy and to permit IFAD to inspect their accounts, records and other documents relating to the bid submission and contract performance, and to have them audited by IFAD-appointed auditors.

202. As part of the e-governance policy and framework, PMU of FOCUS in each State will disclose the following minimum documents either in its Project Website or Directorate of Agriculture Website: (i) procurement plan and its revisions; (ii) procurement manual; (iii) invitation for bids for goods and works for all NCB contracts; (iv) request for expression of interest for selection/hiring of consulting services, (v) contract awards of goods, works and all consultancy services, (vi) list of contracts following Direct Contracting or Single Source Selection (SSS); (vii) short list of consultants; (viii) contract award of all consultancy services; and (ix) action taken report on the complaints received. In addition, the PMU will also publish any information required under the provisions of suo-motu disclosure as specified by the Right to Information Act and the decisions of the State Information Commissioners applicable to project implementation.

203. Other details: The prior review modalities and thresholds and the post review of procurement actions are provided in Appendix 6.

## E. Supervision

204. The project will be directly supervised by IFAD. During the start-up phase of the project, IFAD will attend the state level start up workshop in each state and participate in the discussions on the project approach, strategy and implementation arrangements. IFAD will engage specialists depending upon the need. Special attention will be provided to establish a robust financial management and procurement system with training of the finance and procurement staff. Other implementation support during the first year will include assistance to prepare standard bidding documents, standard design, evaluation and contracting procedures and contract management systems particularly for agricultural link road construction. It is envisaged that the first supervision mission will take place towards the end of the first year of operations. It will include specialists in water conservation, agronomy, livestock and financial management, and will review project targets and, if needed, recommend adjustments.

## F. Risk identification and mitigation

205. There are a number of risks associated with the project. Key risks from those identified in the logframe are summarised in the table below. Overall the risk profile of the project is medium to low and the project has incorporated adequate risk mitigation strategies. There is high ownership of the project within the states. The respective state governments have taken a number of steps to ensure timely and quality implementation. Accordingly the Special Purpose Vehicle for implementing the project has been formed and registered, the Mission Director and Project Director have been appointed. Additionally, in Nagaland the state government has already appointed a number of technical staff.

**Table 2: Risks and Risk Mitigation**

Risk (R) / Assumption (A)	Risk before mitigation	Risk reduction Approach	Residual Risks
Goal level: Economic growth and social stability (A); Growth of the non-farm sector means that fewer households than anticipated participate in project	Low  Medium	If needed, cover additional districts and include non-farm activities	Low

Risk (R) / Assumption (A)	Risk before mitigation	Risk reduction Approach	Residual Risks
activities (R) Long history of insurgent groups in Nagaland putting pressure on the government to comply with their demand for funds (R)	Medium	Project to transfer funds directly to the community groups and these community groups will be able to tackle the insurgent groups	Medium to Low
Development Objective level: Extreme climatic events (R) Climate change and/or better non-farm opportunities makes farming unattractive (R)	Low Low	Project interventions increase productivity and resilience of crops to climate change. Focus on livestock, horticulture and agroforestry which are more resilient.	Very low
Improved <i>jhum</i> management: component level risks: Farmers find it worthwhile to adopt improved methods for <i>jhum</i> cultivation and settled agriculture (A) Farmers are prepared to replicate project pilots and demonstrations using own resources (A)	Medium Medium-High	Improved methods based on proven practices which are already adopted in some locations Careful monitoring of results of demonstrations with profitable technologies disseminated via training and extension efforts in each village.	Medium to low Medium to low
Reduced levels of income from settled agriculture due to lack of appropriate knowledge and investment in improved productivity (R) Lack of a sharing pattern between land owners and share croppers in Nagaland for long term tree crops and orchard/plantation cultivation in <i>jhum</i> system will disincentivise <i>jhum</i> farmers who are share croppers. (R)	Medium Medium	Project support through training and provision of materials and technology will demonstrate profitability of settled agriculture GoN has agreed to consult the community institutions and develop a system of sharing between the land owners and share croppers for long term tree crops, orchards and plantations	Low Low
Market access and value chain: component level risks: High transaction cost due to small volume and remote location (R) Policy changes discourage market engagement (R) Expansion of pig and poultry production constrained by competition from other states (R) Breeding animals/day-old chicks available (A) Govt supports role of CAHW in health care (A).	High Low Low Medium Medium-low	Build production clusters and aggregation centres, with improved road communications. Marketing units in Mizoram to provide policy advice in line with GoI pro-market strategies Increased efficiency and lower feed costs makes local production of pigs and poultry more competitive. Village level production of breeding pigs and chicks Strong links with state agencies reassures government	Low Very low Very low Low Low
Overall weak Financial Management (budgeting, accounting, reporting, internal controls, internal/external audit) may result in suspension of disbursements and consequent interruption of implementation activities	High	Hiring of qualified staff, training and implementation support should facilitate the performance of good Financial Management. Finance and Accounts Specialist and a Finance and Accounts Officer on a contractual basis will be hired from the market (refer to para 139)	Medium to Low

## IV. Project costs, financing, benefits and sustainability

### A. Project costs

206. Key assumptions used in estimating the project costs both for Mizoram and Nagaland are (i) price contingencies assumed at 4.7% and applied on all items, except for Grant and subsidies category financed by IFAD and physical contingencies at 7.5% on civil work items; (ii) exchange rate at INR 68 per USD that is expected to prevail from the project start; (iii) taxes and duties as prevailing in July 2017 and broadly at 15% on works, consultancies, equipment and vehicles; (iv) a six year implementation phase and the project starting in April 2018, (v) all unit costs were input in local currency unit, i.e. INR; (vi) cost tables are set in fiscal year basis and (vii) taxes, mostly excluded from IFAD financing rules<sup>42</sup>.

207. The project costs estimated separately for Mizoram and Nagaland will be USD 79.31 million and USD 89.16 million respectively and totalling USD 168.47 million. Project costs are organized into three major components: (i) Improved *Jhum* cultivation; (ii) Market access and value chain development and (iv) Project management as summarised in Table- 3 below and detailed in “Appendix-9: Project Costs and Financing”.

<sup>42</sup> While estimating taxes, the provisions contained in the new GST-2017 introduced by GOI have been broadly taken into consideration

**Table 3: Project Cost Summary (amount in million)**

Project components	Mizoram		Nagaland		Total	
	INR	USD	INR	USD	INR	USD
1 Improved jhum management	1,378.92	20.28	1,943.32	28.58	3,322.24	48.86
2 Value chain and market access	3,024.24	44.47	2,658.01	39.09	5,682.25	83.56
3 Project management	551.07	8.11	985.23	14.49	1,536.30	22.60
Total baseline costs	4,954.23	72.86	5,586.56	82.16	10,540.79	155.02
Physical contingencies	59.06	0.87	45.11	0.66	104.17	1.53
Price contingencies	379.74	5.58	431.08	6.34	810.82	11.92
Total Project costs	5,393.03	79.31	6,062.75	89.16	11,455.78	168.47

## B. Project financing plan

208. The project will be financed by multiple financiers, namely IFAD, respective governments, parallel financing through Central Sector Schemes specifically set out for Tribal Development (CSS) and convergence funds from GoI and in addition to beneficiary contribution in the form of locally available materials and labour. IFAD would provide a loan of USD 35.25 million to Mizoram and USD 40.25 million to Nagaland out of the 2016-18 PBAS allocation for India. In addition IFAD would also finance a Grant of USD 1.00 million, that is, USD 0.45 million to Mizoram and USD 0.55 million to Nagaland for FAO Technical Assistance support. The GoM and GoN financing would be largely in the form of part of staff costs and operating costs and taxes.

209. Project financing, separately for Nagaland and Mizoram by financiers and components are summarised in Tables 4 and 5 below and also a combined Table (Table 6) showing financing plan. IFAD will provide the loan on Blend Terms, with interest on the principal amount outstanding at a fixed rate of 1.25% per annum, plus a service charge of 0.75% per annum. The loan would have a maturity period of 25 years, including a grace period of five years starting from the date of approval by the Executive Board of IFAD.

**Table 4: Project financing plans by Components by Financiers (Nagaland State)**

India FOCUS_Nagaland State Components by Financiers (US\$ '000)																
	The Government		IFAD Loan		IFAD Grant		Parallel finance (CSS)		Parallel Finance,GON		Beneficiaries		Convergence		Total	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
<b>A. Improved Jhum Cultivation</b>																
1. Better Jhum and Conservation	5,966.6	24.1	14,317.9	57.9	-	-	3,149.2	12.7	349.9	1.4	945.1	3.8	-	-	24,728.7	27.7
2. Support to settled agriculture	289.0	4.3	6,076.6	90.4	-	-	-	-	-	-	353.9	5.3	-	-	6,719.5	7.5
<b>Subtotal</b>	<b>6,255.6</b>	<b>19.9</b>	<b>20,394.5</b>	<b>64.9</b>	<b>-</b>	<b>-</b>	<b>3,149.2</b>	<b>10.0</b>	<b>349.9</b>	<b>1.1</b>	<b>1,299.1</b>	<b>4.1</b>	<b>-</b>	<b>-</b>	<b>31,448.2</b>	<b>35.3</b>
<b>B. Market access and value chain development</b>																
1. Value chain development	836.4	5.1	9,049.2	55.3	-	-	3,495.7	21.3	390.0	2.4	2,602.1	15.9	-	-	16,373.4	18.4
2. Market Access Infrastructure	874.1	3.5	4,340.8	17.4	-	-	5,880.0	23.6	727.5	2.9	-	-	13,134.8	52.6	24,957.3	28.0
<b>Subtotal</b>	<b>1,710.5</b>	<b>4.1</b>	<b>13,390.0</b>	<b>32.4</b>	<b>-</b>	<b>-</b>	<b>9,375.7</b>	<b>22.7</b>	<b>1,117.5</b>	<b>2.7</b>	<b>2,602.1</b>	<b>6.3</b>	<b>13,134.8</b>	<b>31.8</b>	<b>41,330.7</b>	<b>46.4</b>
<b>C. Project Management</b>																
1. Project Management	9,363.3	57.2	6,466.0	39.5	550.0	3.4	-	-	-	-	-	-	-	-	16,379.2	18.4
<b>Total PROJECT COSTS</b>	<b>17,329.3</b>	<b>19.4</b>	<b>40,250.4</b>	<b>45.1</b>	<b>550.0</b>	<b>0.6</b>	<b>12,524.9</b>	<b>14.0</b>	<b>1,467.5</b>	<b>1.6</b>	<b>3,901.2</b>	<b>4.4</b>	<b>13,134.8</b>	<b>14.7</b>	<b>89,158.1</b>	<b>100.0</b>

**Table 5: Project financing plans by Components by Financiers (Mizoram State)**

India FOCUS_Mizoram State Components by Financiers (US\$ '000)																	
	GOVT		IFAD Loan		IFAD Grant		Parallel finance (CSS)		Parallel Finance,GOM		Beneficiaries		Convergence		Total		Duties & Taxes
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	
<b>A. Improved Jhum Cultivation</b>																	
1. Better Jhum and Conservation	2,932.5	15.8	8,795.0	47.3	-	-	6,165.4	33.2	685.0	3.7	-	-	-	-	18,577.9	23.4	214.5
2. Support to settled agriculture	238.5	6.5	3,220.8	88.0	-	-	-	-	-	-	198.7	5.4	-	-	3,658.0	4.6	103.4
<b>Subtotal</b>	<b>3,171.0</b>	<b>14.3</b>	<b>12,015.8</b>	<b>54.0</b>	<b>-</b>	<b>-</b>	<b>6,165.4</b>	<b>27.7</b>	<b>685.0</b>	<b>3.1</b>	<b>198.7</b>	<b>0.9</b>	<b>-</b>	<b>-</b>	<b>22,235.9</b>	<b>28.0</b>	<b>317.9</b>
<b>B. Market access and value chain development</b>																	
1. Value chain development	1,819.6	12.2	7,680.7	51.4	-	-	2,938.0	19.7	327.2	2.2	2,172.0	14.5	-	-	14,937.5	18.8	614.4
2. Market Access Infrastructure	2,496.1	7.6	10,564.1	32.0	-	-	5,880.0	17.8	965.0	2.9	-	-	13,134.8	39.8	33,040.0	41.7	2,311.9
<b>Subtotal</b>	<b>4,315.7</b>	<b>9.0</b>	<b>18,244.8</b>	<b>38.0</b>	<b>-</b>	<b>-</b>	<b>8,818.0</b>	<b>18.4</b>	<b>1,292.2</b>	<b>2.7</b>	<b>2,172.0</b>	<b>4.5</b>	<b>13,134.8</b>	<b>27.4</b>	<b>47,977.6</b>	<b>60.5</b>	<b>2,926.4</b>
<b>C. Project Management</b>																	
1. Project Management	3,653.6	40.2	4,992.1	54.9	450.0	4.9	-	-	-	-	-	-	-	-	9,095.7	11.5	653.1
<b>Total PROJECT COSTS</b>	<b>11,140.3</b>	<b>14.0</b>	<b>35,252.7</b>	<b>44.4</b>	<b>450.0</b>	<b>0.6</b>	<b>14,983.4</b>	<b>18.9</b>	<b>1,977.3</b>	<b>2.5</b>	<b>2,370.7</b>	<b>3.0</b>	<b>13,134.8</b>	<b>16.6</b>	<b>79,309.2</b>	<b>100.0</b>	<b>3,897.4</b>

**Table 6: Project financing by Components and Financiers (Combined)**

	Parallel financing															
	Govt		IFAD Loan		IFAD grant		CSS*		State Govt		Beneficiary		Convergence**		Total	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
<b>Project costs-Mizoram</b>	11,140.3	14.0	35,252.7	44.4	450.0	0.6	14,983.4	18.9	1,977.3	2.5	2,370.7	3.0	13,134.8	16.6	79,309.2	100.0
<b>Project costs-Nagaland</b>	17,329.3	19.4	40,250.4	45.1	550.0	0.6	12,524.9	14.0	1,467.5	1.6	3,901.2	4.4	13,134.8	14.7	89,158.1	100.0
<b>Total</b>	<b>28,469.6</b>	<b>16.9</b>	<b>75,503.1</b>	<b>44.8</b>	<b>1,000.0</b>	<b>0.6</b>	<b>27,508.3</b>	<b>16.3</b>	<b>3,444.8</b>	<b>2.0</b>	<b>6,271.9</b>	<b>3.7</b>	<b>26,269.6</b>	<b>15.6</b>	<b>168,467.3</b>	<b>100.0</b>

210. **Retro-active financing:** Facilities for financing certain key activities from 10 June 2017 until entry into force of the IFAD financing will be provided as retroactive financing as an exception to the general conditions. Accordingly the facilities for retro-active financing have been requested by the respective governments of Mizoram and Nagaland from the period June 10, 2017 onwards. These proposed expenditures will fall under two expenditure categories, namely (i) Goods, services and inputs and (ii) Training and capacity building. The estimated total expenditure would be about USD 250,000 for Mizoram and USD 300,000 for Nagaland. The respective state government would pre-finance these expenditures. These expenditures would be reimbursed when withdrawal applications are submitted adhering to the financing agreements.

## C. Summary benefits and economic analysis

### Nagaland State

211. **Benefits and Beneficiaries:** The Project will benefit a total of about 137,000 households. The beneficiaries include mostly Tribal households including disadvantaged households. Women-headed and poor households will be especially targeted under the programme. Table-7 below gives an estimate of the cumulative number of beneficiaries by year.

**Table 7: Number of Benefited Households, cumulative - Nagaland**

Subproject households	Project year cumulative						Cumulative
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
Food crops jhum agriculture hh a/	45,500	91,000	91,000	91,000	91,000	91,000	91,000
Spices & orchards jhum households b/		45,500	91,000	91,000	91,000	91,000	91,000
Community Forestry households c/	42,000	84,000	137,000	137,000	137,000	137,000	137,000
Livestock households	0	7500	15000	22,500	30,000	30,000	30,000
Processing units households d/	0	0	0	14,700	29,400	42,000	42,000
Farm to market link road households e/	0	9350	18,700	28,050	37,400	37,400	37,400
<b>Total outreach (# of households)</b>	<b>45,500</b>	<b>91,000</b>	<b>137,000</b>	<b>137,000</b>	<b>137,000</b>	<b>137,000</b>	<b>137,000</b>

a/ includes jhum households, wet land paddy households and upland farming households  
a/ These households concentrated in 50 spices clusters;  
b/ All 650 villages covered by community forestry programme  
c/ concentrated in 200 spices villages and 210 households per village;  
d/ assumed at 187 households/km of road provided with better CD structure

212. **Household incomes:** The immediate benefits from the programme are increased productivity-through the introduction of better management practices and improved farming practices. This response is expressed in incremental household income of INR 24,008 per household in year 6 and 36,600 at full development. These incomes are the resultant impact of the project interventions and do not include any other sources of incomes. Broadly, there are hardly any demands on incremental labour inputs which, is 53 person-days per household at present and this is marginally increased to 56 person-days.

213. **Economic analysis:** Key assumptions as mentioned earlier were used in the economic and financial analysis of the Programme. The analysis included all incremental costs and incremental benefits that are quantifiable and associated with the project's investments in development. Current calculations show that the Nagaland state project yields an Economic Rate of Return (IRR) of 29%, a benefit-cost ratio of 1.78 and the Net Present Value of INR 6,593 million at a discount rate of 10% as shown in Table below:

**Table 8: Sensitivity of NPV, IRR and BCR to varying scenarios - Nagaland**

Indicators	Base case	Cost Increased by		Benefits down by	
		10%	20%	10%	20%
NPV-Benefit & cost streams discounted at 10% INR million	6,593	5,747	4,901	5,088	3,583
IRR-Net incremental benefits stream for a 20 year period	29%	25%	22%	25%	21%
BCR-Cash flows discounted at 10%	1.78	1.62	1.48	1.60	1.42

214. **Sensitivity analysis** was also undertaken to assess how varying the assumptions change the economic parameters. This analysis shows that the project investments are robust and sound and

even under varying adverse conditions including the simultaneous increases in costs and decreases in benefits. A switching value analysis demonstrates that the costs would have to increase by 78% or benefits would have to decrease by 44% for the NPV to be zero.

## Mizoram State

215. Benefits and Beneficiaries: The Project will benefit a total of about 64,500 households. The beneficiaries include mostly Tribal households including disadvantaged households. Women-headed and poor households will be especially targeted under the programme. Economic and financial analysis of the project is provided in Appendix-10. Table-9 below gives an estimate of the cumulative number of beneficiaries by year.

**Table 9: Number of Benefited Households, cumulative - Mizoram**

Subproject households	Project year						Cumulative
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
Food crops & rice+fish agriculture hh	28,240	61,520	64,500	64,500	64,500	64,500	64,500
Spices & orchards households a/	600	5,600	10,600	12,040	12,040	12,040	12,040
Forestry village households b/	2,370	30,810	64,500	64,500	64,500	64,500	64,500
Livestock & fishery households	5,136	12,448	19,488	26,528	26,528	26,528	26,528
Processing units households c/	0	0	0	9,450	18,900	28,350	28,350
Farm to market link road households d/	0	6,800	13,600	20,400	27,200	27,200	27,200
<b>Total outreach (# of households)</b>	<b>27,200</b>	<b>54,200</b>	<b>64,500</b>	<b>64,500</b>	<b>64,500</b>	<b>64,500</b>	<b>64,500</b>

a/ These households concentrated in 120 spices clusters; b/ All 272 villages covered by village forestry programme

c/ concentrated in spices villages; d/ assumed at 136 households/km of gravelled road

216. Household incomes: The immediate benefits from the programme are increased productivity through the introduction of better management practices and improved farming practices. This response is expressed in incremental household income of INR 17,690 per household in year 6 and INR 28,190 at full development. These incomes are the resultant impact of the project interventions and do not include any other sources of incomes. Broadly, there are no demands on incremental labour inputs which is 68 person-days per household per year.

217. Economic analysis: Following key assumptions were used in the economic and financial analysis of the Programme- (i) the benefits have been estimated over a 20 year timeframe using a discount rate of 10%; (ii) the benefits that have been included in computing the economic and financial analysis included only those benefits which could be realistically quantified; (iii) use of a SCF of 0.85 for output and 0.84 for most of the inputs, and (iv) average financial wage rate of INR 270/person-day. The analysis included all incremental costs and incremental benefits that are quantifiable and associated with the project's investments in development.

218. Project performance indicators: Current calculations show that the Mizoram state project yields an Economic Rate of Return (IRR) of 25%, a benefit-cost ratio of 1.51 and the Net Present Value of INR 3,141 million at a discount rate of 10%.

**Table 10: Sensitivity of NPV, IRR and BCR to varying scenarios - Mizoram**

Indicators	Base case	Cost Increases by		Benefits down by	
		10%	20%	10%	20%
NPV-Benefit & cost streams discounted at 10% INR million <sup>43</sup>	3141	2527	1913	2213	1284
IRR-Net incremental benefits stream for a 20 year period <sup>44</sup>	25%	21%	18%	21%	16%
BCR-Cash flows discounted at 10% <sup>45</sup>	1.51	1.37	1.31	1.36	1.21

<sup>43</sup> The NPV is a very concise performance indicator of an investment project: it represents the present amount of the net benefits (i.e. incremental benefits less incremental costs) flow generated by the investment expressed in AFA (a single value with the same unit of measurement used in the accounting tables). The Net Present Value is the sum of a 20 year discounted net cash flows.

<sup>44</sup> IRR is defined as the discount rate that zeroes out the net present value of flows of costs and net present value of flows of benefits of an investment. The IRR was computed using incremental net benefits streams for 20 year period. As IRR rankings can be misleading, and given that the informational requirements for computing a proper NPV and IRR are the same except for the discount rate, it is always worth calculating the NPV of a project. There are many reasons in favour of the NPV decision rule (see Lev, 2007).

<sup>45</sup> BCR is independent of the size of the investment and it does not generate ambiguous cases and for this reason it can complement the NPV in ranking projects where budget constraints apply. Being a ratio, the indicator does not consider the

219. Sensitivity analysis was also undertaken to assess how varying the assumptions change the economic parameters. This analysis shows that the project investments are robust and sound and even under varying adverse conditions including the simultaneous increases in costs and decreases in benefits. A switching value<sup>46</sup> analysis demonstrates that the costs would have to increase by 51% or benefits would have to decrease by 34% for the NPV to be zero.

#### 220. **Other benefits**

221. Environmental and other benefits: Overall, the project is environmentally favourable with the planting and maintenance of 15,720 ha village forests along with water development facilities, 7,600 ha of *jhum* plots planted with annual and perennial spices, 59,700 ha of *jhum* fallow land planted with annual and perennial legumes to enhance soil fertility, some 127,000 ha of *jhum* and low land treated with soil and water conservation measures such as contour bunds and trenches, 15,190 ha wetland treated with soil fertility enhancement measures etc. These measures would enhance organic carbon contents of soil. Farm-to-market roads are improved using the existing road alignments and no felling or clearing of existing jungles or excavation of new road alignments proposed. More over the road improvement work include adoption of climate resilient features such as protection of side slopes, construction of cross-drainage structures and side drains, etc.

222. An attempt was made to use FAO's EX-ACT software in assessing the greenhouse gas emissions in two project area states and the results are shown in Annex-H, Appendix-10. Accordingly  $tCO_2eq$  is  $-(-2.5)$  for biomass and  $(-1.0)$  for soils per year per ha in case of Mizoram and  $tCO_2eq$  is  $(-1.9)$  for biomass and  $(-1.0)$  for soils per year/ha for Nagaland.

## H. Sustainability

223. The project interventions should be sustainable. Improved agricultural practices, if found by farmers to be useful and profitable will be sustained provided inputs and markets are available. The project interventions in the market access and value chain component will aim to ensure this.

224. In particular the project seeks to build capacity at the village level, not just in terms of the capacity of farmers to produce, but in local service providers - such as Lead Farmers, CRPs and CAHWs. In addition the project will establish village level suppliers of inputs - plant nurseries and animal feed mills, along with poultry and pig breeding farms. All of these will be operated by local people and make a profit from providing these inputs - and so will be sustainable after the project is completed. The project will also establish systems for the continuing provision of crop and vegetable seeds through community seed systems.

225. Marketing systems will very largely be in the private sector, with the project helping producers make links with agribusiness and marketing companies, as well as establishing local aggregation and primary processing enterprises. There are a number of examples in both states of such enterprises continuing to operate after direct support has been ended.

226. Government will have some continuing responsibilities. Road maintenance will be needed - but village and farm link roads are largely the responsibility of Village Councils who will mobilise resources to keep roads open. The provision of livestock vaccine is a continuing GoI responsibility which will be sustained after the end of the project.

## I. Assurances

227. GoM shall issue a notification nominating the Department of Agriculture as the lead implementing and nodal agency and the Department of Agriculture to register a new society under the

---

total amount of net benefits and therefore the ranking can reward more projects that contribute less to the overall increase in public welfare

<sup>46</sup>Switching values are yet another measure of sensitivity analysis They demonstrate by how much a variable would have to fall (if it is a benefit) or rise (if it is a cost) to make it not worth undertaking an option.

Chair of the Chief Secretary. GoN has already completed activities related to registration of the society.

228. GoM to appoint a Joint Director or above level officer from the technical department as the Chief Executive Officer of the society.

229. GoN and GoM shall approve release INR 150 million (INR 15 crores) as endowment grant of which INR 20 million (INR 2crores) to be released immediately after the society formation to undertake the start-up activities and make budgetary allocation in the budget of 2018-19 for the balance INR130 million (INR 13 crores) which will be released in two instalments.

230. GoN and GoM to initiate steps to include budgetary requirements for 2018-19 into the state budget by creating a separate budget line in the budget of the APC's Office/Department of Agriculture.

231. GoN and GoM to release about 20% of the MGNREGA funds for the project districts as convergence funds for this project to be implemented by the Rural Development Department using the already prevalent procedures of implementation.

232. GoN and GoM to start the process of deputation of regular government staff to the society, engagement of contractual staff for the society and also engagement of staff for the districts and blocks/circles.



Investing in rural people

## India

---

# Fostering Climate Resilient Upland Farming Systems in the Northeast

## Design completion report

## Appendices - Mizoram

Document Date: **Insert date**

Project No. **[Insert project number]**

Report No: **[Insert report number]**~~[if not final PDR delete line]~~

Asia and the Pacific Division  
Programme Management Department

## Contents

Currency equivalents	i
Weights and measures	i
Abbreviations and acronyms	ii
Appendix 1: Country and rural context	1
Appendix 2: Poverty targeting and gender	5
Appendix 3: Country performance and lessons learned	34
Appendix 4: Detailed Project Description	39
Appendix 5: Institutional aspects and implementation arrangements	58
Appendix 6: Planning, M&E, learning & knowledge management	81
Appendix 7: Financial Management and disbursement arrangements	101
Appendix 8: Procurement	115
Appendix 9: Project costs and financing	126
Appendix 10: Economic and financial analysis	1
Appendix 11: Compliance with IFAD policies	78
Appendix 12: SECAP Review Note	92

## Currency equivalents

Currency Unit	=	Indian Rupees (INR)
USD1.0	=	INR 68

## Weights and measures

1 kilogram	=	1000 g
1 000 kg	=	2.204 lb.
1 kilometre (km)	=	0.62 mile
1 metre	=	1.09 yards
1 square metre	=	10.76 square feet
1 acre	=	0.405 hectare
1 hectare	=	2.47 acres

## Abbreviations and acronyms

AFAs	Agricultural Field Assistants
AO	Accounts Officer
AOS	Annual Outcome Survey
APDMP	Andhra Pradesh Drought Mitigation Project
APMC	Agriculture Producers' Marketing Committee
ATARI	Agriculture Technology and Research Institute
ATMA	Agriculture Technology Management Agency
AWP&B	Annual Work plan and Budget
BPCC	Block Project Coordination Committee
BPL	Below Poverty line
CAG	Controller and Auditor General
CAHW	Community animal health worker
CAIM	Convergence of Agricultural Interventions Programme in Maharashtra
CI	Community Institution
COSOP	Country Strategic Opportunities Programme
CPE	Country Programme Evaluation
CRPs	Community Resource Persons
CSSs	Centrally Sponsored Schemes
DAHV	Department of Animal Husbandry and Veterinary Services
DAO	District Agriculture Officer
DEA	Department of Economic Affairs
DMU	District Project Management Unit
DoA	Department of Agriculture
DPCC	District Project Coordination Committee
DPM	District Project Manager
FAS	Finance and Accounts Specialist
F&AO	Finance and Accounts office
FAO	Food and Agriculture Organization
FIGs	Farmer Interest Groups
FOCUS	Fostering Climate Resilient Upland Farming Systems in the Northeast
FPO	Farmer Producer Organization
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Green House Gases
GIA	Grant in Aid
GoI	Government of India
GoM	Government of Mizoram
GoN	Government of Nagaland
HH	Household
ICAR	Indian Council of Agricultural Research
ICEF	India-Canada Environment Facility
ICRAF	International Centre for Research in Agroforestry
ILRI	International Livestock Research Institute

ILSP	Integrated Livelihoods Support Programme
IOE	Independent Office of Evaluation
JTDP	Jharkhand Tribal Development Programme
JTELP	Jharkhand Tribal Empowerment and Livelihoods Programme
KM	Knowledge Management
KVK	Krishi Vigyan Kendra
LAMP	Livelihood and Access to Markets Project
LPG	Liquefied Petroleum Gas
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
Ministry of DoNER	Ministry of Development of Northeast Region
MIS	Management Information System
MLIPH	Meghalaya Livelihoods Improvement Project for the Himalayas
MoU	Memorandum of Understanding
MOVCD	Mission on Organic Value Chain Development
MTR	Midterm Review
NAPCC	National Action Plan on Climate Change
NEPED	Nagaland Environment Protection and Economic Development through People's Action
NER	Northeast Region
NERCORMP	Northeast Region Community Resource Management Project for Upland Areas
NGO	Non-governmental Organization
NHM	National Horticultural Mission
NICRA	National Innovations in Climate Resilient Agriculture
NLUP	New Land Use Policy
NMOP	National Mission on Oil Palms
NTFP	Non-timber Forest Products
OPELIP	Orissa PTG Empowerment and Livelihoods Improvement Programme
OTELP	Orissa Tribal Empowerment and Livelihoods Programme
PCR	Project Completion Report
PDS	Public Distribution System
PEFA	Public Expenditure Financial Accountability Assessment
PESA	Panchayats (Extension to Scheduled Areas) Act
PFM	Public Finance Management
PFS	Project Financial Statements
PIM	Project Implementation Manual
PLUP	Participatory Land Use Planning
PMC	Project Management Committee
PMKSY	Pradhan Mantri Krishi Sinchayi Yojana
PMU	State Project Management Unit
PRA	Participatory Rural Appraisal
PSC	Project Steering Committee
PTSLP	Post Tsunami Sustainable Livelihoods Project
PWD	Public Works Department
RIMs	Results and Impact Management System
RKVY	Rashtriya Krishi Vikas Yojana

SAABs	Site Allotment Advisory Boards
SARS	State Agricultural Research Stations
SCRAM	Society for Climate Resilient Agriculture in Mizoram
SCRAN	Society for Climate Resilient Agriculture in Nagaland
SHG	Self Help Group
SLEM	Sustainable Land and Ecosystem Management
SoE	Statement of Expenditure
SRI	Si=system of Rice Intensification
SSI	Sustainable Spice Initiative
SWCAs	Soil and water conservation Assistants
SWI	System of Wheat Intensification
SPD	State Project Director
TA	Technical Assistance
ToR	Terms of reference
ToT	Training of Trainers
TRC	Terrace Rice Cultivation
TRWEP	Tejaswini Rural Women's Empowerment Project
UC	Utilization certificate
UNDP	United Nations Development Programme
USD	United States Dollar
VC	Village Council
VDB	Village Development Board
VFAs	Veterinary Field Assistants
WRC	Wet Rice Cultivation

## Appendix 1: Country and rural context

### A. India country context

1. India is now the third largest economy in the world, having grown at a robust 7.5 per cent per year between 2004 and 2013, placing it in the top 10 of the world's fastest growing nations. India is a diverse country of 1.3 billion people from several ethnic groups, speaking several languages and more than 1,000 dialects, identifying themselves in more than 5,400 castes and tribes, following six major religions, and an area of 3.28 million km<sup>2</sup> covering 20 different agro-ecological zones. India has achieved the first Millennium Development Goal (MDG 1) by halving the proportion of people living on less than USD 1.25 a day. The country's economic and human development is one of the most significant global achievements of recent times (World Bank, 2013) in which between 2005 and 2010, 53 million Indians were lifted out of poverty.

2. Although rural poverty has decreased by 14 percentage points, India remains at the bottom of the group of middle-income countries where more than 400 million people still live in poverty, representing 33 % of the world's poor people. Hence, poverty remains a major issue, with 23.6% of the population living on less than USD1.25 per day and unacceptably low nutritional levels, where 29.4% of children are underweight. The economic growth has also increased the inequalities and segmentation between different socio-economic groups. Inequalities vis-à-vis disadvantaged groups such as, the scheduled castes, scheduled tribes, and women persist. Structural inequalities have kept entire groups trapped, unable to take advantage of opportunities that economic growth has offered. While much progress has been made in education, health, maternal mortality, and fertility, the gender inequality remains high.

3. The Green Revolution, expansion of irrigation and widespread adoption of mechanisation have transformed India from chronic dependence on grain imports into a net exporter of food. The country is now the world's largest producer of milk, pulses, cotton and spices, and second largest producer of rice, wheat, sugarcane, farmed fish, sheep & goat meat, fruit, vegetables and tea. The country has some 195 million hectares under cultivation, of which some 70 million hectares (over one third) are irrigated.

4. Despite this growth, the share of agriculture in India's economy has progressively declined to less than 17% with higher growth rates in the industrial and services sectors. The decreasing contribution of agriculture to GDP is a cause of concern because of its impact on the millions of livelihoods. Agriculture remains vital to India's economic and social cohesion because (i) nearly three-quarters of India's families depend on rural incomes, (ii) the majority of India's poor live in rural areas, and (iii) the country's food security depends on increasing the production of cereal crops, fruits, vegetables and milk to meet the demands of a growing population with rising incomes. Without structural adjustment to increase the productivity of farm labour and reduce the proportion of population that rely on farming from around 50 percent, there is a risk of labour shortages in the non-farm sector along with a rise in the cost of food. Sector-level constraints include small and fragmented land holdings, irrigation problems, dependence on unreliable monsoon rainfall, inadequate high quality seed systems, patchy support services and low yields.

### B. Mizoram context

5. Mizoram is a land-locked state characterized by steep, parallel forested hills with exceptional high biological diversity. It has a geographical area of 21,081 sq. km and a total population of 1.09 million, of whom slightly more than half live in urban areas. Despite this, the average population density is only 52 persons per sq. km. Of the 15 tribes in the state, the majority are Mizos, but there are also some Maras, Chakmas, Riangs and Bru. The poverty headcount rate was 20.4%<sup>1</sup> in 2011-12.

---

<sup>1</sup> Reserve Bank of India, <https://www.rbi.org.in/scripts/PublicationsView.aspx?id=16603>

## Agriculture

6. Agriculture (crops and livestock) accounts for 14.2% of the State GDP (estimated figure for 2015-16) but supports around 60% of the population. The topography severely limits the area of cultivation, as a result only 6.2% of the state's area is cultivated (130,200 ha<sup>2</sup>), with only 3% of land is suitable for paddy cultivation - very little of which is irrigated. The state has greater proportion of its area under forest than any other state. According to state land use data, 75% of the state is covered with forest, while the 2011 Forest Survey of India puts it at 91%.

7. *Jhum* is the predominant agricultural land use system, with an estimated 20,000 hectares being cleared and burnt each year. Most *jhum* land is only cultivated for one year, with the main crop being upland rice mixed with other crops such as, rice, maize, pulses, and vegetables. With a typical *jhum* cycle of around 8-10 years, about 14% of the state is utilised for *jhum* cultivation. The area of *jhum* has declined considerably over the last 20 years. Data in the table below showed that the area fell by more than half in 1999-2000. This was due to flowering of bamboo, the seeds of which were food for a plague of rats which, once the bamboo seed was finished, destroyed crops in the fields. This resulted in the area of *jhum* falling from over 68,000 ha to only 36,000 ha. In the following years there was only a slight recovery but in the last 10 years the area has steadily declined from over 40,000 ha to less than 20,000 ha.

**Table 1: Area under *jhum* by year**

Year	Area cleared for <i>jhum</i> ha	Number of <i>jhum</i> households
1997-8	68114	
1998-9	68392	
1999-2000	36285	
2000-1	35789	
2001-2	41356	
2002-3	43447	
2003-4	40969	
2005-6	40100	
2006-7	41465	
2010-11	28562	68433
2014-15	20064	60338
2015-16	19851	48417

8. In 2015-16 a total of 16,804 ha of wetland fields were cultivated with paddy (of which under 500 ha also grew a second irrigated paddy crop). The area for wet rice cultivation in Mizoram is even more limited than Nagaland, and though this makes up less than half of the total rice area it produces 60% of the total rice of the state. In 2015-16 the paddy yield on *jhum* land was only 1.23 tons per ha, and on wet paddy land it was 2.17 tons per ha.

9. The value of horticultural crops produced in Mizoram exceeds that of field crops. The area recorded for vegetables and spices exceeds that of field crops (some are grown on *jhum* land). A large area of fruit is also grown (citrus, banana, and pineapple are the main crops) along with areca nut palms.

## Livestock

10. Swine (pigs) are the most important type of livestock in the state, and play a significant role in the livelihood of most rural households as well as in the food culture and nutrition of the Mizo people. Cattle and goats are also kept, but are greatly outnumbered by pigs. In some areas there are also Mithun. There has been a steady growth in livestock numbers including poultry, although the last census in 2012 showed that, compared with 2007, there had been a small decline in pig numbers,

<sup>2</sup> Crop production statistics show that field crops (including *jhum*) cover less than 49,000 ha, and the balance seems to be made up by vegetables and other horticultural crops.

and little change for cattle and poultry. The state is largely self-sufficient in pig meat, although around half the piglets needed for fattening come from other states and Myanmar, so as do around 80% of the cattle slaughtered for beef.

**Table 2: Livestock population (livestock census 2012)**

District	cattle	Buffalo	mithun	sheep	goats	pigs	chicken
Champhai	7,337	2,575	1,858	220	822	37,789	184,767
Kolasib	5,646	102		84	467	23,469	104,889
Serchhip	2,374	609	71	-	2,384	12,061	96,690
Mamit	2,711	75		168	3,670	26,273	86,713
Project area	18,068	3,361	1,929	472	7,343	99,592	473,059
State total	34,803	5,028	3,283	640	22,079	242,507	1,253,129

### Policy

11. With low yields of paddy from both *jhum* and wet rice land, and with only a limited area of wet rice, the state currently produces only 26% of the rice it consumes each year, compelling the state government to spend about INR 200 to 250 million to purchase rice to meet the requirements of the population. A major objective of policy in the agricultural sector is to achieve self-sufficiency in foodgrains.

12. The other major plank of government policy has been the New Land Use Policy (NLUP) which aims to wean the rural population away from the labour intensive and unprofitable shifting cultivation practices, and replacing this with sedentary farming and livestock rearing linked to secure land certificates / titles. NLUP also promotes non-farm livelihoods by encouraging small scale industries and trades; along with land reclamation, afforestation, environment protection and watershed restoration. NLUP was implemented on a limited scale from 1983 to 1998 (reaching around 35,000 households) and on a larger scale since 2009 (targeting 120,000 households). NLUP is due to come to an end in 2017.

### Climate change

13. The climate of Mizoram is moist tropical to moist sub-tropical, with an average rainfall of around 2500 mm per annum. Rainfall is concentrated in the monsoon period from May to September. Mizoram has relatively cool summers with temperatures ranging from 20 to 29 °C, and mild winter temperatures ranging from 7 to 22 °C.

14. Projections of climate change for north-eastern India as a whole show increases in temperature and total precipitation, along with increases in extreme precipitation and temperature, and in the number of rainy days. The Mizoram State Action Plan on Climate Change (2010-2015) forecasts that, by 2021-2050s compared with 1961-1990, temperatures will increase by 1.6 to 1.75°C, with the greater change in the more northerly districts. Annual precipitation will increase by around 5%, with up to 2 more days per year of extreme rainfall. Based on this, the Action Plan estimates that rice yields could fall by 5% to 8% (partially offsetting the yield increase that is expected to come from adoption of better cultivation methods). Using data such as rainfall variability, area under rain-fed crops, rural population density, net sown area, area under high yielding crop varieties, use of fertilizers and manure, groundwater availability, and mean crop yields, the Action Plan's 2025-30 agricultural vulnerability rating for the project districts is very low in Champhai, and low in Mamit, Serchhip and Kolasib. However the vulnerability rating for forests is relatively high in Serchhip.

### Nutrition

15. Mizoram fares better than the national average in terms of all key major indicators of underweight, stunting and wasting in children under 5. The national average for prevalence of underweight in under 5 children is 29.4%, while Mizoram is less than half this at 14.8%. Wasting in

Mizoram is 14.3%, slightly lower than the national average of 15.1%. In terms of stunting, Mizoram at 26.9% is substantially below the national average of 38.7%. In terms of low birth weight of children under 3, Mizoram is the best in the country<sup>3</sup>. Mizoram has a comprehensive system for the public distribution of subsidised food, with just about the entire population being entitled to 8 kg of rice per head per month at a price of INR15 per kg. Around two-thirds of all households are classed as priority households under the National Food Security Act, and receive 5 kg per head per month at the highly subsidised price of INR3 per kg - plus 3 kg at INR15 per kg.

---

<sup>3</sup> India Health Report- Nutrition (2015). [http://www.indiaenvironmentportal.org.in/files/file/INDIA-HEALTH-REPORT-NUTRITION\\_2015.pdf](http://www.indiaenvironmentportal.org.in/files/file/INDIA-HEALTH-REPORT-NUTRITION_2015.pdf)

## Appendix 2: Poverty targeting and gender

### A. Introduction

#### 1. General poverty situation in the state.

1. Poverty Estimates for Mizoram during 2009-10 (on Tendulkar Methodology) based on the Press note of Planning Commission on Poverty Estimates, 2009-10 (Dated 19th March,2012) is slightly higher than 2004-2005 estimates, showing that 31.1% of rural population in Mizoram live below poverty line. The poverty ratios of Mizoram as compared to All India situation (number and Percentage of Population below Poverty line) during 2004-05 and 2009-2010 as per Tendulkar Methodology is provided in Table 1 below.

**Table 1. Poverty Ratios of Mizoram**

Year	State	Rural		Urban		Combined / Total	
		%age of persons	No. of Persons (Lakhs)	%age of persons	No. of Persons (Lakhs)	%age of persons	No. of Persons (Lakhs)
2004-2005	Mizoram	23	1.1	7.9	0.4	15.4	1.5
	All India	42	3258.1	25.5	814.1	37.2	4072.2
2009-2010	Mizoram	31.1	1.6	11.5	0.6	21.1	2.3
	All India	33.8	2782.1	20.9	764.7	29.8	3546.8

(Source: Ministry of DoNER, [www.mdoner.gov.in/content/poverty-estimates](http://www.mdoner.gov.in/content/poverty-estimates))

#### 2. Dimensions of poverty in Mizoram

2. The multi-dimensional poverty in Mizoram as seen from four key poverty dimensions, viz. (a) Economic Poverty (expenditure deprivation); (b) Human Poverty (health, education and income deprivation); (c) Nutritional Poverty (deprivation to required K.Cals i.e. 80% of 2700 /person/day or calorie gap); and (d) Basic Amenities Poverty (Deprivations to basic amenities-not having /possessing safe drinking water, electricity, housing (pucca) and sanitation) can be understood from below Table 2.

**Table 2. Multi-poverty dimension**

Particular	Poverty dimensions (in % of population)			
	Economic poverty	Human poverty	Nutrition poverty	Basic amenities poverty
Mizoram (Rural)	31.1	37.4	27.3	49.1
NE India (All)	22.3	-	-	-
All India (Rural)	33.8	36.3	30.6	52.6

(Source: Poverty Eradication/Alleviation in North East India: An Approach. NIRD & NEC, 2013)

#### 3. Major poverty alleviation programmes in the state.

3. **Integrated Watershed Management Programme (IWMP):** The main objectives of IWMP are to restore ecological balance by harnessing, conserving and developing natural resources such as soil, vegetative cover and water, while at the same time, providing sustainable livelihood options to the people residing in the watershed area. The expected outcomes are prevention of soil run off, regeneration of natural vegetation, rain water harvesting, recharging of the ground water table, multicropping and introduction of diverse agro-based activities, which help to provide sustainable livelihoods to the people residing in the watershed area. This Programme is expected to boost productivity and income of rural households. The project costs are shared between the Centre and the

State on 90:10 ratio. It must be noted that since 2016 this scheme forms part of the Prime Minister Krishi Sinchai Yojana (PMKSY)

4. **Indira Awaas Yojana (IAY):** The objective of IAY is to provide financial assistance for construction and upgradation of houses to rural households living below the Poverty Line. This Scheme is funded on a ratio of 90:10 by the Centre and the State respectively.

5. **Mahatma Gandhi National Rural Employment Guarantee Scheme:** The objective of this Scheme is to provide at least 100 days of wage employment in a financial year to every household whose unemployed adult members are willing to do unskilled manual labour. The entire cost of wages for unskilled manual workers is paid by the Central Government. The earmarked outlay for the scheme during 2014-15 was INR 22,687.48 lakhs (out of which state share was INR 225.48 lakhs SCA).

6. **National Rural Livelihoods Mission (NRLM):** The main objective of the National Rural Livelihoods Mission (NRLM) is to reduce poverty through building strong grassroots institutions (SHGs and their federations) of the poor women. These institutions enable the poor households to access gainful self-employment and skilled wage employment opportunities, resulting in appreciable increase in their incomes, on a sustainable basis.

7. **Backward Region Grant Fund (BRGF):** The Backward Region Grant Fund is designed to redress regional imbalances in development. The Government of India (GoI) has identified two districts i.e. Lawngtlai and Saiha for the implementation of BRGF in Mizoram.

8. **Border Area Development Programme (BADP):** This Programme is wholly funded by the Ministry of Home Affairs, Department of Border Management, and GoI. The main objective of BADP is to meet the special development needs of the people living in remote and inaccessible areas situated near the international border and to bridge the gaps in the physical and social infrastructure of such areas. The aim is to transform the border areas by ensuring multifaceted development and to saturate the border areas with the entire essential infrastructure through convergence of Schemes and participatory approach. This Programme is implemented in villages situated near the international border viz. Indo-Bangladesh border and Indo-Myanmar border. Priority is given to villages/areas situated within 0-10 km of the international border, and only after saturating these areas, villages located deeper inside are to be taken up.

9. **Rashtrya Krishi Vikas Yojana (RKVY):** A scheme on Additional Central Assistance (ACA) for Agriculture & allied sectors, namely, the Rashtriya Krishi Vikas Yojana (RKVY) was approved by the GoI in 2007. RKVY scheme is a State Plan Scheme administered by the Union Ministry of Agriculture over and above its existing Centrally Sponsored and Central sector Schemes. The funds under the scheme are provided to the States as 100% grant. The focus is on Production growth, Infrastructure & Asset generation.

10. **New Land Use Policy (NLUP):** Government of Mizoram (GoM) with the approval and funding of Planning Commission launched a Comprehensive Project for inclusive development called New Land Use Policy (NLUP) as a Flagship Project. It focuses mainly on a major overhaul of the economy through structural changes by weaning away farmers from *Jhum* Practices to Sustainable Livelihood opportunities based on local resources, interest and skills of the people and keeping in view regeneration of resources.

11. **Oil Palm development programme** has been implemented in Mizoram since 2004-05 under Integrated Scheme on Pulses, Oilseeds and Maize (ISOPOM) wherein the funding pattern was 75:25 (Central : State). With the implementation of RKVY, Oil Palm development programme was continued under RKVY - Sub-Schemes i.e. Oil Palm Area Expansion (OPAE) scheme till 2013-14. During 2014-15, following the restructuring of various CSS scheme, GoI has introduced National Mission on Oilseeds and Oil Palm by amalgamating ISOPOM and Tree borne Oilseeds and Bio-diesel Schemes. NMOOP comprises of three components such as Mini-Mission-I, II and III under which Mini Mission-II (MM-II) is allocated to GoM for development of Oil Palm in the State. The funding pattern under this

scheme is 75:25 (Central Government: State Government). An amount of INR 653.00 lakh was earmarked as Central Share for implementing the CSS during 2014-15.

#### 4. Main causes of continuing rural poverty in the state.

12. Poverty and under development in Mizoram is primarily linked to the continued subsistence mode of farm production with over 85% of rural households dependent on some kind of farming including *jhum*. Nearly 93% of self-employed population in agriculture are considered as poor primarily due to several factors negatively impacting performance of agriculture including small, unproductive land holding with traditional *jhum* farming, acidic soil with low fertility and overall less sunlight affecting better growth, low productivity of food grains per unit area, challenges of access to credit and agricultural input services, difficulties in marketing even where there are surplus production, low skills of agricultural labourer for high technology, etc. Only about 2.4% of rural population are self-employed in non-agricultural sector. However, even in this sector there are several constraints. Many of the items produced by local non-farm artisans have low market value besides operational units being tiny, labour-intensive or highly manual and depend mainly on unorganised markets. Use of modern tools and technologies remain limited.

## B Socio-economic and Poverty profiles of the target groups

### 1. District Profiles

13. Table 3 presents the basic profile of the proposed programme districts, namely Mamit, Kolasib, Champhai, and Serchhip. These districts taken together constitute 42.75% of the total geographical area of Mizoram; 28.13% of the state's population and 32.83% of the total number of households of the state. There are 238 villages (i.e. 33.81% of Mizoram total) in these four districts.

**Table 3: General Information about the selected Districts (Population Census 2011)**

Particulars	Mamit	Kolasib	Champhai	Serchhip	Mizoram
Area (in Sq. Km)	3025	1382	3185	1421	21081
Total Population	86364	83955	125745	64937	1097206
Population Density (persons/sq.km)	29	61	39	46	52
Number of Villages (inhabited)	86	34	83	35	704
Number of Households	17664	17199	25451	12622	222079
Average Family Size	4.9	4.9	5	5.1	5
Sex Ratio	927	956	984	977	976
Literates (percent)	84.93	93.50	95.91	97.91	91.33
Males	89.13	94.57	97.21	98.28	93.35
Females	80.35	92.38	94.59	97.53	89.27
Scheduled Castes (percent)	0.06	0.10	0.01	0.05	0.11
Scheduled Tribes (percent)	95.04	87.68	98.19	96.85	94.43

Source: Primary Abstract of Population Census, Mizoram, 2011

### 2. Classification of Workers

14. Table 4 presents the status of the workers profile in the selected districts (rural areas). Main workers are further classified into cultivators, agricultural labourers, household industry workers, and other workers (Table 5). The percentage of main workers to the total population are above the state average of 41.46% in all the districts except Kolasib. The percentage of female main workers is highest in Serchhip district (54.87%) and lowest in Kolasib (27.66%).

**Table 4: Distribution of Workers and Non-Workers (percent)**

SN	Categories	Mamit	Kolasib	Champhai	Serchhip	Rural Mizoram
1	<b>Main Workers</b>	<b>42.63</b>	<b>39.57</b>	<b>47.09</b>	<b>50.04</b>	<b>41.46</b>
	Males	51.98	50.79	52.89	54.87	50.12
	Females	32.52	27.66	41.14	45.10	32.36
2	<b>Marginal Workers</b>	<b>3.77</b>	<b>8.17</b>	<b>3.50</b>	<b>3.57</b>	<b>6.58</b>
	Males	1.65	4.39	2.02	2.10	3.79
	Females	6.06	12.19	5.02	5.08	9.50

<b>3</b>	<b>Non-Workers</b>	<b>53.60</b>	<b>52.26</b>	<b>49.41</b>	<b>46.39</b>	<b>51.97</b>
	Males	46.37	44.82	45.09	43.03	46.09
	Females	61.42	60.16	53.84	49.82	58.14

Source: Primary Abstract of Population Census, Mizoram 2011

**Table 5: Classification of Main Workers(percent)**

						Rural
SN	Categories	Mamit	Kolasib	Champhai	Serchhip	Mizoram
<b>1</b>	<b>Cultivators</b>	<b>81.41</b>	<b>75.01</b>	<b>81.25</b>	<b>84.48</b>	<b>78.17</b>
	Males	79.31	74.65	78.17	81.08	75.55
	Females	85.03	75.73	85.30	88.71	82.43
<b>2</b>	<b>Agricultural labourers</b>	<b>3.76</b>	<b>8.69</b>	<b>4.80</b>	<b>1.78</b>	<b>5.71</b>
	Males	3.43	7.99	5.05	2.03	5.61
	Females	4.33	10.05	4.48	1.47	5.88
	<b>Household industry</b>					
<b>3</b>	<b>Worker</b>	<b>0.40</b>	<b>1.09</b>	<b>0.71</b>	<b>1.32</b>	<b>0.71</b>
	Males	0.40	1.27	0.77	2.04	0.74
	Females	0.39	0.74	0.63	0.42	0.67
<b>4</b>	<b>Other Workers</b>	<b>14.43</b>	<b>15.21</b>	<b>13.24</b>	<b>12.43</b>	<b>15.40</b>
	Males	16.85	16.09	16.01	14.86	18.10
	Females	10.25	13.47	9.59	9.40	11.02

Source: Primary Abstract of Population Census, Mizoram 2011

15. To supplement the information on the main livelihood of the rural population in Mizoram, primary data of NSS 68<sup>th</sup> Round (2011-12) was tabulated for the distribution of household type (Table 6). It is clear from the table that agriculture is the main livelihood activity across the districts for covered under the project. Majority of the farming activities are of own farming in nature as 'self-employed in agriculture' constitutes more than 70% in three of the districts, while in Kolasib it is 56.65%.

**Table 6: Types of Rural Households by Economic Activity**

						Percent
household types	Mamit	Kolasib	Champhai	Serchhip	Mizoram	
self-employed in agriculture	78.79	56.65	70.97	81.34	71.39	
self-employed in non-agriculture	7.68	21.22	9.32	1.58	10.60	
regular wage/salary earning	10.34	20.53	19.37	12.60	15.12	
casual labour in agriculture	0.00	0.00	0.00	0.00	0.64	
casual labour in non-agriculture	0.00	1.61	0.35	4.47	1.41	
Others	3.19	0.00	0.00	0.00	0.84	
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	

Source: Primary Data of NSS 68th Round (2012)

### 3. Household Basic Conditions and Living Amenities

16. The availability of living amenities among the rural households in the four project districts and in Mizoram during 2015-16, as reported in the National Family Health Survey-4 (NFHS-4), is presented in Table 7. The achievement of Mizoram and the districts is well above the all India average with respect to household access to electricity, improved sanitation facility, clean fuel for cooking, and health care coverage, while it is lower than the national average in case of improved drinking water supply. While the conditions of the selected districts are impressive in most of the indicators, the percentage of households using clean fuel for cooking is still very low at around one-third of the total number of households, indicating continued high dependency on firewood.

**Table 7: Situation of Living Amenities among Rural Households**

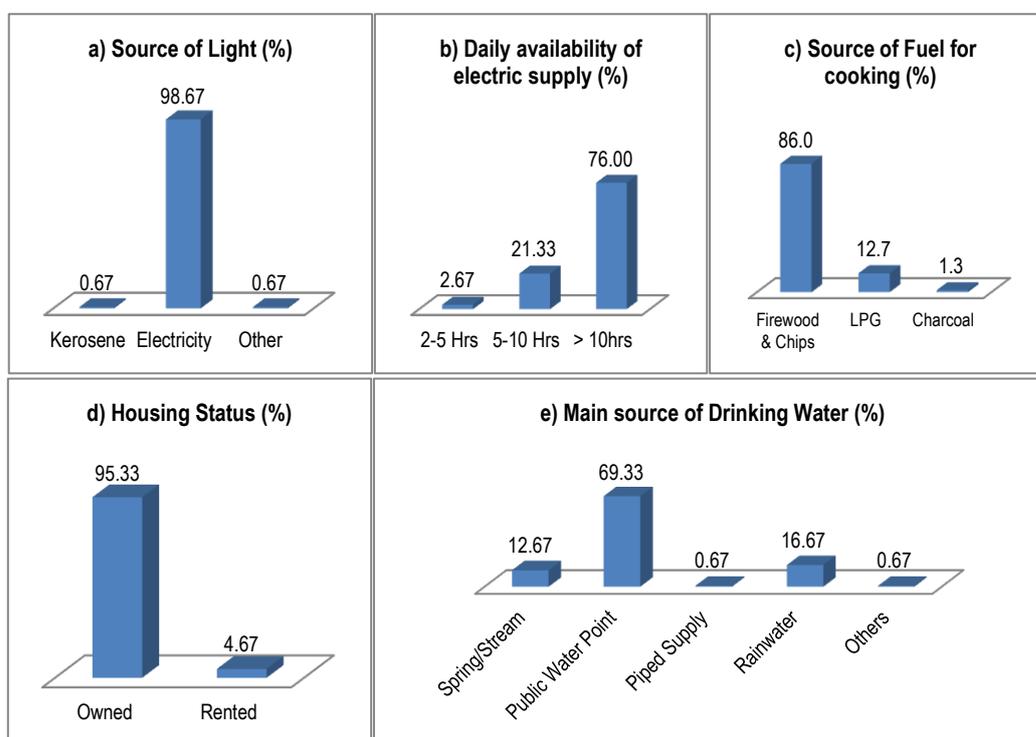
SN	Indicators	Percent					
		Mamit	Kolasib	Champhai	Serchhip	Mizoram	India
1	Household with electricity	82.8	98.1	99.7	99.3	90.5	83.2
2	Household with Improved Drinking Water Source	81.5	96.3	96.6	95.3	87.8	89.3
3	Households using Improved Sanitation Facility	61.7	79.1	81.3	89.6	73.1	36.7
4	Households using clean fuel for cooking	27.5	37.1	30.0	25.8	29.9	24.0
5	Households using iodized salt	97.5	97.8	98.7	98.7	98.6	91.4
6	Households with any usual member covered by Health Scheme or Health Insurance	52.2	65.7	60.8	75.4	49.9	29.0

Source: NFHS-4 (2015-16)

17. The households' access to the basic amenities as observed in the NFHS-4 presented in Table 7 is clearly in line with the data of field survey from 10 villages in the four selected districts during March-April 2017. The field survey data with respect to household's access to basic living amenities is presented in Figure 1, electricity being main lighting source for 98.67% of the households. At the same time, the use of clean fuel for cooking, especially LPG, is unexpectedly low as only 12.7%.

**Figure 1: Rural Households' Access to Basic Living Amenities in Select 4 Districts of Mizoram**

(Source: Household Sample Survey, March-April 2017)



18. The rural population distribution by age in four districts (Table 8) and education level of rural communities (Table 9) is variable across the districts but not too significantly different from overall state average, though Mamit has high rural 'not literate' (17.41%).

**Table 8: Age Distribution of the Rural Population in Selected Districts of Mizoram**

Age (yrs)					Percent
	Mamit	Kolasib	Champhai	Serchhip	Mizoram
<6	11.14	9.34	10.52	10.12	9.64
6-14	18.84	14.11	17.03	17.58	16.48
14-18	8.06	7.61	8.57	7.88	8.23
18-35	30.78	36.94	31.25	31.47	32.74
35-60	25.76	28.23	28.91	27.00	27.74
60&<	5.41	3.77	3.71	5.95	5.18
Total	100	100	100	100	100

Source: Primary Data of NSS 68th Round (2011-12)

19. The educational status of youths (18-35 years) in the study areas gender-wise (Table 10) showed that majority of them had education between primary and middle school. In terms of gender-wise education, female graduates are more than males in Kolasib and Champhai (Table 11).

**Table 9: Educational Achievement of Youths (18-35 yrs) in Rural Areas of Mizoram - Gender Wise**

Educational Levels	Percent									
	Male					Female				
	Mamit	Kolasib	Champhai	Serchhip	Mizoram	Mamit	Kolasib	Champhai	Serchhip	Mizoram
Not Literate	--	--	--	--	0.6	7.8	--	--	--	2.6
Below Primary	1.0	--	0.6	1.6	4.9	4.6	--	0.8	0.0	4.6
Primary	22.8	10.0	12.2	16.2	10.5	29.3	3.6	13.8	17.2	12.3
Middle	60.0	52.9	44.8	52.5	42.0	39.9	57.7	35.2	48.1	38.5
High School	6.6	19.4	27.8	8.3	18.6	8.8	19.1	29.7	22.8	22.3
Higher Secondary	8.0	11.3	10.3	16.0	15.3	8.3	11.3	9.2	8.3	11.6
Diploma/Certificate Course	0.2	--	0.2	--	--	--	0.4	--	--	0.3
Graduate	1.4	5.0	4.0	5.3	7.3	1.0	7.9	9.7	1.1	6.3
Postgraduate & Above	--	1.2	--	--	0.7	0.2	--	1.5	2.6	1.5
Total	100	100	100	100	100	100	100	100	100	100

Source: Primary Data of NSS 68th Round (2011-12)

20. In terms of adult education, rural men are more literate than women in general in all the four proposed districts (Table 12).

**Table 11: Status of Adult Education (age 15-49) in Rural Areas**

Categories	Percent					
	Mamit	Kolasib	Champhai	Serchhip	Mizoram	India
Women who are literate	77.5	87.9	96.0	97.9	85.4	61.5
Men who are literate	92.9	96.3	99.1	100.0	96.3	82.6
Women with 10 or more years of schooling	18.8	15.4	19.3	20.5	21.4	27.3

Source: NFHS-4 (2015-16)

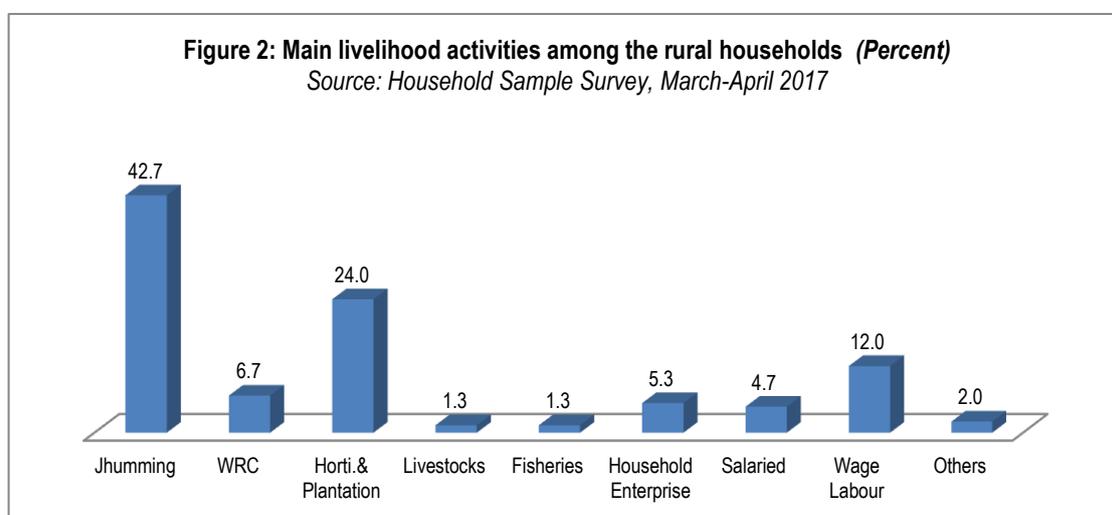
## 5 Major Livelihood Activities, Income and Consumption

21. *Jhum* continues to be major livelihood activity in Mamit, Champhai and Serchhip districts with over 47-56% practicing *jhum* (Table 13) while in Kolasib the main activity is horticulture (over 48%), which was further corroborated by the field survey (Fig 2).

**Table 12: Major Livelihood Activities in Rural Areas of Mizoram - District Wise**

Main Livelihood Activities	Percent				
	Mamit	Kolasib	Champhai	Serchhip	Total
<i>Jhumming</i>	53.33	6.90	47.54	56.67	42.67
WRC	0.00	10.34	9.84	3.33	6.67
Horticulture & Plantation	16.67	48.28	14.75	26.67	24.00
Livestock	3.33	3.45	0.00	0.00	1.33
Fisheries	0.00	3.45	1.64	0.00	1.33
Household Enterprise	3.33	13.79	1.64	6.67	5.33
Salaried	3.33	0.00	9.84	0.00	4.67
Wage Labour	16.67	13.79	14.75	0.00	12.00
Others	3.33	0.00	0.00	6.67	2.00
Total	100	100	100	100	100

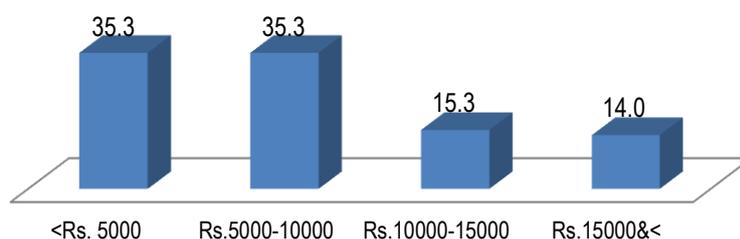
Source: Household Sample Survey, March-April 2017



22. The income distribution in the surveyed households (Figure 3) shows a high degree of inequality among the households in the study areas, but nearly 70% having income less than INR 10 000. It is argued that substantial proportion of rural population have insufficient income to meet their family requirements.

**Figure 3: Distribution of Households Monthly Income (Percent)**

Source: Household Sample Survey, March-April 2017

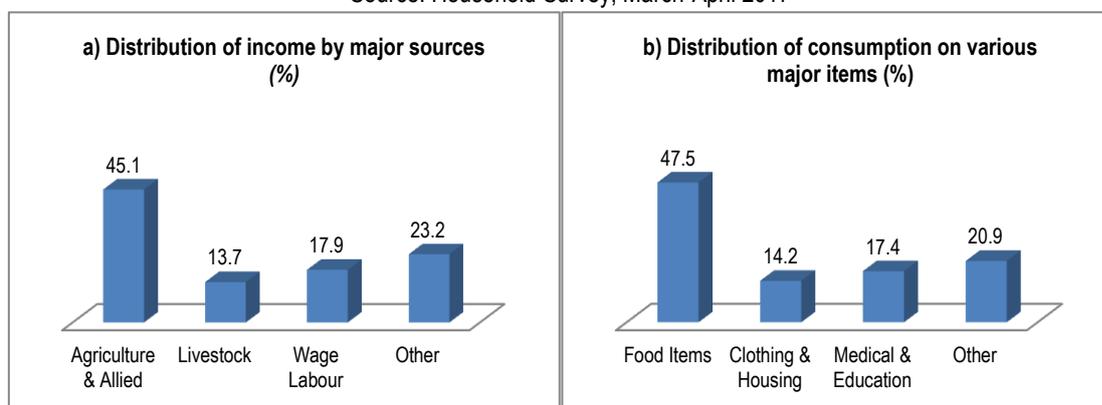


Average Monthly Income: INR11800, Std. Deviation: INR22311.6 Sample: 150

23. Fig 4 shows the disaggregation of household income to various sources and consumption patterns. Understandably, agriculture and allied activities (*jhum*, WRC, horticulture, plantation, etc.) contributed more than 45% of the total family income. At the same time, wage labour (daily labour, wage from MGNREGS, etc.) contributed around 18% of household income.

**Figure 4: Sources of income and patterns of consumption**

Source: Household Survey, March-April 2017



28. Serchhip districts having higher percentage (35% to 40%) of poor people than the state average of 31.76%. Of these, the highest categories of poverty were seen among the self-employed in agriculture and casual labourers in non-agriculture activities (Table 13).

**Table 13: Poverty Incidence in Rural Areas of Mizoram (percentage of households)**

District	Poor as per Official Poverty	Poor as USD 1.90 in	Poor as USD 3.10 in	Rural
Mamit	39.62	32.16	50.23	
Kolasib	14.95	0.00	41.25	
Champhai	26.89	14.22	42.55	
Serchhip	35.33	7.77	79.56	
Aizawl	24.62	1.61	34.27	
Lunglei	23.59	10.14	56.92	
Lawngtlai	41.73	27.59	51.28	
Saiha	43.35	37.91	68.14	
<b>Mizoram</b>	<b>31.76</b>	<b>18.01</b>	<b>51.61</b>	

Source: **Calculated** from Primary Data of NSS 68th Round (2011-12)

\*Official Rural Poverty Line of INR1066 per capita per month for Mizoram according to Tendulkar Methodology (2009)

**Table 14: Poverty incidence among the different groups of households**

Sl.	Particulars	BPL (%)	APL (%)	Total	Rural
<b>A</b>	<b>Household Type</b>				
1	self-employed in agriculture	41.43	58.57	100	
2	self-employed in non-agriculture	10.61	89.39	100	
3	regular wage/salary earning	2.85	97.15	100	
4	casual labour in non-agriculture	36.81	63.19	100	
5	Others	13.74	86.26	100	
	Total	31.76	68.24	100	
	<i>Chi-square Value: 12471.1 (significant at all levels)</i>				
<b>B</b>	<b>Ownership of Land for Cultivation</b>				
1	Owns Land	32.39	67.61	100	
2	Do not Own Land	1.97	98.03	100	
	Total	31.76	68.24	100	
	<i>Chi-square Value: 000 (insignificant)</i>				

Source: Primary Data of NSS 68th Round

<sup>4</sup>As per Tendulkar Committee Recommendation (2009), Government of India<sup>4</sup>, for the year 2012 as well as the primary of NSS 68<sup>th</sup> Round along with the revised international poverty line of USD1.90 per capita per day in PPP<sup>4</sup> and USD 3.10 per capita per day in PPP

## 7. Main causes of continuing poverty in the districts.

29. The poverty ratio is relatively higher among the families who own land for cultivation than those who do not, while the chi-square statistic is insignificant. In fact, most of the villages in Mizoram have large areas owned by the community on which any individual is permitted to undertake cultivation. They are also free to ask the village authority to provide them land from the community land. Thus, ownership of land for cultivation is not a big problem in the study areas. The problem lies in the optimal utilisation of the land owned by the households. Table 15 presents ranking of causes of rural poverty in the districts through focus group discussion.

**Table 15: Ranking of the Causes of Rural Poverty in Mizoram**

Sl. No	Causes of Poverty	Total Score	Rank
1	Inadequate Market for Agriculture Produce	14	1
2	Poor road connectivity or inadequate farm link road	10	2
3	Wrong choice of crops & crop failure	9	3
4	Lack of farm irrigation/water harvesting facilities	3	5
5	Lack of fertile land for successful cultivation	2	6
6	Lack of subsidiary income	2	6
7	Others	9	4

Source: Field Survey, March-April 2017

## 8. Food Security and Nutritional Status

30. Mizoram adopted National Food Security Act 2013 (NFSA, 2013) on 22<sup>nd</sup> June, 2015. Under this Act, PDS implemented by categorising all the households into three categories, namely *Antyodaya Anna Yojana (AAY)*, *Priority Households (PHH)*, and others or *Above Poverty Line (APL)* (Table 1)<sup>5</sup>. Figure 5 shows the percentage of HHs dependent on PDS from field survey of April 2017. Table 17 presents the different indicators of nutritional status of children and adults, as obtained from NFHS-4. With the exception of infant mortality rate (IMR), the performance of Mizoram is better than the all India average.

**Table 16: Status of Family Ration Cards under PDS in Rural Areas of Mizoram- by districts**

Particulars	% of Households				
	Mamit	Kolasib	Champhai	Serchhip	Mizoram
<b>Whether the household has Ration Card?</b>					
Yes	98.66	100	100	100	99.37
No	1.34	--	--	--	0.63
<b>Types of Ration Card</b>					
AAY	23.04	1.61	4.82	10.19	13.28
BPL (PHH)	42.23	37.52	29.31	11.51	43.22
APL (NFSH)	33.39	60.87	65.87	78.31	42.87

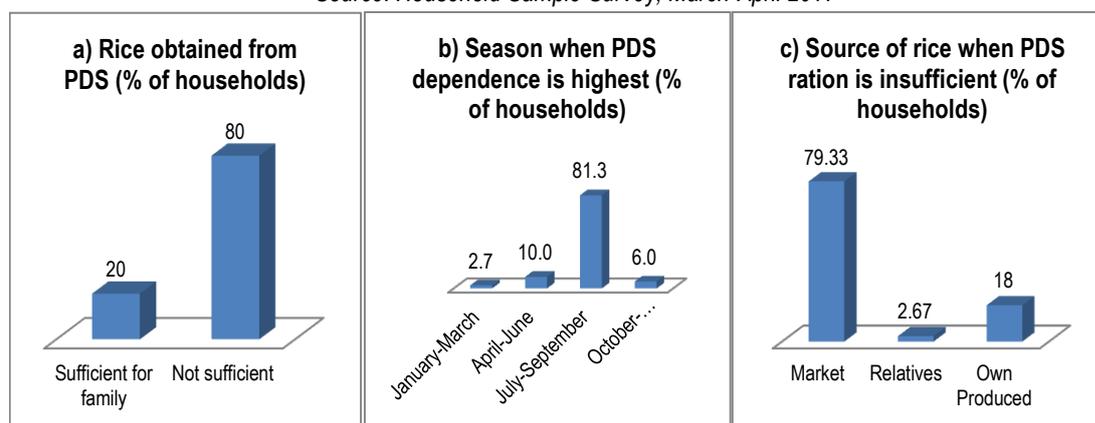
Source: Calculated from Primary Data of NSS 68th Round (2011-12)

Note: PHH and NFSH are Priority Households and Non-Food Security Households respectively under Food Security Act Nomenclature.

<sup>5</sup> AAY families are the poorest sections of the poor, while PHH are basically the below poverty line (BPL) households of the previous system. The AAY HHs are entitled to 35 kg of rice/HH/month at INR3 per kg. PHH are entitled to receive 5 kg of foodgrains/person/month at a rate of INR3 per kg, and can purchase additional 3 kg per person over and above their entitlement for being PHH but at higher rate specified for others (APL households). Other HHs not covered by the FSA called *Non-Food Security Household (NFSH)* or APL households enjoy monthly ration quota of 8 kg per person at a rate of INR15 per kg at present. The four districts in Mizoram had performed well in the implementation of Public Distribution System (PDS)/FSA

**Figure 5: Household Dependence of PDS for family rice consumption**

Source: Household Sample Survey, March-April 2017



**Table 18: Nutritional Status Children & Adult in the Selected Districts of Mizoram (Rural)**

Percent

SN	Indicators	Mamit	Kolasib	Champhai	Serchhip	Mizoram	India
<b>1</b>	<b>Nutritional Status of Children</b>						
	Children age 6-23 months receiving adequate diet	5.1	18.4	21.8	30.8	13.2	8.8
	Children age 6-59 months anaemic	20.2	42.7	7.9	22.4	22.3	59.4
	Children <5 yrs who are stunted	30.5	33.4	37.4	30.7	33.8	41.2
	Children <5 yrs who are wasted	11.4	6.5	6.5	12.5	7.8	21.5
	Children <5 yrs who are severely wasted	3.2	2.6	2.5	4.3	3.4	7.4
	Children <5 yrs who are underweight	19.3	14.0	14.8	13.0	15.7	38.3
<b>2</b>	<b>Nutritional Status of Adults (age 15-49)</b>						
	Women who are anaemic	28.6	40.3	13.9	24.2	22.5	54.2
	Men who are anaemic	14.8	22.9	8.4	7.4	9.6	25.2
	Women whose BMI is below normal	10.5	9.9	7.2	12.5	9.6	26.7
	Men whose BMI is below normal	6.1	4.9	10.3	14.5	9.2	23.0
	Women who are overweight or obese	11.3	17.7	13.0	10.0	12.3	15.0
	Men who are overweight or obese	11.4	5.4	15.1	11.1	9.9	14.3

Source: NFHS-4 (2015-16)

Note: IMR of Mizoram is 50 per 1000 live births, while all India average is 46 per 1000 births

## 9. Institutional Linkages (financial institutions)

31. The access levels of household members to financial institution and other assets as observed in the field survey is presented in Table 17. On an average, more than half of the rural population (54.64%) possess bank accounts.

**Table 17: Access of Household Members to Financial Institutions and other Assets**

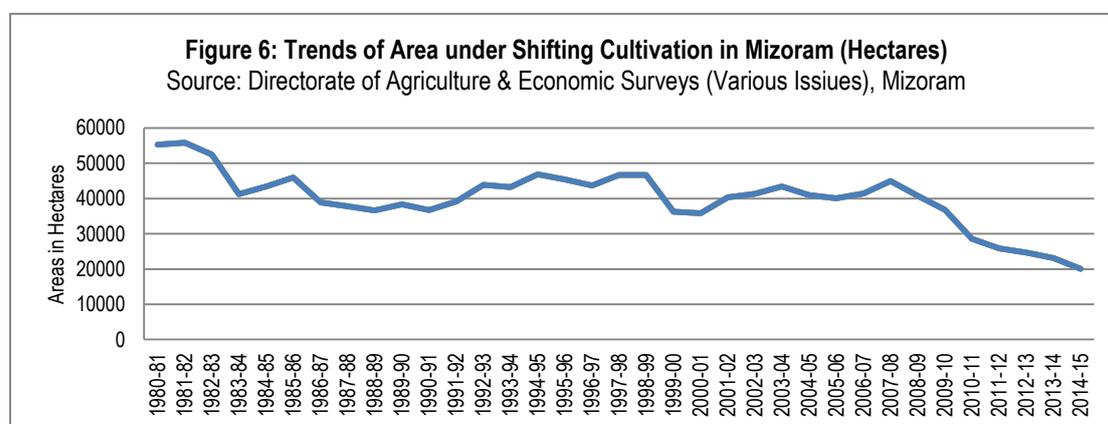
Age groups	No. of Members	Have Bank Account (%)	Ever taken loan in the Past (%)	Percent	
				Have Insurance Policy (%)	Owens land in his/her name (%)
<6	70	5.71	0.00	0.00	0.0
6-14	130	33.08	0.00	0.00	0.0
14-18	71	61.97	0.00	4.23	1.4
18-35	283	53.00	2.47	4.24	3.9
35-60	229	74.67	6.55	7.86	40.6
60&<	90	72.22	8.89	7.78	51.1
Total	873	54.64	3.67	4.58	17.3

Source: Household Sample Survey, March-April, 2017

## C. Land Tenure and Agricultural Practices in project districts

### 1. Areas under Shifting Cultivation (*Jhum*)

32. *Jhum* remains predominant land use and livelihoods activities in rural Mizoram though the trends are decreasing (Fig 6). This could be due to the impact of the state flagship programme NLUP, among others, being implemented since 2011 which aims to reduce areas under shifting cultivation by economic crops.



33. The field study conducted in the selected 10 villages during March-April 2017 observed that those who had *de jure* abandoned *jhuming* as a result of being NLUP beneficiaries have returned to its practice, although to a lesser extent of cultivation, because their crops are currently in gestation. This observation suggests the moving back of the people to shifting cultivation in addition to their normal work on settled cultivation initiated under NLUP. Thus, it is likely that the areas under shifting cultivation in Mizoram may again increase to some extent. The reasons for this need to be further explored.

### 2. Land Tenure System

34. The establishment of Lushai Hills District Council on 25<sup>th</sup> April 1952 (then changed to Mizo District Council in 1954), under Sixth Schedule of the Constitution of India, changed the whole spectrum of land tenure system in Mizoram. The traditional land tenure under the chieftainship, where there existed landed privileges through social gradation, was replaced by the allotment of land without any social distinction. This was instituted under the democratically elected Village Council (VC). With the upgrade of Mizoram to UT status in 1972 and its subsequent attainment of Statehood in 1987, several land laws have been made by the government from time to time. In Mizoram, ownership of land is statutorily vested in the government and the government, in turn, formulate laws by which to

govern different shades of ownership within the state. *Jhum* and forest lands are governed respectively by the *Jhuming Regulation Act of 1954* and *Mizo District (Forest) Act 1955*. Land ownership in Mizoram can be broadly divided into three - (a) Community Land, (b) Government Land, and (c) Private Land.

35. **Community Land:** Community lands are lands over which no person has property, heritable or transferable rights except the right of use and occupancy for a period of one or two years. The VCs are empowered to make the allotment of *jhum* field from such lands. No individual who belongs to the village community is debarred from getting their share of *jhum* plot nor are they entitled to sell or transfer it. Every member of the community has the right to use the land and they do not have to pay land revenue in any form. The ownership or the right of occupancy is vested with the concerned *jhumias* only for a period of one or two years; after which the land again comes under the authority of the community or the VC. These lands are used for *jhum* cultivation on a rotational basis and the cycle of the rotation (*jhum* cycle) normally range from 5 to 10 years. According to The Mizoram (Land and Revenue) Rules 2013, the VC has to apply to the Land Revenue and Settlement Department (LR&S) to demarcate the land reserved for community land, that would be used for special purposes or other seasonal farming or for cultivation for one year (i.e. shifting cultivation).

36. Other categories of lands are also carved out of the *community land* by the village community through village assembly (called *Vantlang Inkhawm*) or by the village council.

- a) The 'safety reserve forest' which encircles the village with a depth of about one and a half kilometres. Even in the traditional communities, the Mizo villagers kept reserved forest land adjoining the entire perimeter of the village. Accordingly, the creation of village safety reserve forest was given due recognition by the Mizo District (Forest) Act 1955. This safety reserve forest is necessary for the protection of the village from fire especially during the burning of *jhum* fields. It also helps to preserve the balance of ecology.
- b) The 'village supply reserve' controlled and managed by the Village Council falls under the category of 'Protected or Partially Protected forest' and is out of bounds for agriculture. Any resident of the village may cut trees and bamboos from the supply reserve for his/her domestic needs. Bamboo reserve forest, called *Mauhak*, also falls into this category. The right to access the supply reserve extends to all alike without discrimination but on the condition that the person is in real need of it for domestic use. The possibility of commercial exploration is thus forestalled in the principle of use.
- c) Every village has their own *burial ground* within the vicinity of the village site which is maintained by the community. All members of the village community have equal access to it.
- d) Local NGOs (like YMA, MHIP, etc.) in many villages also keep certain areas as reserved forest in their effort to conserve natural resources and the environment. They have been successful in the management and protection of these reserved forests.

### 3. Allotment of *Jhum* Land

37. The process of allotment of *jhum* plot to each household is normally undertaken in three phases as follows:

- i) Firstly, the Village Council assess the number of households who intends to have *jhum* in the coming year. After knowing the number of households who need land, the VC calls a meeting of knowledgeable persons (based on their knowledge of the village lands) and *Val Upa* (village elders) to earmark plot of land sufficient to accommodate all the families who want to have *jhum* in the coming year. The land so earmarked is called *zau*. Once identified, nobody is allowed to visit this land (*zau*) until it is distributed to the households through draw of lots and subsequent plot selection, locally called *lo chhang*.
- ii) Secondly, the VC calls a village assembly for the allotment of *jhum* plot. In it, all the households randomly pick a number under the supervision of the VC. The allotment of *jhum* plot is done based on the numbers drawn/picked by the farmers. An individual who picked No.1 would be the first to choose his *jhum* plot from the entire area already earmarked *jhum* land for the next year (called *zau*). He is permitted to choose any place he likes as long as it

is within the *jhum* land. However, he must give consideration to natural boundaries like drainage, streams, etc. (called *Khuanu Ri Kham Sa*). He will be followed by the one who picked No.2 who can select any place except the area already selected by No.1 holder. The process goes on until all the households select their *jhum* plot. At the same time, if an individual draws a high number, he has to sit and note all the areas already selected by those before him (those who hold a lesser but stronger number) while waiting for his turn so that there would be no duplication in land allotment. As such, they cannot leave the hall but have to be present throughout the day to wait for their turn. The exercise could last from 10AM in the morning till midnight, depending on the number of households in the village.

- iii) Thirdly, the plots of land selected and earmarked have to be demarcated and boundaries have to be identified by each household with their neighbours under the supervision of VC. Normally, no major problems or disputes arise in the allotment and demarcation of *jhum* lands.

#### 4 Government Land

38. Government lands are classified into the following categories:

- a) *District Council (State) Reserve Forest*, which is exclusively owned and protected by the government from acts of felling of trees, setting fire, and clearing and breaking up of land for any purpose is prohibited in such areas. *Riverine Reserve Forest* and *Roadside Reserve Forest* come under this category.
- b) *Protected Forest*. Under the provision of the Forest Act, the government can declare any part of communal or community land to be a *protected forest area*, within which private access is restricted. Clearing of any portion of such lands or extracting any material for private use without prior permission of the government is prohibited.
- c) *Wildlife Sanctuary*. In order to make the people aware of the impending threat of wildlife, the state government has notified wild life sanctuaries. Table 18 presents the existing status of various categories of reserved forests in Mizoram.

**Table 18: Areas under various categories of reserved forest in Mizoram, 2011**

Sl. No	Type of Forest	Area (in Sq. Km)
<b>A</b>	<b>State Owned Forest</b>	<b>6192.08</b>
1	Riverine Reserved Forest	1832.50
2	Inner Line Reserved Forest	570.00
3	Roadside Reserved Forest	97.20
4	Other Reserved Forest	1963.63
5	Wildlife Protected Areas	1728.75
<b>B</b>	<b>District Council Forests</b>	<b>2562.00</b>
<b>C</b>	<b>Total Reserved Forest</b>	<b>8754.08</b>

Source: *Economic Survey 2015-16*, Dept. of Planning & Prog. Implementation, Govt. of Mizoram

#### 5. Private Land

39. The Mizoram (Land and Revenue) Rules, 2013 states that allotment of land for agricultural purposes is to be made either by periodic patta or by land lease for specific tenure and for specific purposes (e.g. commercial plantation, horticultural farming, etc.). When applying for a P. Patta, a No Objection Certificate (NOC) from the concerned Village Council is required. The P. Patta is valid for 5 years, is renewable, and can be converted to an Agricultural Land Settlement Certificate (LSC or ALSC) with consideration of the quality of land use, annual revenue payment, and validity of the patta. At the same time, the ALSC holder has absolute ownership, heritable, and transferable rights, but is required to pay land revenue every year. It may also be noted that The Rules 2013 do not give authority to the Village Councils for land settlement. The VC is authorised to allot house pass in the villages, while house pass in the notified urban towns is issued by LR&S Department. Lands allotted for the purpose other than agriculture are given land title called *Land Settlement Certificate (LSC)*,

while *Land Lease* is to be issued by the Department for specific purposes. It may also be noted that the Mizo District (Transfer of Land) Act 1963 forbids any transfer of land to a non-tribal.

40. In spite of the existing statutory provisions on land administration, majority of the private lands within the villages visited during the field data collection are allotted by the concerned VC and held in the form of VC Pass. More than 65% of the agricultural lands are held in VC Pass, while Periodic Pass or Patta (P. Patta) constitutes 30.97% (Table 19). In line with the statutory provision that the VC is authorised to allot housing site and house pass in the village, almost 80% of the houses are VC pass. However, the share of VC pass is more than 92% for house garden, for which the VC has no authorisation.

**Table 19: Land holding status in select 4 districts of Mizoram**

Land Categories	% of holdings				
	LSC	P. Patta	VC Pass	No Pass	Total
House Site	8.80	4.00	78.40	8.80	100
House Garden	4.88	2.44	92.68	0	100
Agriculture & other lands	0	30.97	65.81	3.23	100
Total	4.05	16.82	74.14	4.98	100

Source: Household Sample Survey, March-April 2017

**Table 20: Acquisition of Current Lands by the Households in the select Districts**

Land Categories	% of holdings				
	Fresh	Purchased	Inherited	Others	Total
House Site	60.61	18.18	13.64	7.58	100
House Garden	56.60	20.75	15.09	7.55	100
Agriculture & other lands	64.08	19.01	11.27	5.63	100
Total	61.47	18.96	12.84	6.73	100

Source: Household Sample Survey, March-April 2017

41. A major problem in other parts of the country, especially in urban areas, is landlessness among people due to the possession of large areas of land by the rich and well to do families. The poor households without stable income sources are forced to sell their land to the rich due to unexpected expenditure requirements. To gauge the extent of the presence of land market in the areas, households were asked how they attained their existing lands (Table 20). More than 60% of the land holdings are freshly allotted by the authority (normally VC), and the percentage is highest for agriculture lands (64.08%). In fact, land market is not completely absent in the areas, as almost 20% of the lands are purchased. At the same time, inherited lands constitute 12.84% of the total land holdings.

## 6. Land Use and Agricultural Land Holdings

42. The land use system of Mizoram has undergone significant changes during this 10-year period (Table 21). One clear observation from this table is that the net sown area has increased by 73.3% and net irrigated areas also increased by 38.2% during this period. The areas of land under miscellaneous tree crops jumped up by more than 200%. This includes areas under trees, thatching grasses, bamboo bushes, and other groves. Meanwhile, fallow lands have decreased by 3.6% for current fallow and 8.7% for other fallow lands. The changing land use observed in this table reflects the pressure of increasing population on land for cultivation, and the increase in land use for settled cultivation side by side with declining intensity of shifting cultivation.

**Table 21: Land Use Statistics in Mizoram**

		<i>in Thousand Hectares</i>		
SN	Major Land Use Categories	2004 – 05	2014 - 15	change (%)
1	Geographical Area	2108.1	2108.1	0
2	Forest Area	1593.65	1585.31	-0.5
<b>3</b>	<b>Not Available for Cultivation</b>			
	Land put to Non Agricultural use	125.51	42.00	-66.5
	Barren and inculturable Land	8.52	7.45	-12.6
<b>4</b>	<b>For other cultivated Land excluding fallow Land</b>			
	(a) Permanent pasture and other grazing Land	5.35	4.25	-20.6
	(b) Land under miscellaneous tree crops and groves not included in net Area sown	10.23	32.05	213.2
	(c) Culturable waste	5.00	5.70	14
<b>5</b>	<b>Fallow Land</b>			
	(a) Fallow Land other than current fallow Land	181.20	165.37	-8.7
	(b) Current fallow Land	49.97	48.15	-3.6
6	Net Area Sown	123.56	214.18	73.3
7	Net Area Irrigated	11.85	16.38	38.2

Source: *Basic Statistics of Mizoram 2015*, Directorate of Economics & Statistics, Govt. of Mizoram

43. More than half of agricultural holding in Mizoram (54.65%) are marginal holdings (below 1 ha), and small holdings constitute 32.38% (Table 22). In terms of district-wise land holding, similar state patterns are seen (Table 23), with percentage of marginal holdings being highest in Serchhip district (55.57%) followed by Champhai (47.67%), while Champhai has the highest percentage of holdings less than 2 hectares (90.86%) followed by Serchhip (83.03%).

**Table 22: Number of Agricultural Holdings in Mizoram (Agricultural Census)**

Year	Marginal	Small	Semi-Medium	Medium	Large	All sizes
<b>No. of Holdings</b>						
1976-77	16682	19622	10586	1688	101	48679
1980-81	15651	19146	10380	1399	21	46597
1985-86	20692	18098	10967	1284	81	51122
1990-91	28538	23039	8736	717	--	61030
1995-96	27674	25656	11752	730	9	65821
2000-01	33695	27973	12539	1258	58	75523
2005-06	43382	31061	13744	1443	36	89666
2010-11	50210	29753	9922	1731	264	91880
<b>Percentage share</b>						
1976-77	34.27	40.31	21.75	3.47	0.21	100
1980-81	33.59	41.09	22.28	3.00	0.05	100
1985-86	40.48	35.40	21.45	2.51	0.16	100
1990-91	46.76	37.75	14.31	1.17	0.00	100
1995-96	42.04	38.98	17.85	1.11	0.01	100
2000-01	44.62	37.04	16.60	1.67	0.08	100
2005-06	48.38	34.64	15.33	1.61	0.04	100
2010-11	54.65	32.38	10.80	1.88	0.29	100

Source: Directorate of Economics & Statistics, *Statistical Abstract of Mizoram, 2015*, Govt. of Mizoram

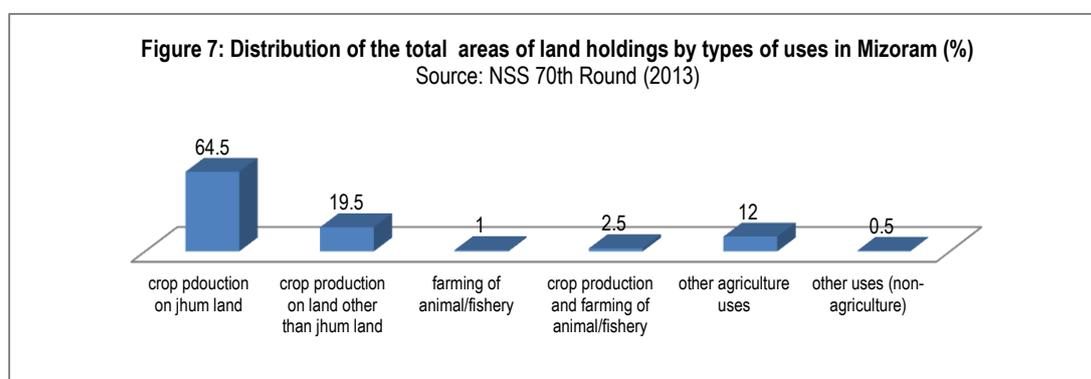
*Note: Marginal (below 1 ha), Small (1-2 ha), Semi-Medium (2-4 ha), Medium (4-10 ha), and Large (10 ha & above)*

**Table 23: District Wise Number of Agricultural Holdings in Mizoram (Agricultural Census)**

2010-11						
District	Marginal	Small	Semi-Medium	Medium	Large	All sizes
<b>No. of Holdings</b>						
Mamit	4304	3294	2069	633	138	10438
Kolasib	2183	1451	1566	615	110	5925
Champhai	9629	8724	1657	190	0	20200
Serchhip	4130	2041	1086	165	10	7432
<b>Percentage share</b>						
Mamit	41.23	31.56	19.82	6.06	1.32	100
Kolasib	36.84	24.49	26.43	10.38	1.86	100
Champhai	47.67	43.19	8.20	0.94	0.00	100
Serchhip	55.57	27.46	14.61	2.22	0.13	100

Source: Directorate of Economics & Statistics, *Statistical Abstract of Mizoram, 2015*, Govt. of Mizoram

*Note: Marginal (below 1 ha), Small (1-2 ha), Semi-Medium (2-4 ha), Medium (4-10 ha), and Large (10 ha & above)*



44. The data of agricultural land holdings with respect to different types of uses as observed in the 70<sup>th</sup> Round of NSS (2013) is presented in Figure 7. The extensiveness of *jhum* cultivation in Mizoram can be clearly observed from this Figure as more than 64.5% of the total areas of land holdings was used for ‘crop production on *jhum* land’. Meanwhile, cultivation of crops on land other than *jhum* land also contributed a substantial area of 19.5%, while other agricultural uses constituted 12%.

## 7. Household Land Ownership

45. The average size of total land ownership, cultivated and irrigated areas, across the different districts of Mizoram are presented in Table 24. An estimated number of more than 1.1 lakh households possess land for cultivation. As already noted, the average size of land owned by the households is very small at 1.67 acres (less than 1 hectare) in Mizoram. Among the study areas, the size is highest at 3.21 acres in Serchhip, followed by Kolasib (2.29 acres) and is the lowest in Champhai district (1.59 acre). The average land size of the study districts is 2.23 acres, which is well above the state average and the average of the remaining 4 districts (1.44 acre).

**Table 24: Sizes of lands owned by the households in Mizoram**

District	Estd. No. of Households	Average Areas (Acre)			% to total land	
		TT Land Owned	Cultivated	Irrigated	Cultivated	Irrigated
Mamit	14168	1.83	1.17	0.06	118.58	3.18
Kolasib	6205	2.29	1.93	0.00	84.44	0.00
Champhai	13433	1.59	1.65	0.01	103.71	0.70
Serchhip	7476	3.21	2.12	0.03	66.09	0.86
Aizawl	15770	1.62	1.32	0.00	81.24	0.00
Lunglei	19298	1.39	1.19	0.00	85.59	0.00
Lawngtlai	19094	1.22	1.00	0.00	81.96	0.00
Saiha	10390	1.54	1.36	0.01	88.29	0.39
Mizoram	105835	1.67	1.49	0.01	88.97	0.70

Source: Calculated from Primary Data of NSS 68th Round (2011-12)

46. It may be worthwhile to examine the relationship between the size of land owned and household's socio-economic conditions. Table 25 presents the average size of land holding between the poor and non-poor, and male-headed and female-headed households. Firstly, poverty status of the households does not affect their access to land. This is clearly indicated by the fact that the size of land held by the BPL households is larger than that of APL households. A more or less similar observation was already cited in Chapter 2 in which it was stated that access to land is not a big problem for the people in rural areas of Mizoram, poor or non-poor, but the problem lies in its fruitful utilisation. There is, however, a clear difference between the two groups when we look at the distribution of the households over the 5 groups of land holdings where those who have more than 5 acres constituted 13.24% in case of APL (Table 26).

**Table 25: Average size of land owned by different status of the households**

District	Status (area in acre)		Family Head (area in acre)		% Female headed Households
	BPL	APL	Male	Female	
Mamit	2.49	1.39	1.85	0.87	2.06
Kolasib	3.49	2.08	2.40	0.29	5.34
Champhai	2.18	1.38	1.59	1.65	4.60
Serchhip	1.49	4.17	3.68	1.23	19.06
Aizawl	1.41	1.69	1.63	1.57	13.02
Lunglei	1.60	1.31	1.40	0.97	6.93
Lawngtlai	1.36	1.11	1.25	0.10	3.37
Saiha	1.98	1.20	1.54	0.00	0.00
Mizoram	1.83	1.60	1.70	1.17	6.36

Source: Calculated from Primary Data of NSS 68th Round (2011-12)

**Table 26: Distribution of the size of land holdings in the selected 4 districts of Mizoram**

area (acre)	poverty status (%)		gender of HH (%)		Total (%)
	BPL	APL	Male	Female	
< 1.5	34.56	54.92	46.35	79.79	48.53
1.5--2.5	34.02	16.12	22.30	13.61	21.74
2.5--3.5	2.50	11.85	9.33	3.08	8.92
3.5--5	28.92	3.86	12.30	3.52	11.72
5&<	0.00	13.24	9.72	0.00	9.09
Total	100	100	100	100	100

Source: Calculated from NSS 68th Round (2011-12)

## 8. Cropping System

47. The main cropping practices in the study areas of four districts are presented in Table 27. It may be noted that one household can cultivate several crops simultaneously in the same plot of land, and thus, the number of cases reported can be significantly greater than the number of households covered by the survey. Due to the greater diversity of crops cultivated by the farmers for own consumption in their *jhum* land, it is not practicable to capture all the crops they cultivated during the reference period. So, the field study considered only the major crops grown by the households in terms of production and income earned from it.

**Table 27: Cropping Practices in Selected District of Mizoram**

cultivation system	No. of reported cases			Percentage of cases		
	Single Cropping	Mixed Cropping	Total	Single Cropping	Mixed Cropping	Total
<i>Jhum</i>	91	242	333	27.33	72.67	100
WRC	18	13	31	58.06	41.94	100
Terrace	5	4	9	55.56	44.44	100
Plantation	25	48	73	34.25	65.75	100
Other Settled Cultivation	22	73	95	23.16	76.84	100
Total	161	380	541	29.76	70.24	100

Source: Household Sample Survey, March-April 2017

48. Mixed cropping is adopted by a significant number (70.24%) of the farmers (Table 28) with settled cultivation having the highest practice of mixed cropping, while Table 29 provides different sources of seeds for cultivation. Over 89% of seeds for *Jhum* comes from farmers' own seeds systems.

**Table 28: Major Crops Under Different Cultivation System in Mizoram**

<b><i>Jhum</i> (Shifting) Cultivation</b>			<b>Settled/Plantation</b>			<b>Terrace &amp; WRC</b>					
S	N	Crops	cases	S	N	Crops	cases	S	N	Crops	cases
	1	Paddy	85		1	Orange	34		1	Paddy	13
	2	Ginger	73		2	Banana	22		2	Ginger	4
	3	Chilli	44		3	Betelnut	19		3	Chilli	2
	4	Maize	19		4	Broom	13		4	Colocasia	2
	5	Brinjal	19		5	Mango	12		5	Sugarcane	1
	6	Colocasia	16		6	Zawngtah (sting bean)	11		6	Kiwi Fruit	1
	7	Mustard Leaf	13		7	Pineapple	10		7	Passion Fruit	1
	8	Tobacco	12		8	Oil Palm	6		8	Mustard Leaf	1
	9	Broom	8		9	Lemon	5		9	Pumpkin	1
	10	Pumpkin	6		10	Mulberry	5				
	11	Sesamum	6		11	Passion Fruit	5				
	12	Other Gourds	5		12	Tea	5				
	13	Pumpkin Leaf	4		13	Sugarcane	4				
	14	Soyabean	4		14	Khanghu	4				
	15	Cucumber	3		15	Kawhtebel	4				
	16	Bitter Gourd	2		16	Rubber	4				
	17	Green Chilli	2		17	Grape	2				
	18	Cow Pea	1		18	Teak	2				
	19	Turmeric	1		19	Other Citrus Fruits	1				
	20	Tapioca	1		20	Kiwi Fruit	1				
	21	Cow Pea Leaf	1		21	Papaya	1				
	22	Flower	1		22	Groundnut	1				

Source: Household Sample Survey, March-April 2017

**Table 29: Sources of Supply and Quality of Seeds**

Sources/Perception	Percent					
	<i>Jhum</i>	WRC	Terrace	Plantation	Other Settled Cultivation	Total
<b>a) Sources of seeds</b>						
Farm Saved	89.19	64.52	33.33	32.88	44.21	71.35
Exchange	2.40	9.68	22.22	6.85	5.26	4.25
Purchase	2.10	9.68	33.33	47.95	29.47	14.05
Govt. Assistance	2.40	9.68	0.00	9.59	14.74	5.91
Others	3.90	6.45	11.11	2.74	6.32	4.44
Total	100	100	100	100	100	100
<b>b) Farmers' on seeds quality</b>						
Good	87.39	58.06	33.33	61.64	83.16	80.59
Satisfactory	12.31	38.71	66.67	34.25	12.63	17.74
Poor	0.00	0.00	0.00	1.37	3.16	0.74
Don't Know	0.30	3.23	0.00	2.74	1.05	0.92
Total	100	100	100	100	100	100

Source: Household Sample Survey, March-April 2017

## 9. Profitability Analysis of Cultivation

49. Shifting cultivation dominated the entire agricultural system in Mizoram in the past, and continues to be an important feature of agriculture in the state though the trend is changing. More than 64% of the total agricultural lands are used for cultivating *jhum* crops, while settled cultivation in the form of plantation and other allied activities have emerged at a fast rate through the initiatives of the state and central governments. Benefit cost ratio is highest for ginger in *jhum* cultivation (over 14.0), while for banana it is 10.40 for settled cultivation (Table 30). The return or income has been calculated per acre, rather than hectares<sup>6</sup>. On an average, in the field study the Benefit-Cost Ratio (B-C Ratio) is found to be higher for *jhum* crops than crops under settled cultivation.

**Table 30: Cost and Benefits Conditions of selected crops under *Jhum* and Settled Cultivation**

Crop	Rough Exercise					
	Shifting Cultivation			Settled Cultivation		
	Paddy	Ginger	Chilli	Orange	Betel nut	Banana
Ave. Cultivation Area (Acre)	1.60	1.26	1.27	1.17	1.25	1.39
<b>Cultivation Cost</b>						
seeds (INR)	141.4	750.0	300.0	230.0	500.0	537
labour (INR)	2500	2500	2500	3000.0	1500.0	1500.0
fertilizer (INR)	0.0	70.0	0.0	0.0	0.0	117.1
pesticides (INR)	30.3	65.0	0.0	55.6	0.0	214.3
total cost (INR)	2671.7	3385.0	2800.0	3285.6	2000.0	2368.6
total cost/Acre (INR)	1667.6	2688.1	2204.3	2816.2	1600.0	1700.5
<b>Income</b>						
production	113.3	3392.4	130.6	7811.1	9250.0	13500.0
price (INR)	150.0	15.0	250.0	4.0	1.3	2.0
total income (INR)	16992	50885	32655	31244	11563	27000
income/Acre (INR)	10606	40409	25708	26781	9250	19385
Net Income/Acre (INR)	8939	37721	23503	23965	7650	17684
<b>Benefit-Cost Ratio</b>	<b>5.36</b>	<b>14.03</b>	<b>10.66</b>	<b>8.51</b>	<b>4.78</b>	<b>10.40</b>

Source: Calculated from Primary Data of Field Survey, March-April 2017

<sup>6</sup> If the net income per acre is INR10606, then the return per hectare would be INR26515.

Note: (1) Since mixed cropping system is normally adopted under shifting cultivation, the total labour cost is reduced into one-third of the reported expenses to give allowance to other crops being cultivated in the land.  
 (2) measurement units are: paddy = Tin, ginger & chilli = Kg, orange, betel nuts & banana = Nos.  
 (3) settled crops like orange, banana and betel nuts are not expected to require seeds as the analysis considered only the matured trees. But to give an allowance to normal plant loss certain amounts are added  
 (4) average quantities of cultivation areas, price, production, etc. calculated from the household survey data are used as basis estimation and calculation.

## 10. Marketing and Post-Harvest Practices

50. Over 80.0% of *jhum* crops are used for local consumption including own consumption and sale within the village, while sale in other market stations constitute only 16.57%, and outside the state that of 2.76% (Table 31). Market perception analysis has shown poor to satisfactory nature of the market system and collection prices, while 'very satisfactory' constituted less than 20% in all cases except in plantation. Market perception showing lower than satisfactory and unsatisfactory constituted 45.26% in *jhum*, 11.43% in plantation, and 51.06% for other settled cultivation. It may be concluded that market access and good prices for their produce are perceived by farmers to be among the most serious problems faced by the farmers under shifting cultivation.

**Table 31: Market Conditions of the Farmers under Cultivation System**

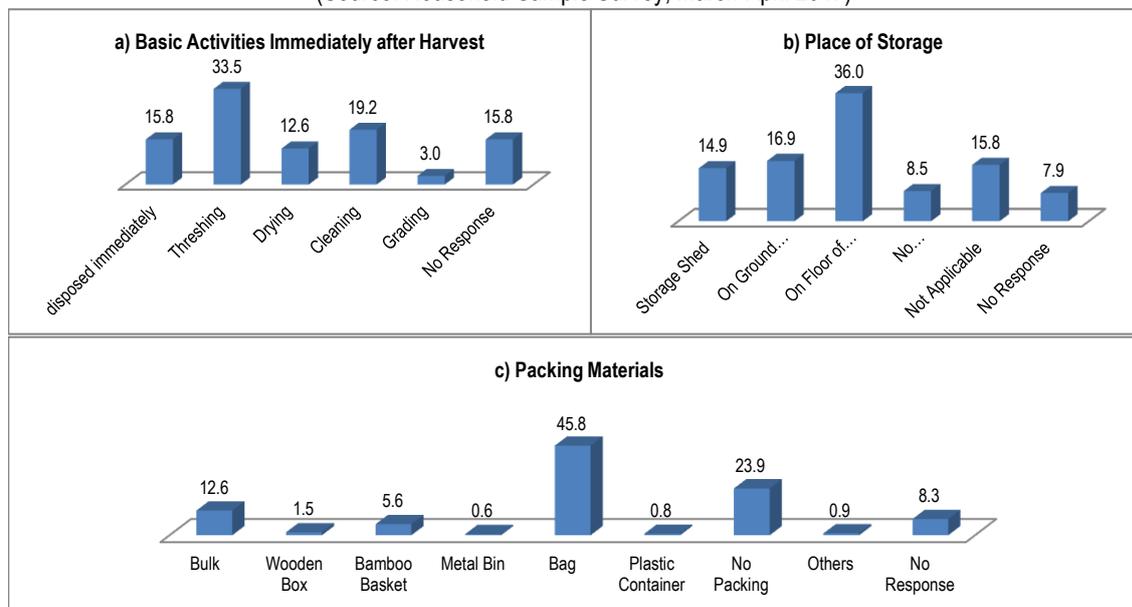
Sources/Perception	Percent					
	<i>Jhum</i>	WRC	Terrace	Plantation	Other Settled Cultivation	Total
<b>a) Market Destination</b>						
Local Consumption	80.66	70.59	100	62.86	44.68	72.28
Market Station Within the State	16.57	11.76	0	25.71	55.32	23.51
Outside the State	2.76	17.65	0	11.43	0	4.21
<i>Total</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>
<b>b) Market Perceptions</b>						
Very Satisfactory	8.42	18.75	0	42.86	10.64	13.36
Satisfactory	46.31	37.50	50	45.71	38.30	44.52
Lower than Satisfactory	19.47	25	25	2.86	25.53	18.84
Unsatisfactory	25.79	18.75	25	8.57	25.53	23.29
<i>Total</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>

Source: Household Sample Survey, March-April 2017

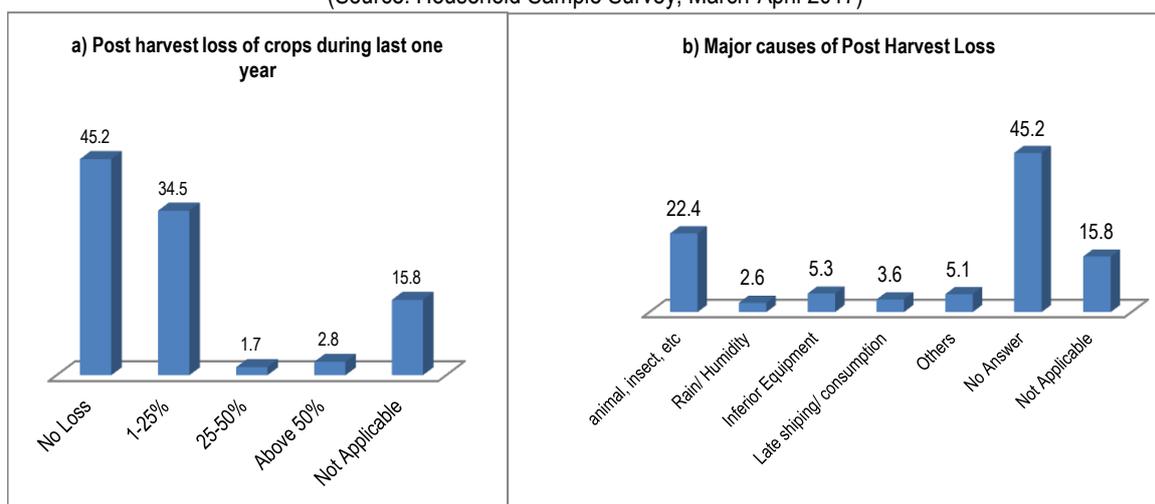
51. Figure 8 presents the scenario of post-harvest management activities for agriculture crops and tools or equipment in Mizoram. The major activities undertaken immediately after harvest are threshing (33.5%), cleaning (19.2%), and drying (12.6%). Figure 9 reflects the post-harvest loss in Mizoram.

52. The extent of post-harvest loss and its causes as observed in the survey are presented in Figure 3.4. Interestingly, 45.2% of the cases reported that there was no post-harvest loss, and 34.5% lose below 25% of the total produce, while those which lose more than 50% constitute only 2.8% of the cases. Among the reasons cited for post-harvest loss, animal, rodents, insects, etc. contributed 22.4% of the cases, while inferior equipment and late shipping or late consumption (long storage period) contributed 5.3% and 3.6% of the cases respectively.

**Figure 8: Post harvest activities and equipment for agriculture produces in Mizoram**  
 (Source: Household Sample Survey, March-April 2017)



**Figure 9: Post Harvest Loss of Agriculture Produce in Mizoram (% of cases)**  
 (Source: Household Sample Survey, March-April 2017)



### 3.11 Livestock Farming Activities

53. Piggery is the most popular livestock rearing in the programme districts (over 68%). However, bee keeping appears to be the most profitable livestock activity (Table 32).

**Table 32: Household Income from Livestock Business in Select Districts of Mizoram**

Animal / Products	Households Involved		Ann. Expenditure (INR/HH)		Rural Ann. Income (INR/HH)	
	No	Percent**	Initial	Maintenance	Total	Net
						Income
1. Dairy / Milk Cow	5	3.3	7700	430	32850	24720
2. Poultry	16	10.7	1169	1450	4931	2313
3. Piggery/other animals	103	68.7	4956	1432	20219	13831
4. Fisheries	9	6.0	4744	2667	19494	12083
5. Bee Keeping	1	0.7	0	0	60000	60000
Total / Average	134	89.3	3714	1196	27499	22589

Source: Household Sample Survey, March-April 2017; \*\*percentage out of 150 sample households

## 12. Households dependency on forests

54. Rural households heavily depend on the forest for cooking since 90.7% (Table 33) of the households contacted obtained firewood from the forest and the average number of firewood chips obtained per household turned out to be as much as 4514 in a year. Secondly, river products are also significant as 19.3% of the households obtained such commodities, and the average quantity obtained by these 29 households turned out to be 19 kg. Thirdly, bamboo is also another important forest resource used by the households. 12.7% reported to have obtained 759 nos. of bamboo on an average. Lastly, majority of the forest products or resources are taken by the households from community land (65.5%), while forest resources obtained from own land (land owned by the households) contributed as much as 34%.

**Table 33: Households' Dependence on Forests in Select Districts of Mizoram**

Forest Products with measurement Units	Reported Households		Average Quantity	Sources (%)			
	No of HH	% out of 150 HH		Own Land	Community Land		
					Community Land	Others	Total
1. Timber (Nos.)	12	8.0	134	16.7	83.3	0	100
2. Firewood (Nos)	136	90.7	4514	43.4	55.9	0.7	100
3. Bamboo (Nos)	19	12.7	759	36.8	63.2	0	100
4. bee & insects (Kg)	4	2.7	2	50	50.0	0	100
5. Honey (Bottle)	3	2.0	4	100	0.0	0	100
6. River products (Kg)	29	19.3	19	6.9	93.1	0	100
7. Wild animal (kg)	18	12.0	146	16.7	83.3	0	100
8. Mushroom (kg)	7	4.7	6	14.3	85.7	0	100
Total / Average				34.0	65.5	0.4	100

Source: Household Sample Survey, March-April 2017; HH = Households

## 13. Availability of Agricultural Advisory Services

55. Household access to agricultural extension services and technical advisory services in the study areas are presented in Table 34. Most services seem to be in the form of training for post-harvest and marketing (92%) followed by technical training on farm and crop management (80%)

**Table 34: Household's Access to Agriculture Advisory Services**

Extension/Advisory Services	No. of Households			Percent	
	Not Access	Access all the time	Total	Not Access	Access all the time
1. Technical training for farm management & crop protection	30	120	150	20	80
2. Training on post-harvest management, marketing, etc	12	138	150	8	92
3. Input quality assurance service	150	0	150	100	0
4. Machineries & other material inputs	149	1	150	99.3	0.7
5. Market information services	150	0	150	100	0
6. Weather information	133	17	150	88.7	11.3
7. Soil quality testing facilities	149	1	150	99.3	0.7
8. Other	150	0	150	100	0
Total No. of Cases	923	277	1200	76.9	23.1

Source: Household Sample Survey, March-April 2017

#### 14. Household Perception on *Jhum*

56. The perception of the households on *jhum* from project districts is given in Table 35. In addition, the results of the ranking exercise on the measures as suggested by the respondents for the improvement of the existing practice of shifting cultivation is presented in Table 36.

**Table 35: General Perceptions of Respondents on Shifting (*Jhum*) Cultivation**

Sl. No	Statements	Percent	
		Agree	Disagree
1	It is not possible to produce sufficient food (rice) supply from the existing <i>jhum</i> practice	96	4
2	<i>Jhumming</i> is necessary at least to some extent for family requirements of vegetables, fruits, and other family needs	98	2
3	<i>Jhumming</i> can be made sustainable, and ecologically and environmentally friendly	94	6

Source: Household: Sample Survey, March-April 2017

**Table 36: Ranking of Measures to Improve the Existing Practices of Shifting Cultivation**

Rank	Measures	Scores
1	improved seeds and cultivation technology	92
2	better soil and land conservation technology (block bunding, etc)	90
3	better land use planning and efficient allotment of land so as to avoid fragmentation of <i>jhum</i> land	89
4	smaller <i>jhum</i> size, but more productive system with improved cropping	70
5	use of the same <i>jhum</i> land for 2/3 times with better land conservation technology	69
6	fire prevention	31

Source: Household Sample Survey, March-April 2017

## D. Women and Gender situations in Project Areas and Target Groups

### 1. Women Empowerment

57. To examine the status of Mizoram in respect of women empowerment, the NFHS-4 data have been examined and presented in Table 37. As the report of this survey does not present the performance of various districts, the total figures for the state of Mizoram is the primarily adopted proxy for the four districts under study. In addition, to have better view on the performance of Mizoram, the table also presents an all India average and also the performance of the two (state and national) in 2005-06 wherever information is available that enable us to assess the progress on the indicators.

58. It is impressive to see that the performance of Mizoram is well above the all India average in seven out of eight indicators of women empowerment though for some indicators such as women who worked and were paid in case in the last 12 months, as well as women having a bank account, the situation of rural women in Mizoram is marginally worse than the national average for rural women. Also,, the case of women owning houses or lands, where the percentage of Mizoram (19.7%) is significantly lower than the national average of 38.4%, may need further examination. In the patriarchal Mizo society, properties are normally registered in the name of the father or son (if no father). The observations of the field survey conducted during March-April 2017 also pointed to this result as more than 90% of the households visited stated that household properties (lands, houses, etc.) are registered in the name of the household head or father. However, more than half of the women visited stated that they do have a say in most of the household decision-making at times of purchase of land, crop selection, children education, etc. Thus, the participation of women in the ownership of properties is observed even if they themselves are not registered as owners.

**Table 37: Women Empowerment & Gender Based Violence in Mizoram (15-49 years)**

SN	Parameters	Percent							
		Mizoram				India			
		Rural	Urban	Total	2005-06	Rural	Urban	Total	2005-06
1	Currently married women who usually participate in household decision	95.6	96.3	96.0	97.2	83.0	85.8	84.0	76.5
2	Women who worked in the last 12 months who were paid in cash	21.4	34.0	29.3	28.7	25.4	23.2	24.6	28.6
3	Ever-married women who have ever experienced spousal violence	17.6	16.7	17.0	22.1	31.4	23.6	28.8	37.2
4	Ever-married women who have experienced violence during pregnancy	1.1	2.8	2.1	---	3.5	2.9	3.3	---
5	Women owning a house or land (alone or jointly with others)	27.8	14.9	19.7	---	40.1	35.2	38.4	---
6	Women having a bank or saving account that they themselves use	38.8	68.4	57.4	8.1	48.5	61	53.0	15.1
7	Women having mobile phone that they themselves use	58.2	88.5	77.3	---	36.9	61.8	45.9	----
8	Women age 15-24 yrs who use hygienic methods of protection during their menstrual period	88.6	96.3	93.4	----	48.2	77.5	57.6	----

Source: NFHS-4 (2015-16)

59. An improvement on the indicators of women empowerment could be seen in Mizoram during the last 10 years, i.e. 2005-06 to 2015-16. Percentage of women who worked in the last 12 months and were paid in cash increased by 2.1% in Mizoram, while the same declined by more than 10% at the national level. Similarly, women experiencing spousal violence decreased by more than 23%, and

women who possess bank accounts increased heavily by more than 600%. Although there was a slight decrease in terms of their participation in household decision making (1.2%), the improvement in the parameters of women empowerment is quite substantial in Mizoram.

## 2 Gender Contribution in Cultivation

60. Table 38 presents the average number of persondays used for various agricultural activities in Mizoram, and also presents gender-wise contribution in each activity. To ensure an integrated view, the entire farming activities are broadly divided into two major cultivation system as shifting cultivation and plantation/orchard/other settled cultivation.

**Table 38: Gender Contribution in Various Farming Activities**

Sl. No	Major cultivation activities	Shifting Cultivation (persondays)			plantation/orchard/other settled cultivations		
		Ave. No	M (%)	F (%)	Ave. No	M (%)	F (%)
1	Jungle Clearance, burning & other land preparation	22	87.5	12.9	6	77.7	28.9
2	Seeding/plantation of main crop	19	56.3	44.4	10	62.6	40.6
3	Seeding/plantation of subsidiary crops	11	43.6	54.4	5	53.2	39.7
4	Weeding & crop protection	64	56.2	46.9	44	70.2	30.4
5	Harvesting	23	54.0	46.3	9	59.1	40.6
6	Storage & transportation	12	61.5	38.3	9	61.4	39.7
<b>Total</b>		<b>150</b>	<b>59.9</b>	<b>41.4</b>	<b>84</b>	<b>66.6</b>	<b>34.2</b>

Source: Household Sample Survey, March-April 2017

61. The study observed that, under shifting cultivation, the contribution of males is significantly higher than females in farming activities, except in the case of seeding/plantation of subsidiary crops. On an average, households spend 150 persondays in their *jhum* land in a year, and 84 days for other cultivations (plantation/orchard/other settled cultivations). Female contribution in the total farming activities (in percentage of persondays) of *jhuming* and settled cultivations are 41.4% and 66.6% respectively. The most female friendly activities in terms of their contribution in the total persondays under *jhuming* are seeding of subsidiary crops (54.4%), weeding (46.9%), harvesting (46.3%), and seeding of main crops (44.4%), while jungle clearance was found to be the most male friendly work. At the same time, in case of settled cultivation, female contribution is relatively high in case of plantation of main crops (40.6%), harvesting (40.6%), and storage & transportation (39.7%), while jungle clearance and weeding are the male friendly activities where their contributions are 77.7% and 70.2% respectively.

62. Overall, the situation of women in the state can be summarised as below:

- Women are actively engaged in decision making at the household levels and with regards to agriculture.
- Violence against women is very low in the state and is a strong indicator of gender equality.
- Even though women do may not hold joint titles to land and property they have a major say in such matters. However, effort needs to be made towards promotion of joint titling of land and house.
- In agriculture men and women divide the labour with men involved in forest clearance and women more involved in seeding and harvesting. Both share the drudgery almost equally.
- Collection of firewood and its use in cooking is a predominant cause of drudgery among women. Promotion of LPG Gas is essential to address this and its impact on drudgery as well as health.
- Access to financial institutions is still significantly low in the state, though it has improved in the last ten year. This is largely due to the fact that populations are scattered and in remote areas, which is unattractive for financial institutions and not a major gender issue.

- Women's participation in the public domain exists but there is a scope to improve this.

## **E. Gender Mainstreaming and Poverty Targeting strategies**

### **1. Poverty Targeting Strategy**

63. The analysis above shows that poverty has multiple dimensions in the rural areas of Mizoram namely in terms of access to basic services, connectivity and low incomes. It is also closely associated with the agriculture and natural resources based livelihoods of the rural households. Indeed, the low productivity of production system, the high inputs of family labour for agriculture and the limited options to diversify livelihoods, and the high cost of living in the State, trap households in poverty and render them vulnerable to price shocks on the one hand and to climate change on the other. The FOCUS project will thus address the low productivity and climate vulnerability of the *jhum* and TRC/WRC systems, and diversify the farming system by integrating crops/trees/livestock. The poverty strategy of the project is guided by the following:

- (i) It is proposed to implement the project activities in the districts of, Champhai, Mamit, Serchhip and Kolasib. The remaining four districts of the state, namely Aizawl, Lunglei, Lawngtlai and Saiha, have not been considered as these are covered by implementation of other major projects. The four selected districts have an estimated population of 83,254<sup>7</sup>. The project will be implemented in all the villages of the four project districts. A saturation approach will be followed to ensure comprehensive land use planning for the entire village landscape and provision of support services to address the needs of 77% of the households who are involved in farm activities. In total the project will support 64,500 households comprising a population of 322,500 persons in these districts.
- (ii) The activities that will be all inclusive are the land use planning and the market infrastructure. While the project will adopt a saturation approach ensuring that all households within a village are covered, specific activities/ strategies will be used, where needed, to ensure that the poorest, vulnerable and remote households are included.
- (iii) As regards poverty targeting, for the rural population who perceive themselves as poor, their households will be identified through a PRA exercise that will be conducted with the land use planning. They will be targeted for the agriculture and livestock activities, especially the training of producers, the access to inputs and the participation in the FIG. The poverty targeting will be monitored as the M&E will target the BPL status of the beneficiaries.

### **2. Gender and Youth Mainstreaming in the Project**

64. Gender Mainstreaming: In Mizoram women are significantly engaged in marketing of their produce. The project will ensure full participation of women in capacity building, project planning and implementation. Representation of women is already mandated by State policy and laws in the Village Council (VC), the principal local governance institution at the village level. The participatory processes envisaged for land use planning will include women which will draw them into public life of the village and give a voice in matters related to the community. Women representation will be ensured in all the committees to be established by the project and while selecting beneficiaries of the project interventions. Additionally, the project will take up concrete activities to reduce the drudgery on women, through promotion of LPG gas connections under the government scheme and introduction of mechanisation where possible.

65. Youth mainstreaming: The project design shall develop interventions to involve young women and men in the 18 to 25 year age group in the project activities. Project will engage youth particularly young women as Community Animal Health Workers (CAHWs) by building their capacity through technical training and by providing them handholding support. Opportunities exist for youth to establish production input supply and marketing activities with project support. Youth will also be engaged as VFAs, Lead farmers and Community Resource Persons (CRPs). The project will also

---

<sup>7</sup>As per state statistics assuming growth rate of 13.5% between the 2011 census and 2017.

support civil society organizations such as the Young Mizo Association and other agencies to train youth and provide them with loans to start their own enterprise. The project also intends to establish a Patient Capital modality with a financial institution to ensure flow of credit to farmers in general and youth in particular.

### 3. Gender and targeting strategies in Project Components

66. The project will have three components: (i) Improved *jhum* Management; (ii) Market Access and Value chain; and (iii) Project Management.

Component & sub-component	Key activities	Gender and inclusion targeting strategy in FOCUS (Nagaland)
<b>Component 1. Improved <i>Jhum</i> Management</b>		
<b>Sub-component 1.1 Better <i>jhum</i> and conservation</b>	Land use planning	All adults in the village, both women and men, from all wealth group, participate in the PRA and land use planning
	Better <i>jhum</i>	All <i>jhum</i> producers in a given village are eligible and priority will be given to the poorer groups, taking into consideration gender balance as women are responsible for a major part of the agricultural labour in <i>jhum</i> .
	Conservation	All producers and community leadership are involved in the planning, implementation and supervision of the soil and water conservation works.
<b>Sub-component 1.2 Settled agriculture promotion</b>	<i>Jhum</i> conversion	Interested <i>jhum</i> producers; there is likely to be high demand from youth and adult women.
	Terrace rice cultivation	All producers of the TRC and priority to be given to the poorer groups, taking into consideration gender balance given women's involvement in the agricultural activities.
<b>Component 2. Value chain &amp; market access</b>		
<b>Sub-component 2.1 Value chain development</b>	Production support	Production support is oriented on spices and is likely to attract youth and women given their involvement in marketing and better off HH
	Marketing support	This is related to aggregation of farm produce and would attract the youth and adult women given their role in marketing
	Livestock support services	This activity is geared towards women in particular as the piggery and backyard poultry are done close to the homestead. Mithun rearing is likely to be undertaken by men from poor as well as better off households.
	Innovations	This covers pilot activities around export oriented commodities (outside of the state). This will be of interest to poor and better off farmers, as well as youth and adult women
<b>Sub-component 2.1 Market access infrastructures</b>		This activity is all inclusive of the rural population, however as women tend to be more actively engaged in local marketing they may benefit more from this activity.
<b>Component 3. Project Management</b>	Project Management Structure	The project proposes equal opportunity for staff selection/ appointment to ensure adequate number of women form part of the Project management structure. Preference will be given to women for field based staff.
	Convergence	Convergence with government programmes will

		help in reducing women's drudgery (e.g. LPG gas)
	Monitoring & Evaluation	The M&E system will provide evidence of the results with data disaggregated by gender and by age to show impact on women and youth.
	Capacity building	Capacity building will help in greater and more fruitful participation of women and youth in the project activities.

## Appendix 3: Country performance and lessons learned

### A. Country Programme overview

1. IFAD's cooperation with the GoI spans 28 projects with approx. USD 1 billion in IFAD financing. Of the nine ongoing projects with a total cost of USD1 billion, IFAD financing is USD 431 million, thus making India IFAD's largest country programme.

2. In terms of outreach, 1.6 million households have been reached from 2011 to 2015 corresponding to 8.2 million people who received projects services. Impact surveys show that IFAD funded projects are reducing poverty, with increased income and ownership of assets, increased food security, improved housing, better access to water and hygienic sanitation, and women's empowerment. The allocation of IFAD lending funds for India significantly increased during the period of this COSOP period (2011-16), with the result that recent IFAD loans range in size from USD 50-100 million. The efficiency of the programme has also improved. Recent projects have adopted a saturation approach to targeting to reduce transaction costs in service delivery. Larger loan sizes combined with this saturation approach has also increased efficiency. Efficiency in loan administration has also improved significantly with increase in loan disbursements compared to previous years, and reduced time in processing withdrawal applications. Opportunities to further improve the implementation of IFAD projects include regular follow-up training on M&E and financial management.

### B. Country programme Evaluation and lessons for the design

3. In 2015 the IFAD Independent Office of Evaluation (IOE) carried out the second country programme evaluation (CPE) of the IFAD India portfolio. The CPE found that there is still significant scope for IFAD interventions in addressing rain-fed agriculture in India especially in the context of climate change. IFAD's intervention paradigm continues to be relevant and has positive impact in terms of household assets and income, human and social capital, innovation/ scaling up and moderately satisfactory in other domains. Consistent with present and past COSOPs, projects targeted the lagging states and geographic areas characterised by lower rainfall patterns, low fertility of soils or degraded natural resources base and poor infrastructure (e.g. poor quality of roads, lack of electricity, potable water).

4. The proposed project is aligned with the first recommendation of the CPE i.e. *focusing on disadvantaged areas, particularly in states with large rain-fed areas where effective and innovative approaches can be tested for further replication and scaling up of results*. With *Jhum* being practiced in almost the whole of the North Eastern Region, successful models on effective *Jhum* management in the project area could be adopted by other states in the region.

5. IFAD has accumulated considerable experience in India with a host of lessons emerging from its implementation experience as well as those identified by the CPE. These lessons cover a range of issues regarding the best approach to deal with social and economic inclusion, empowerment, partnerships, targeting, sustainability and impact. Some of the key lessons learned by the overall IFAD programme in India which have specific relevance to the project being designed, include the following:

- a. **Targeting:** Overall, the intervention paradigm with disadvantaged groups is valid as IFAD-funded projects focus on particularly disadvantaged groups among the rural poor, and include the scheduled tribes, scheduled castes, women and the landless as their target group. The targeting of disadvantaged groups in remote areas combined with a "saturation approach" is relevant to the design of the project which focusses on the remote tribal population of the hill districts in the two North Eastern states of Mizoram and Nagaland. The project adopts a saturation approach covering all households in the cluster of villages in 8 districts of Nagaland and all households in the identified 4 districts in Mizoram. Also the identified districts and cluster of villages are contiguous to ensure that management and oversight is less time and cost intensive. The saturation approach also helps avoid portfolio dispersion at the sub-state level which will help in greater management efficiencies too.

- b. Leveraging government resources through Parallel financing and Convergence. Strengthening the linkages with public programmes and collaboration with sub-state and local government entities (also known as “convergence”) with public programmes is particularly relevant in a Middle Income Country like India where government investments for developmental activities are big and where IFAD finances play a catalytic role. All projects approved since the 2010 CPE have embedded this aspect in the design (ILSP, JTELP, LAMP, OPELIP, APDMP). The convergence approach has enhanced the policy engagement opportunities at different level from central to state government and boosted the scaling-up landscape.
- c. The North Eastern states in India have a special status whereby significant investments in the state are made through Centrally Sponsored schemes where the liability on the state is just 10% as compared to other states in the country which have to invest up to 50% from the state resources. FOCUS envisages major co-financing from Government programmes which includes parallel financing from key Centrally Sponsored Schemes under the Agriculture and Allied Sector as well as convergence funds from Rural Development Department. The project will mobilise parallel financing from the following CSSs- Rashtriya Krishi Vikas Yojana (RKVY), Agriculture Technology Management Agency (ATMA), Pradhan Mantri Krishi Synchayi Yojana (PMKSY), Mission on Organic value chain development (MOVCD), National Horticulture Mission and National Mission on oil palm (in case of Mizoram. Additionally MNREGS funds will also be earmarked by the Rural Development Department for convergence with the project in the identified areas. In Nagaland an amount of nearly USD 21 million for parallel financing from these schemes as well as USD 13.08 as convergence from MNREGS is planned. In Mizoram it is USD 19 million through CSS and USD 12.75 million from MNREGS.
- d. Focus on Rain-fed agriculture: The country programme helped raise agricultural productivity and viability of rain-fed agriculture. This is important even beyond the IFAD-funded portfolio, given national constraints of low rain-fed agricultural productivity, water resource management and transition to low-carbon economy. A particularly relevant example is of private sector partnership between cotton farmers of Vidarbha (in CAIM project) with Better Cotton Initiative; promotion of SRI and SWI techniques for enhancing production of rice and wheat; large scale adoption of the Broad Bed and Furrow technique for soil and water conservation etc. Additionally IFAD projects have focussed both on diversifying crops by promoting high value , short duration crops as well as broad-basing the livelihoods opportunities through on and off farm activities to help farmers deal with the weather shocks. In the case of Nagaland and Mizoram the project will focus on improving current *jhum* and improved management of *jhum* fallows through promotion of cover crops, especially the fertility building and leguminous plants during the pre-crop and fallow periods, planting and growing of high value leguminous, timber and fuel wood plants / trees on contour bunds, and better planting material and agronomy for the cultivated crops, and introduction of new and high value low volume crops in the system. The project will also invest in soil and water conservation activities especially suited to hill areas.
- e. Market access: The emphasis on market access and value chains implies: (i) better market access and value chain diagnostics upfront to identify the barriers that smallholder farmers face; (ii) clearer identification of the envisaged role of a project (e.g., enhancing access to market information; facilitating access to wholesale markets; investing on improved processing capacity); and (iii) exploring the interest of private sector operators at the design stage. The FOCUS design lays significant stress on market access and value chain development addressing all the 3 issues identified by the CPE. A detailed value chain analysis study was done prior to the main design and the interest of key private sector players in the region have been explored.

### C. Lessons from Similar projects in the NER and opportunities for scaling up

6. IFAD financing for the development of the NER began in 1999 and so far amounts to USD 102.626 million, spanning four projects, namely NERCORMP-I&II, MLIPH and LAMP<sup>8</sup>. These projects focused on improving management of natural resources, bio-diversity conservation and value chain development to enhance livelihoods of poor rural highland communities in the NER. These initiatives have established IFAD's expertise in reaching underserved and remote areas, working with marginalized socio-economic groups and promoting natural resource management and market linkages for more productive rain-fed agriculture, including in the upland areas inhabited predominantly by tribal communities. This experience continues to be relevant for agricultural and rural development, and rural poverty reduction in India.

7. In addition to NERCORMP, lessons from Odisha Tribal Empowerment and Livelihoods Project (OTELP), a project which was implemented with the tribal communities of Odisha also demonstrates effectively that projects being implemented in remote areas can achieve ambitious targets. The analysis from the Project Completion Report of both these projects lend credibility to the proposed targets of FOCUS. The NERCORMP PCR was carried out in Jan 2017 and the project covered 20,826 households. The Financial analysis yielded FIRR of about 40% for cash-flow before financing. Net incremental income of the households increased several fold from food crops, which increased by 100%. The OTELP PCR was carried out in 2016 and the project covered an estimated 56,180 households. The Financial analysis yielded FIRR of about 26% for cash-flow before financing. Net incremental income of the households increased several fold from food crops, which increased by 140% for these household. These estimates were based only on the interventions that the Project supported.

8. Additionally, the NERCORMP, a project supported by IFAD in two phases and implemented in Manipur, Meghalaya and the hill districts of Assam has demonstrated the effectiveness of community based planning and implementation to usher in more sustainable land use systems. NERCORMP results indicate that unproductive *jhum* fallows have been converted to commercial plantations, including agro-horticultural systems, resulting in productive use of land, higher incomes, reversal of resource degradation and improved local environment. Consequently, income from non-*jhum* activities has increased significantly and *jhum* cultivation per HH decreased to an average of 1.2 acre in 2016 from the baseline (2011) of nearly 2.1 ha. End line survey (2016) showed that the area under *jhum* decreased from 61 percent at baseline in 2011 to about 33 percent in 2016 due to *jhum* land development interventions of the project.<sup>9</sup> FOCUS has been built on this lesson.

9. Aside from IFAD projects, there are significant lessons emerging from the implementation of at least three projects in the two states which demonstrate the effectiveness of a twin approach of promoting better management of *Jhum* on the one hand and gradually shifting towards sedentary agriculture on the other. The projects are NEPED<sup>10</sup>, funded by the India-Canada Environmental Facility (ICEF) during 1995-2006, the Sustainable Land and Ecosystem Management in shifting cultivation areas of Nagaland for ecological and livelihood security (SLEM) funded under United Nations Development Programme (UNDP) – Global Environment Facility (GEF) in Nagaland to introduce modest changes in *Jhum* management practices and the New Land Use Policy (NLUP) Initiative in Mizoram funded by GoM which promotes sedentary agriculture.

10. The project (FOCUS) aims to scale up emerging lessons from these projects, namely, SLEM and NEPED in Nagaland and NLUP in Mizoram. Whereas the former has demonstrated the effectiveness of investing in improved *Jhum* management, the latter has focussed on finding a viable alternative to *Jhum* by promoting settled agriculture. Both approaches have been found to be useful in

<sup>8</sup> NERCORMP I&II (North Eastern Region Community Resource Management Project for Upland Areas) was implemented in the States of Assam, Manipur and Meghalaya whereas MLIPH (Meghalaya Livelihoods Improvement Project for the Himalayas) and LAMP (Livelihoods and Access to Markets Project) are focused on Meghalaya.

<sup>9</sup> Project Completion Report, NERCORMP-II, para 87, page 19

<sup>10</sup> Implemented in two phases, the first phase (1995-2001) was called Nagaland Environment Protection and Economic Development through People's Action and the second phase (2001-06) was called Nagaland Empowerment of People through Economic Development. [https://www.nagaland.gov.in/Nagaland/GovernmentAndPrivateBodies/Department\\_of\\_NEPED.html](https://www.nagaland.gov.in/Nagaland/GovernmentAndPrivateBodies/Department_of_NEPED.html)

addressing issues such as low productivity, forest /soil degradation and poor incomes of farmers. The project will scale up the lessons of these projects in their respective states while also facilitating cross learning and adoption of key lessons across the two states. In addition, the project will also introduce innovative strategies (especially for local processing, storage and market access). As the practice of *Jhum* is common across the entire North Eastern region, the project will also serve as a learning site for all NER states who can explore adoption/ scaling up of one or both of these models.

#### **D. Past and current scaling up opportunities in the country programme**

11. A major cross-cutting theme in the COSOP was the importance of scaling-up successful rural development interventions. Some of the most recent examples of scaling-up in the country programme are highlighted below:

- ILSP: In December 2011, the IFAD Executive Board approved a loan of USD 90 million to scale up successful rural development initiatives in the State of Uttarakhand;
- JTELP: In September 2012, the IFAD Executive Board approved a new project designed to scale-up successful tribal development initiatives in the State of Jharkhand;
- OTELP: In 2011, and as a result of the success of the IFAD programme in Odisha, the State Government agreed to allocate significant additional national funding to scale up OTELP across larger areas of the State. This has added a further 70,000 HHs to the OTELP programme, and brings the total OTELP coverage to 126180 HHs. A supplementary IFAD loan of USD 15 million was approved in December 2013 to support this process.
- OPELIP: In 2013, the State Government of Odisha requested IFAD to assist them with the scaling-up of OTELP activities to the PVTG districts of Odisha. A new project – OPELIP – will be approved by IFAD's Board in 2015 for this purpose.
- LAMP: In 2012, the State Government of Meghalaya requested IFAD to assist with the scaling-up of successful elements of NERCORMP and MLIPH across the State of Meghalaya. A new project – LAMP – has been approved in April 2014 for this purpose.
- TRWEP: The 2018 State Vision Document for Madhya Pradesh foresees scaling-up of TRWEP across the entire State. IFAD has been requested to assist the State Government through the provision of an additional loan of USD 15 million.
- TRWEP: On 19th February 2014, the Chief Minister of Madhya Pradesh organised a major meeting where he announced the scale-up of the Shaurya initiative (undertaken in the Tejaswini project), for the entire state. The government also signed a MoU on the occasion, with UNWOMEN who would be providing technical assistance to the state government in the scale up process. Over 3000 Shaurya members had gathered. In addition to the Chief Minister the State Minister for Women and Child and Minister for Higher Education were also present along with very senior bureaucrats.
- NERCORMP: In January 2014, NERCORMP III was launched, as a six year project funded exclusively by GoI, to expand NERCORMP activities to two new states (Arunachal Pradesh and Manipur) , to benefit over 58,850 households in 1177 villages with an investment of USD 90 million.

## Annex 1: India Country Programme – Key Statistics and Achievements

### Active Country Programme as of 30 June 2016

On-going IFAD financed projects	Approval Date	IFAD Loan USD	Effective Date	Disbursement rate
Orissa Tribal Empowerment and Livelihoods Programme (2 loans)	23 Apr 2002	19,996,000 15,000,000	15 Jul 2003	
Tejaswini Rural Women's Empowerment Programme (2 loans)	13 Dec 2005	39,448,000 15,000,000	23 Jul 2007	85%
Post-Tsunami Sustainable Livelihoods Programme for the Coastal Communities of Tamil Nadu (2 loans)	19 Apr 2005	14,958,000 15,000,000	09 Jul 2007	78%
Women's Empowerment and Livelihoods Programme in the Mid-Gangetic Plains	14 Dec 2006	30,169,000	04 Dec 2009	
Mitigating Poverty in Western Rajasthan Project	24 Apr 2008	30,361,000	11 Dec 2008	55%
Convergence of Agricultural Interventions in Maharashtra's Distressed Districts Programme	30 Apr 2009	40,101,000	04 Dec 2009	39%
North-Eastern Region Community – phase II	17 Dec 2009	20,000,000	12 Jul 2010	97%
Integrated Livelihood Support Project	December 2011	90,000,000	1 Feb 2012	23%
Jharkhand Tribal Empowerment and Livelihood Project	September 2012	51,000,000	4 Oct 2013	8%
Livelihood and Access to Markets Project	April 2014	50,000,000	9 Dec 2014	3%

### 2016 results on overall outreach

Name	Beneficiary HHs (SAR target)	Total persons (SAR target)	actual beneficiary HHs reached 2015	Individuals receiving project services	Source
NE Region	23000	131000	20826	124956	RIMS 2015
Orissa Tribal	75000	338000	203981	954396	RIMS 2015
Tejaswini MH	1120000	6160000	938 336	4694980	RIMS 2015
Tejaswini MP			190441	1047426	RIMS 2015
PT - Tamil Nadu	230000	1150000	131587	103692	RIMS 2015
WELP MGP	108000	540000	52786	149887	RIMS 2014
MPOWER	86880	474670	80030	470432	RIMS 2015
CAIM	286800	1430000	280656	601695	RIMS 2015
ILSP	143400	717000	147756	153312	RIMS 2015
LAMP	191070	1000000	2947		RIMS 2015
JTELP	136000	510000	18526	92631	RIMS 2015
OPELIP	62356	311780	604 173	1	GRIPS

## Appendix 4: Detailed Project Description

### A. Logic of Planned Interventions

1. The design of this project is in consonance with the following nine principles of engagement espoused in the IFAD Policy on Engagement with Indigenous People: (i) cultural heritage and identity; (ii) free, informed and prior consent; (iii) community driven development; (iv) equitable access to land and other resources; (v) building on indigenous knowledge; (vi) environmental issues and climate change; (vii) access to markets; (viii) empowerment; and (ix) gender equality.
2. *Jhum* cultivation and the traditional foods that it produces are one of the cornerstones of the tribal *cultural heritage and identity* in Mizoram and the project is focused on making this system more productive and sustainable. Village livestock also have an important role in traditions and food - often being consumed at festivals. The participatory planning process through elected Village Councils will ensure *free, informed and prior consent*, and a *community driven development* approach.
3. In Mizoram land originally belonged to Chiefs of the villages. With the enactment of Assam Lushai District (Acquisition of Chief's Rights) Act 1954 which was subsequently amended in 1955, chieftainship was abolished and the administration of land and land revenue then passed into the hands of the District Councils. The land of the chiefs was vested to the State and a sum of INR 12.5 million, was awarded as compensation to be distributed among the dismantled Chiefs. The land now is held in trust by the government on behalf of community. Administration of the land at the village level is undertaken by the Village Councils comprising members elected from the community. Village Councils identify and allocate lands for both *jhum* cultivation and sedentary/settled agriculture. However, issuance of periodic patta for 5 years and conversion of periodic patta into land settlement certificate (lease up to 99 years) for the lands allocated by the Village Councils is undertaken by the Revenue Department after obtaining recommendation from the Site Allotment Advisory Boards (SAAB) which are headed by the Chairpersons of the Village Councils.
4. The basic intention of GoM in providing fixed land tenure in the form of lease is to facilitate farmers to make transition from *Jhum* cultivation to sedentary agriculture, as *jhum* imposes high levels of drudgery on farmers. The yield from *jhum* is also declining on account of fertility loss. Unless tenurial security exists, there will be no investment in water harvesting and fertility management, and also in cultivation of high value crops/trees. In order to address these issues, GoM has issued guidelines for providing tenurial security to interested farmers wherein community institutions have been given full powers to allocate the land, fix boundaries for the land and monitor investments so as to recommend issuance of land settlement certificate. As investment in land development is a pre-requisite for issuance of land settlement certificate, landless persons with inability to invest, are usually left out. To ensure inclusion of landless farmers, the project has introduced an intervention to support such households through formation of FIGs. In total, the project plans to support 10,800 landless households covering 5,440 ha of land. FOCUS will address this issue to ensure *equitable access to land resources*.
5. *Building on indigenous knowledge* will be a key to improving both *jhum* cultivation and settled agriculture. There are a number of examples of traditional practices for more productive *jhum* management in Mizoram which provide the basis for the improved practices to be supported by FOCUS<sup>11</sup>. Representation of women is already mandated by state policy and laws in the Village Council (VC), the principal local governance institution at the village level. Women are already fully involved in production and marketing of farm produce. The project will build on this to ensure *empowerment and gender equality*, with full participation in project institutions, capacity building for women, and reduction in their often excessive workload.

---

<sup>11</sup> For example "The Alder Managers, the cultural ecology of a village in Nagaland", Malcolm Cairns, PhD thesis, 2007. Also see Building upon Traditional Agriculture in Nagaland, IIRR, 1999. In Mizoram there is the indigenous Changkham technology - see [https://www.cinram.umn.edu/sites/cinram.umn.edu/files/purama\\_may\\_28\\_2015.pdf](https://www.cinram.umn.edu/sites/cinram.umn.edu/files/purama_may_28_2015.pdf).

### Improving *jhum* cultivation

6. The project will address the issues facing *jhum* cultivation through: (i) better *jhum* cultivation practices that will be both more productive and more sustainable, with an ecological balance being created; and (ii) gradually shifting *jhumia* households to sedentary farming. Both of these approaches, along with more productive wetland rice fields, better plantation crops, improved livestock systems and increased off-farm income, will enhance farmer's income and reduce pressure on land. As farmers seek to increase their income via more market-orientated production, they will need support for marketing, including orientation of production towards what the market needs in terms of volume, quality and price.

7. More productive and sustainable *jhuming* ("better *jhum*") requires a judicious combination of modern scientific knowledge, agricultural technologies and practices in natural resource management with the traditional wisdom and adaptive practices of the highland communities. For instance, farmers already practice certain measures to conserve soils, such as placing wood logs and stones across contours; and this can be augmented by a ground cover of nitrogen-fixing legumes to add to soil fertility, conserve moisture and suppress weeds. Such measures will enable communities to cultivate *jhum* fields for a longer period, thereby restoring the *jhum* cycles to the earlier, sustainable levels of 15 to 20 years. A virtuous cycle can thus be created. Similarly, planting of carefully selected indigenous species of trees and shrubs on *jhum* fallows can reduce soil degradation and increase the biomass for soil fertility restoration and as firewood and timber. This, together with better planting material for *jhum* crops, and judicious introduction of new crops and varieties, will increase household food production and also enable additional sales of surplus produce for cash.

8. The communitarian system of resource governance embedded in the cultural ethos and customs of the highland communities in Mizoram provide an ideal setting to introduce changes into the production systems. The project will support participatory land use planning in each village to enable communities to come up with a rational plan for equitable and sustainable use of natural resources, including reservation of steeper slopes for trees and the establishment of community conservation areas which will be reserved for traditional timber and non-timber forest produce.

### More productive and sustainable settled agriculture

9. As farmers become able to cultivate more productive *jhum* plots for a longer period, and as they invest in planting trees and soil conservation methods, they will be less inclined to shift themselves for cultivation to other plots, and thus the *jhum* will evolve into sedentary farming. Since *jhum* farming is highly labour intensive in cultivation and transport of input and produce (a real burden for women), improvements to enhance productivity and income generation from settled agricultural and livestock enterprises will mean that households will earn considerably more from non-*jhum* activities, and so would reduce the amount of *jhum* they cultivate<sup>12</sup>. With only a limited available area of terraces for wetland paddy cultivation (because topographically it is difficult to create more terraces), settled agriculture on sloping lands, to a large extent would reflect a move to permanent tree and plantation crops, which are produced for sale rather than producing food for subsistence. The approach to support settled agriculture will be to improve soil fertility and crop productivity, and provide access to better planting material (from village level plant nurseries and local seed systems) and other inputs, along with training. Where possible, intercropping with annual crops will contribute to food security and also ensure the continued production of the traditional crops that were previously grown in *jhum*.

10. Particular attention will be paid to the poorest households who may lack resources to invest in settled agriculture. In Mizoram, where there is greater emphasis on transition of *jhum* to settled agriculture, these households will be identified and provided with land titles for a specific area of *jhum* land for conversion to settled agriculture. The project will then provide support for these households for land development and the establishment of long rotation crops. While waiting for the perennials to come up to the productive stage, inter-cropping with annuals for initial years (3-4 years) will also be supported to start up income generation for these families.

---

<sup>12</sup> Not only does settled agriculture require less labour, but a higher share of this labour comes from men.

11. The technologies and methods used in production of the relatively newer crops are often outdated and crops are nowhere near as productive as they should be. Up to now the emphasis for government support has been on getting these crops established rather than on improving their productivity. Standards of crop husbandry are often poor, and pests and diseases are not effectively controlled. In some cases farmers are using dangerous pesticides, such as the Furadan and DDT, therefore, it may well be possible to reduce production costs as well as increase productivity.

12. The household food security will not be overlooked. There is a major opportunity to increase the productivity of wetland rice through integrated soil fertility management, improved irrigation, better seed and improved varieties. Care will also be taken to preserve traditional varieties, many of which fetch premium prices in local markets. Pulses, oilseeds, garlic and maize can be grown after paddy harvest to utilise residual soil moisture and increase cropping intensity. There are also opportunities to grow food crops, especially the local vegetables and grains found in traditional *jhum*, as intercrops in orchards.

13. A number of IFAD-supported and other projects in India have useful experiences in the development of cash and food crops. These include SRI in Andhra Pradesh, Jharkhand, Maharashtra and Madhya Pradesh, cotton, soya beans, pulses and oranges in Maharashtra, and maize, millets and oilseeds along with vegetables in Rajasthan and Uttarakhand. A number of these initiatives have shown the value of practical in-field training along with demonstrations of new technologies (including rainwater harvesting and micro-irrigation), backed up by community provision of services for input supply, hire of small equipment and marketing.

#### Access to value chains

14. This shift from subsistence to commercial production can result in a major increase in household income and improvement in living standards. However, it needs to be accompanied by improved access to markets and better value chain management. If this does not happen, households may revert to *jhum* cultivation<sup>13</sup>. FOCUS-value chain support will aim to address bottlenecks in the production and marketing system, to ensure that farmers are able to produce for specific market opportunities. It will complement and support better *jhum* and the expansion of settled agriculture. For many commercial crops the main market is outside of Mizoram (and also outside of India), and in the absence of well-developed value chains, farmers are unable to realise the full potential of these crops.

15. There is potential to capitalise on *jhum* products, as they being traditional varieties produced under natural conditions (they are effectively organic by default). Markets for such products exist within the state<sup>14</sup>, however to access larger and the distant markets may need some form of certification - such as organic. FOCUS will enable partnerships with external agribusiness and trade organisations to enable access to such markets<sup>15</sup>. Processing of products adds value and can reduce bulk and increase shelf life to make access to external markets easier. There are opportunities to produce ground and packaged spices for local markets and semi-processed (cleaned, sliced and dried) spices for markets outside of the state (providing new opportunities for local youth). Drying is not so easy due to the rainfall pattern, which many a times falls at the time of harvesting some crops. Nevertheless, there is potential to support the development of new approaches and drying technologies - which would also be useful for paddy and maize as well as spices.

---

<sup>13</sup> The design mission saw an example of this in Mizoram, where farmers had taken up grape cultivation for winemaking. This had done well while the state prohibited the sale of other alcoholic drinks, but relaxation of this policy to allow sales of liquor from outside of the state has meant a big drop in demand for locally produced wine. In Hnahlan village, the number of *jhum* households had fallen to only 40 (out of 730 in the village) with the growth in grape production. However, with problems in marketing wine over the last two years, the number of *jhum* households has now increased to 350. The village Grape Growers Association is actively looking for other opportunities such as grape juice, while some farmers are moving into oranges.

<sup>14</sup>[http://www.undp.org/content/india/en/home/library/environment\\_energy/market-development-assessment-for-organic-agri-horticulture-prod/](http://www.undp.org/content/india/en/home/library/environment_energy/market-development-assessment-for-organic-agri-horticulture-prod/)

<sup>15</sup> Contact has already been made with this spices initiative: <https://www.idhsustainabletrade.com/sectors/spices/>

16. FOCUS will develop value chains for selected products. A value chain study<sup>16</sup> carried out as part of the project design process has identified a number of sub-sectors with potential for value chain interventions. These are spices (large cardamom, ginger, chilli, and turmeric), oranges, areca nut, bamboo, vegetables, and pineapple. Based on the potential benefits from improving market linkages, the project will initially focus on turmeric, ginger and chilli in Mizoram - once dried these are non-perishable, low volume and high value products that can stand the cost of transport to more distant markets. At the same time the project will provide marketing support for widely grown cash crops, such as oranges, and bamboo, including support for aggregation and producer organisations, and links with the private sector. With closer proximity to markets (both inside and outside of the state) and a more developed horticultural sector, the potential for value chain and market development is greater in Mizoram, and here the project will also support the establishment of small marketing units in the Department of Horticulture to provide support on policy, market intelligence and planning issues.

17. Market access is also hindered by poor road infrastructure. In Mizoram almost all villages are now connected by all-weather roads, these tend to run along the ridges where settlements are located. Much of the land with good potential for the development of plantation and other permanent crops are in lower valleys, which lack any road access. In response to these needs in Mizoram, the project will invest in access link roads.

18. In Mizoram, funds will be provided to support innovative sub-projects to be implemented by selected government agencies, universities and NGOs. Including value chains, these may focus on *jhum* development, settled agriculture and livestock, and on providing opportunity for youth and women. Some funds may also be allocated for generating knowledge on the evolution and sustainability of upland farming systems and their capacity to respond to climate change.

19. IFAD has extensive experience of value chain development through the projects it supports in India. These include projects in Uttarakhand (off-season vegetables, pulses and millets), and Maharashtra (a wide range of farm products, along with value addition). In Tamil Nadu an IFAD project has successful experience with a patient capital fund.

#### Supporting village livestock development

20. The project will also support livestock production in project villages. Livestock are an integral part of rural livelihoods and traditions, and most village households keep a few pigs and/or chickens. Cattle and goat rearing is also significant in some locations, and in some areas mithun (*gayal - Bos frontalis*) are kept, which has a special place in the culture of north-east India. Pigs are fed on domestic food waste and crop by-products, however, manufactured feeds are also used. Support for pig rearing will enable project interventions to reach most of the households in project villages.

21. The rationale to include livestock in the project is to increase household income, complement directly or indirectly nutrition, reduce dependence on *jhum* cultivation, utilize crop by-products, and to realize new opportunities through improved production technologies, both for livestock and feed production. Villages do not allow pigs to scavenge, and all pigs are housed in pens, generating a significant volume of manure. However, almost no use is made of pig manure, and there is an opportunity to demonstrate improved composting system, including bio-gas production, which can be demonstrated to households to make and use in homestead vegetable gardens and on areas of permanent cropping.

22. The approach for livestock development will be based on the successful “Pashu Sakhi” model.<sup>17</sup> This involves having a trained CAHW in each village, who will provide preventive health services and first aid, as well as advice and information on improved husbandry practices including feeding and housing. The CAHW will act as a link between livestock producers and the Department of Animal Husbandry and Veterinary Services – with the project also providing support to DAHVS. CAHW is expected to charge for their services and become self-sustaining during the project period.

---

<sup>16</sup>Value Chain Analysis Report for Mizoram and Nagaland, Sanjay Kumar Gupta (Value Chain Consultant)

<sup>17</sup> The Pashu Sakhi model has been successfully used by IFAD-supported project in India (MPOWER, Tejaswini MP) as well as other development programmes. See [www.goattrust.org](http://www.goattrust.org) for further details.

In each village the CAHW would be selected from the village community and it is expected that a great majority of them would be women, particularly younger women.

## **B. Components**

23. The project will have three components: (i) Improved *jhum* management; (ii) Value chain and market access; and (iii) Project management and knowledge services.

### **1. Component 1: Improved *Jhum* Management**

24. Agriculture in Mizoram state is practised on hill slopes and terraced low lands. The forest cover has been reduced from over 90% to 88% during the last 25 years due to the practice of shifting cultivation (locally called *jhum*). The quality of forest also depleted during this period. Normally farmers have been farming on hill slopes by clearing forests and preparing the cleared land for rain-fed mixed cropping systems for 1-2 years in Mizoram. They leave the land as fallows and return after 8-10 years to cultivate it the same way for 1-2 years. However, they continue to cultivate wet land rice on the terraced lowlands years after year. The farmers cultivate wet land rice on terraced lowlands called wet rice cultivation (WRC). Villages in Mizoram also have another important multi-purpose resource - the Village Forest. These forests traditionally were protected and used as village safety net forests --water conservation for local domestic uses and as a source of forest produce, including the non-timber forest produce for the community uses (not for commerce). Such resources have dwindled in the recent past, and their rejuvenation/conservation is a necessity to protect water resources and other forest based livelihoods.

25. The main objective of ensuring sustainable agriculture without resorting to *jhum* will be to intensify efforts on: (i) soil and water conservation through mechanical and vegetative methods; (ii) promoting settled agriculture on sloping lands; and (iii) increased rice production from low lands. The project will take into account emerging climate resilient best practices, which include demonstration of technological practices to adapt to current climate risks such as suitable plant genotypes, in situ moisture conservation, run off water management, disease and insect-pest management, and matching cropping systems to current precipitation levels.<sup>18</sup>

26. The project intends to implement agriculture related interventions on *jhum* land taking into account climate change and its impact on food production and livelihoods. The project will take into account climate resilient best practices that are emerging from various research institutions such as, the NICRA programme of ICAR and NAPCC of the Ministry of Environment and Forests. Some of these best practices and innovations that will be introduced include: (i) use of remote sensing capacities to facilitate Village Councils to identify lands appropriate for cultivation and to avoid using steeply sloping lands for *jhum* cultivation, as is prevalent currently; (ii) introduction of fertility management practices using both biological measures and also possibly through the introduction of “nano-nutrient delivery systems”; (iii) use of traditional knowledge in erosion control for ensuring extension of cultivation period from currently one year to at least three years; and (iv) use of better agronomic practices to introduce agroforestry, linear planting, cereal and pulse cultivation to build synergy between crops to maintain soil health on one hand and improved farmer income on the other.

27. The project intends to promote cover crops for soil fertility improvement, fruit trees, fodder crops and timber trees. All the species intended for use are indigenous to Mizoram and have not been reported to have any allelopathic effect on the bio-diversity. The project does not support monoculture and will support only existing crops with better seedlings and package of practices, and introduction of high value tree crops for erosion control which in reality will enhance biodiversity. Village forests and community level seed banks will be promoted for preservation and promotion of local varieties. However, the slash and burn practice (*jhum* cultivation) has significant negative effect on the local bio-diversity and the environment.

---

<sup>18</sup>National Innovations in Climate Resilient Agriculture, Indian Council of Agricultural Research

### **Sub-component 1.1 – Better *Jhum* and Conservation**

28. **Capacity building:** The project will train all the PMU staff on project concept, project activities, implementation modalities and village level plan preparation. Thereafter, the PMU will train all district level staff on project concept, project components and step-wise implementation modalities, including the process of village level micro-plan preparation. Subsequently, the district staff, under the supervision of PMU staff will train the Block/Circle level and village level staff of all the Agriculture, Horticulture, Animal Husbandry and Soil and Water Conservation departments.

29. The project will initially conduct a day long stakeholders' workshop at the district level by inviting all the Chairpersons and Secretaries of Village Councils in the project area to orient them on project goal and project activities with deliberations on the impact of the project. Thereafter, the Chairpersons and Secretaries of Village Councils will be requested to conduct a meeting of the Village Assembly and deliberate as to whether the village wants to take up project implementation. The Village Councils will be requested to submit minutes of the meeting with records noting their willingness, or otherwise for participation in the project. Based on the willingness of the community, the project implementation will proceed.

30. The project will identify a Lead Farmer in each village in consultation with the Village Councils. These Lead Farmers will be trained and supported for establishing nursery and livestock units and will be supported to establish seed banks of local varieties. These efforts will create a cadre of village level workers linked to all the agriculture and allied departments. The project will use the services of existing Agriculture Field Assistants (AFAs)/Soil and Water Conservation Assistants (SCAs) /Veterinary Field Assistants (VFAs) after providing them adequate training.

31. **Land Use Planning:** The project will engage Mizoram Remote Sensing Application Centre (MiRSAC) to assist in the preparation of land use maps and land suitability maps for the four project districts. The project will also prepare land suitability classification maps for each village to enable the project to identify clusters for development of value chains and also crops/plantation suitable to the area. The project will support procurement of GPS for each village and will also build the capacity of MiRSAC in the use of new technology for preparing the land use maps. The project will also support digitization of land records to fix boundaries for the land allotted for settled agriculture. Based on the land use maps and also land suitability classification maps, Village Councils and Site Allotment Advisory Boards (SAAB) will be trained to: (i) identify lands suitable for growing various crops based on the slope, altitude and soil texture, and to allocate land based on this scientific information for *jhum*, settled agriculture and village forest conservation; (ii) fix boundaries for land allocated for settled agriculture; and (iii) decide on the crops to be cultivated to ensure development of economies of scale required for accessing markets.

32. **Better *Jhum*:** *Jhum* cultivation system has two phases: (i) crop production phase; and (ii) fallow phase. The fallow phase is also known as *jhum* cycle. The duration of both, cultivated and *jhum* fallow varies according to the fertility and productivity status of the land. Usually in *jhum* system many crops of different duration, such as rice, chillies, ginger, vegetables, etc. are grown in the same piece of land and in an inter-spread (non-linear) manner. The harvesting of crops is done based on their maturity. Usually the land is cultivated for 1-2 years and after that left fallow for few years. One of the major problems in the *jhum* system is the menace of the large volume of weedy and scrubby growth. Farmers burn this vegetation after slashing. Therefore, it is important to keep the weedy growth suppressed through cover crops. In order to achieve the improvements in *jhum*, it is important to address both the phases - cultivation and the fallow periods simultaneously.

33. The project will focus on improving current *jhum* and improved management of *jhum* fallows, which will give two-fold results. First, it will increase the productivity and second it will lengthen *jhum* cycle, resulting in increased fallows. Based on the land use planning maps prepared with support from MiRSAC, communities will be encouraged to earmark the ridge and steep slopes for permanent tree farming, and side slopes for crop farming along with trees, including fruit trees. The community will be encouraged to create fire lines to prevent the spread of fire outside the land allocated for *jhum*. The

selection of tree species will be decided based on the altitude of the area. Better planting material and agronomy for the crops will be introduced coupled with the introduction of new high value and low volume crops in the system. The project will either maintain or increase the crop diversity in *jhum* that is important for the dietary diversity of the *jhum* farmers. Fertility improvement measures will involve growing of cover crops, especially the fertility building and leguminous plants during the pre-crop and fallow periods, and planting and growing of high value leguminous crops, timber and fuel wood plants / trees on contour bunds.

34. The project will promote Farmer Interest Groups (FIGs) to take up activities related to current *jhum* improvement and fallow *jhum* management. Each FIG will comprise of 10-20 farmers and each member of the FIG will be connected to 20 *jhum* families and these 20 households will be the associates of FIG members. The project will train FIG members and provide project support for implementation of activities.

35. *Current Jhum Improvement*: The FIGs comprising farmers will be encouraged to earmark the ridge and steep slopes for permanent tree farming, and side slopes for crop farming along with trees, including fruit trees. The selection of tree species could be decided based on the altitude of the area. The farmers will be encouraged to create fire lines to prevent the spread of fire outside the land allocated for *jhum*. Farm planning will be undertaken in such a way that high nutrient requiring crops are grown in the first year of *jhum* cultivation and lesser nutrient requiring crops in subsequent years due to the natural decline in soil fertility. Farmers will be trained in all these aspects. The project will support the construction of water harvesting ponds, low cost bunds and trenches that will improve the availability of moisture for the cultivated crops.

36. All *jhum* farmers will be covered in current *jhum* improvement strategy. Each *jhum* farmer will get support for about 25% of their *jhum* plot (estimated at 0.25 ha per *jhum* farmer). This will enable provision of support for all *jhum* farmers and based on the experience from this plot, the farmers will be able to scale up. The support will be spread over three years to ensure that the *jhum* farmers continue cultivation in the same area. During the first year, the project with support from Lead Farmers will form a FIG in each village comprising 10-20 members with each member linked to 20 *jhum* farmers as associate members.

37. The project will promote linear manner planting (proper row and plant spacing) to increase the possibility of using farm implements and to control weed growth. Mulching using local materials, use of nano-nutrients, and planting leguminous plants and the upper edge of the bunds and cereals on the lower edge of the bund to improve farm productivity and income of the farmers will be promoted. The project will support construction of low cost bunds and trenches and water harvesting structures that will improve the availability of moisture for the cultivated crops. Planting of the leguminous crops on contour bunds, such as *Flemingia macrophylla*, *Flemingia semilata*, *Tephrosia candida*, and *Gliricidia maculate* will contribute to improved soil fertility and moisture conservation through leaf fall and mulch, and also explore the possibility of introducing nano-nutrient delivery systems, which will thereby help in stabilizing and improving productivity. Crops/commodities such as, rice, maize, sesame, cowpea, vegetables and other pulses will also be promoted for consumption purposes to add to dietary diversity and to improve nutritional security in addition to fodder trees, tubers, etc, for use as animal fodder and feed. The project will purchase planting material from the Lead Farmers to facilitate progression of nursery activities of the Lead Farmers as business enterprise.

38. The project will support current *jhum* improvement in total 54,400 ha out, of which direct project support will be for 13,600 ha covering some 54,400 households. During second year, the *jhum* households will be required to take up cultivation using their own resources on the same *jhum* plot. During the third year, subject to the FIGs and their associates completing low cost in situ conservation works, taking up cultivation on the same plot using their own resources without shifting to the next *jhum* plot and starting purchase of planting materials from the Lead Farmers, the project will provide additional planting materials to them.

39. **Fallow Jhum Management:** Fallow management in *jhum* is as important as the current *jhum* improvement. Fallow *jhum* management gives benefits for both, in-situ and downstream areas, though its cost is borne by the community at the site. The emphasis will be to grow the soil erosion controlling and nutrient building species rather than allowing the scrubby growth during the fallow periods. Fast growing leguminous plant species will suppress weedy growth, facilitate improving soil fertility and nutrient cycling, reduce soil erosion and improve soil moisture holding capacity. As for the current *jhum* improvement, all households in the village will be covered under fallow *jhum* management.

40. The FIGs promoted for *jhum* improvement will also take up fallow management in the previous *jhum*. Fallow management will facilitate improving soil fertility and reduction in soil erosion. The project will support low cost contour bunding, including log wood bunding, trenching, creating terraces using vegetative strips of fast growing tree species and grasses, such as *Gliricidia*, *Tephrosia*, *Flemingia*, and vettiver / lemongrass. The project will also support seeding the fallows with both, annual and perennial legume cover crops, such as the perennial pigeon pea, *Sesbania speciosa*, *Trifolium alexandrinum*, *Indigofera tinctoria*, and this is expected to stabilize the land and improve soil fertility. These leguminous crops also have significant fodder value. Fallow *jhum* improvement efforts will be monitored to avoid over exploitation and biomass burning during the fallow period. The project will support in total 13,600 ha covering 54,400 households. Each household will get support for 0.25 Ha for fallow management.

41. **Village Forest Conservation:** The village forests remain the vital community asset for protecting water sources, supply of non-timber forest produce (NTFP), and controlling forest fires. Only the dry wood is allowed to be removed from the village forests and no commercialization is allowed for the NTFPs. The village forests in riverine areas are also protected as rivers are used for navigation purposes. However, over a period of time these forests have not been maintained impacting the water sources and availability of water. It is therefore, essential to restore the village forests to meet the above objectives.

42. The project will support the restoration / conservation of village forests, which will involve re-demarcating the village forest boundaries, constructing contours, construction of check dams, protection of water sources, and protection of water sources, raising nurseries and supplying planting material of locally preferred species. Non-structural vegetative measures will also be promoted to recharge springs in the village forests after mapping of the geology, vegetation and data on water availability.<sup>19</sup>

43. The project will support raising nursery and planting of locally preferred species such as, *Parkia timoriana*, *Michella champaka*, *Gamar (Gmelina arborea)*, *Bombax ceiba*, etc. Village Councils will implement this activity. The Village Councils will plan village forest conservation in consultation with the forest department and funding will be provided to the Village Councils for this activity. This activity will cover 5,440 ha (20 ha per village).

### **Sub-component 1.2 – Support to settled agriculture**

44. The project does not directly promote settled agriculture though many farmers have made the transition from *jhum* only production system to *jhum* and settled agriculture mixed system mainly on account of high levels of labour requirement and hard labour on a day to day basis throughout the year, disinterest of younger generation in *jhum* cultivation and the need for cash income. The project will support two aspects related to settled agriculture: (i) the existing settled agriculture comprising terrace rice cultivation in terraces and orchards and plantations in sloping uplands; and (ii) the landless households (households that have access to *jhum* land but not to land with tenurial security).

45. **Support to existing terrace rice cultivation:** The project will support farmers undertaking terraced rice cultivation. The main aim of this will be to increase soil fertility, productivity and cropping intensity, and stabilize productivity. One to two FIGs in each village, comprising of about 10-20 members will be established and supported by the selected Lead Farmer and by the project in each village. FIG

---

<sup>19</sup>ICIMOD -2016- Spring recharge interventions in Nepal

members will be provided training on improved farming systems and better agro-techniques for the chosen crops and production of improved seeds.

46. The main aim of this activity will be to increase soil fertility, productivity and cropping intensity, and stabilize productivity. The project will form FIGs and train them on improved crop husbandry. The project will also promote additional measures for improving soil fertility by growing *Sesbania rostrata* and *Azolla pinnata* under rice cultivation systems.<sup>20</sup> This apart, developing supplementary irrigation system such as lift irrigation, water harvesting ponds for rice cultivation in low land areas will also be supported. The project will select short duration improved local paddy varieties in consultation with KVKs/ATARI. In addition, the project will also support introduction of second crop (pulses/ginger/onion) after rice cultivation, rice-fish cultivation and fish farming in ponds in each of the selected villages depending on the feasibility to undertake this activity. The project will support 10,880 households covering 5,440 ha. Each household with terrace rice cultivation will get support for 0.5 Ha.

47. The project will promote use of improved locally developed paddy varieties, such as CAU-R1, and Komati, or the identified elite lines from the local rice germplasm, including landraces in the selected villages for increasing paddy production. In addition, the project will also support rice-fish cultivation and fish farming in ponds in the selected villages depending on the feasibility to undertake this activity. The possibility of two crops of decent productivity with first crop of lowland rice and an upland crop (e.g. onion, garlic, field pea, lentil, and other legumes) after rice will be explored through proper crop planning using water balance analysis and improved agronomic practices.<sup>21</sup>

48. Support to upland settled agriculture: The project will support existing settled agriculture in uplands by providing them with quality planting material for horticulture crops, such as banana, orange and pineapple, and spices such as black pepper, turmeric and Mizo-chilli to improve the farm productivity and income of the farmers in the short and medium term. High value timber tree species, such as *Mesua ferra*, *Duabanga grandiflora* and / or *Duabanga meluccana*, and *Cedrela toona* will be introduced in the system to add to the farmers' income in the long run. The results of agri-horti-silvicultural systems and other systems piloted by ICAR in the northeast region will be expanded.<sup>22</sup> The project will also support construction of water harvesting ponds and other measures. Project's marketing support interventions under value chain development will support value addition and marketing of crops/commodities. The project will support 5,440 households covering 5,440 ha. Each household with upland settled agriculture will get support for 1.0 Ha.

49. Support to the landless: The current land allocation system for secured tenurial rights favours persons with the ability to invest in land improvement, and horticulture and other permanent crops. It is likely that this system may result in the poorest households not getting access to land with tenurial rights. In order to address this, the project will identify households that are without tenurial land rights in each village and form a FIG. The selection criteria will include household that: (i) have participated in *jhuming* for the last three years continuously; (ii) do not have temporary pass and land settlement certificate for any land other than residential plot; (iii) do not have any member working in the government sector; and (iv) households that are dependent on wage labour for 75% of their income. A FIG in each village comprising about 10-20 members will be established and supported by the Lead Farmer. A land parcel will be identified using the land use maps and temporary pass will be issued for at least 0.5 ha per member. This allocation will be made not individually but for a group as a whole. FIGs will be provided training on improved farming methods, better agro-techniques and improved planting material for horticultural crops and timber and multi-purpose trees. The project will support 10,880 households covering in total 2,720 ha.

---

<sup>20</sup> Effects of *Sesbania rostrata* and *Azolla microphylla* incorporation on transformation of applied zinc and copper in lateritic rice soils with different flooding regimes, B. Mandal, K. Bhattacharya. P. K. Mete and L. N. Mandal. *Biology and Fertility of Soils*, May 1997, Volume 24, [Issue 4](#), pp 394–39

<sup>21</sup> Singh V P, Singh RK, Sastri ASRAS, Baghel SS, Chaudhary JL. 1999. Rice growing environments in Eastern India: An agro-climatic analysis. *Indira Gandhi Agril. Univ. and the International Rice Research Institute*. Pub. Pp 76.

<sup>22</sup> A.K. Singh et al 2012, *Natural Resources Management for sustainable hill agriculture – need for a paradigm shift*

50. The project will fund soil and water conservation works in these selected areas. Measures such as contour bunds, contour trenches in areas not more than 25% slope and construction of water harvesting ponds, wherever feasible to provide for protective irrigation, will be supported and will be geo-referenced. The project will support promotion of integrated farming systems in these lands. The project will also support terracing and bunding in less than 10 % slope areas. This will enable landless households to access land with tenurial rights and develop this land to reduce dependence on *jhum*.

## **2. Component 2: Value Chain and Market Access**

51. *Jhum* improvement, settled agriculture and value chain and market access are clearly interlinked. Many farmers have both *jhum* and settled agriculture (mainly plantations, and lowland rice). The shift is mainly on account of inadequate labour availability for taking up labour intensive *jhum* cultivation and the need for cash income. The project supports improved productivity in both of these two production systems to generate marketable volume. The beneficiaries under Value Chain and Market access will be a subset of beneficiaries under *jhum* improvement and settled agriculture. Production support under Value Chain component is to further increase marketable volume and the marketing support will facilitate aggregation, value addition and linkage to outside markets. Livestock support will also target a subset farmers undertaking *jhum* to increase their income so as to reduce their dependence on *jhum* in its current form which has negative impact on the environment.

52. Horticulture crops are the key cash crops in Mizoram in terms of providing employment generation and cash income to the farmers in the rural areas. The area under horticulture has increased over time and is presently around 1.43 lakh ha with a production of around 7.03 lakh metric tons in 2015-16, including fruit crops, spices and vegetables. These crops are generally grown on *jhum* land which has over a period of time made a transition from *Jhum* to sedentary/settled agriculture. Constraints to the horticultural value chain include: fragmented production and resultant high transaction costs, inadequate availability of fertilizer, quality planting material (seed/seedling), inappropriate/unscientific package of practices, inadequate data on marketable quantity to feed into supply chain, inadequate post-harvest management practices like drying and storage, and limited access to market players from outside the state.

53. *Cluster approach*: A cluster approach for promotion of select value chain commodities will be adopted wherein on an average four villages form a cluster, which ensures economies of scale in terms availability of a minimum of a truck load of produce for selling, attractive enough for marketing players to get into business partnership with value chain farmers. Cluster ensures collective procurement of agriculture inputs and business development services i.e. transportation and logistics services to make these services economical both for the farmers and market players. Clusters also develop around strategically located villages with comparative advantages in terms of presence of motorable road and transportation access, banking services, collection centres and processing units. The project will support existing and new value chain farmers to become part of clusters selected under the project.

### **Sub-component 2.1 – Value chain development**

54. Production Support: The value chain study conducted as a part of the project design has identified five key sub-sectors with significant potential if support is provided for production system improvement, marketing, and value addition support. These are: Mizo-Chilli (Bird eye chilli), turmeric, ginger, orange and areca nut.<sup>23</sup> Although orange and areca nut have good potential, these two crops have no major marketing problems. A significant volume of ginger is produced, but production is fragmented and competition from other states and countries has severely depressed the market price. Quality seed for ginger remain an issue. In addition, Mizoram needs to focus on commodities that are not perishable, and are low volume/weight and high value. Since there is inadequate supply of quality

---

<sup>23</sup>Value chain analysis report for Nagaland and Mizoram by Sanjay Kumar Gupta, Value Chain Consultant

planting materials and true to the type varieties are not maintained properly, a mechanism will be devised for regulating the production and supply of disease free planting materials to the growers.<sup>24</sup>

55. Two commodities for each project district have been shortlisted taking into account potential of the area for scaling up production and cluster development. The shortlisted commodities/crops include: (i) Kolasib district – Turmeric and Mizo-chilli; (ii) Mamit district – Mizo-chilli and Turmeric; (iii) Serchhip district – Mizo-chilli and Ginger; and (iv) Champhai district – Mizo-chilli and Ginger. The average productivity in the state has been around 2.11 tons/ ha for Mizo chilli and 3.96 tons/ ha for Turmeric. By supplying improved planting material, it is assumed that the productivity of these crops will increase by 30 to 50%.<sup>25</sup>

56. The project will support promotion of FIGs of up to 20 farmers per group in respect of commodities/crops shortlisted for each district in 30 clusters and each cluster covering about 4 villages. The cluster selection for production support will depend on the suitability (soil, climate, water, etc.) of the area to produce these crops and access to roads. Interested farmers in these clusters will have to allocate a separate plot of about 0.5 ha either in current *jhum* or in fallow *jhum* to grow these selected crops.

57. There will be flexibility to shift to other crops depending upon emerging priorities and opportunities after conducting value chain studies by the marketing unit to be established in the Horticulture Department. The project will support engagement of two CRPs in each cluster to support the FIGs. Appropriate training for the CRPs and FIGs will be provided by the project. In order to ensure production of quality planting material, the CRPs will be supported to establish nurseries. The FIG members will be provided access to improved planting material of selected crops.

58. The project will promote better package of practices. It is proposed to provide quality planting material/ seeds covering about 1,200 ha per commodity/crop. In respect of others crops, the project will not provide any production support but assist in market linkages. The project will support 7,200 households covering 3,600 ha under spice production. The project will also identify and support any additional spice / cash crop / medicinal plants during the course of project implementation. In order to meet the demand for planting material/ seedlings, the project will support establishment of nurseries, training of trainers and training of agriculture/horticulture staff and farmers.

59. The project plans to introduce an innovative modality for digital delivery of extension and monitoring of production practices, input use and expected production. This can be accessed by market players across the world to support their procurement decisions by identifying number of farmers cultivating a particular crop, quantity of produce expected, and package of practices used. This would reduce the need for face to face interaction required to access market players and increase the reliability quotient. Introduction of this system would also enable the farmers to make a quick progression into organic certification.

60. Marketing Support: The major constraints to value chain development of traditional spice, and agricultural and horticultural crops are related to marketing. These include: (i) limited aggregation for achieving economies of scale in cost effective collection, transportation and storage; (ii) insufficient investment in post-harvest management practices, including primary processing to add value and to reduce volume for transportation; (iii) inadequate data on marketable quantity to feed into supply chain, (iv) inadequate linkage with premium markets on account of issues related to compliance of certification and quality standards; and (v) limited access to market players from outside the Mizoram state.<sup>26</sup>

---

<sup>24</sup> Present Status and Prospects of Ginger and Turmeric in NE States; A.K. Jha and Bidyut C. Deka, ICAR Research Complex for NEH Region, Umiam-793103, Meghalaya

<sup>25</sup> ICAR NE Hill Complex- <http://www.icarneh.ernet.in>

<sup>26</sup> Livelihood based Agri-business and Market studies for North East Rural Livelihoods Project, MART, 2011

61. The project's marketing efforts will be directed towards both the project promoted commodities (Mizo-Chilli, Ginger and Turmeric), and also other commodities and crops promoted under *jhum* improvement and settled agriculture, including , orange and passion fruit which are grown in sufficient quantities, to make them viable for market entry. The project will support SHGs/Societies/FPOs/FIGs, who will be interested in taking up aggregation and primary processing activities. The project will also establish linkages of these aggregators/primary processors with agencies interested in procuring commodities produced in Mizoram for sale in the mainland and for export.

62. The project will support engagement of short term consultants as commodity specialists to work on establishing marketing linkages. The project will also invite agencies interested in procuring commodities produced in Mizoram for sale in other states and for export. In addition, the project will also support next level of processing of spices such as extraction of oleoresins, capsanoids, natural plant based dyes, etc. In respect of bamboo, the project will support value addition to bamboo in terms of manufacture of handicrafts and incense sticks and partial processing such as flattening. The project will make funds available for engaging agencies like National Institute of Design to make contemporary designs and also to procure machinery required for bamboo value addition.

63. The project will support participation of agencies, both government and non-government, including the private sector, in trade fairs and exhibitions within the country, and will also organize buyer-seller meets. In addition, the project will also provide support for product aggregation and transport to determine the transaction costs and feasibility of establishing market linkages. The project will also prepare plans to attract private sector and other agencies from outside the state to establish processing and value addition of select crops. In addition, the project will support construction of collection centres where simple processing in terms of cleaning, sorting, grading and weighing can take place.

64. In order to facilitate production based on market needs, the project will support establishment of a marketing unit within the horticulture department. This unit will produce market intelligence reports, conduct (or commission) market studies, and policy reforms required for implementing APMC Act. This will enable the line departments plan production based on market intelligence and inputs from the marketing unit. In addition, this unit will act as focal point to identify market linkage partners and to facilitate market support activities of the project.

65. The marketing unit will establish contacts with agencies, such as Sresta Organics, Patanjali, and other agencies to develop contract farming modalities for the FIGs promoted under the project. Patanjali has shown interest to buy dried turmeric, tulsi, aloe vera, etc. The marketing unit will analyse all market interests and explore the possibility of entering into contract farming arrangements. Collaboration with IDH India (a trade initiative supported by the governments of Netherlands and Sweden) will be firmed up. Once the project implementation starts, IDH India will: (i) conduct a study to validate the business case for organic spice production to the local spice farmer and explore the market demand; (ii) validate the market size for Cardamom both for the domestic and the international markets from India; (iii) explore the model and the business case for a local (near to farm gate) processing plant in Mizoram and the statutory and local requirements to start up such an enterprise; (iv) work with the local partners of Sustainable Spice Initiative (SSI) to identify the parties who would be interested in providing technical support and enter into a long term MoU; and (v) define market requirement parameters for sourcing products from the North East.

66. In addition, small storage sheds/ common facility centres (30 nos.) would be constructed in select villages and equipped with weighing machines, tarpaulins, wheel barrows etc. This would aid aggregation at the village level. These sheds would also be managed by VCs. MGNREGS resources would converge with the project to carry out further earthwork in support of improved communications and to excavate water supply channels to bring in water for irrigation.

67. Livestock Support: Livestock is an integral part of rural livelihoods and form an integral part of Mizo culture and diet, with most village households keeping a few pigs and/or chickens. Cattle and goats are also kept, but are greatly outnumbered by pigs. In some areas there are also Mithun. After

many years of significant growth, the livestock census of 2012 shows a significant decline in the number of pigs and poultry. The state is largely self-sufficient in meat, although around half the piglets needed for fattening come from other states and Myanmar. The project will support any other emerging livestock value chain during the course of project implementation.

68. *Animal Health:* The key person in supporting livestock development would be a CAHW, with one in each village who will be trained to provide health /husbandry services and first aid, as well as providing advice on improved husbandry practices. Youth comprising both boys and girls and those committed to serve the community and stay in the village during the project period and beyond will be given preference. The CAHW activities will be technically supervised by the Veterinary Field Assistants (VFAs) and their activities monitored by the respective Village Councils. There will be about 50 VFAs, at least two in each block (one VFA supporting 4 - 5 villages). It is envisaged that half of these VFAs would come from Department of Animal Husbandry and Veterinary Services (DAHV) who are already on the Government payroll, while the remaining will be hired on a contract basis.

69. Capacity building of farmers and CAHWs has been emphasized in the project. Towards this, customized training manuals for pig farmers, poultry farmers and CAHWs will be developed based on the existing training manuals/ available literature and will be translated in to local language. Based on those, the training material for the VFAs will be developed, who will be the master trainers for imparting training to the target group of farmers. A protocol will be drafted and followed to ensure quality of trainings in all places.

70. Important diseases of livestock and poultry would be prevented by carrying out mass immunization programme. About 60% of the animals in the project area will be vaccinated against prevalent diseases by the CAHWs under the supervision of the VFAs/Veterinary Officers (VOs). Necessary support in terms of making timely availability of vaccine etc. from the DAHV will be made by the concerned VFAs. The pigs will also be de-wormed on limited scale during the first two years of the project (demonstration). VFAs would also carry out inseminations of pigs and cattle.

71. *Pigs:* The project will support the pig sub-sector by developing support services related to breed improvement, feed improvement and animal health. The biggest constraint in pig production is inadequate availability of quality feed. To address the problem, the project will demonstrate and promote feed crops cultivation (e.g. sweet potato, tapioca, yam, maize, azolla, stylos etc.) in the backyard and generate awareness among the farmers about the nutrient requirement of pigs and poultry. There is a requirement of feed supplements/ingredients to increased productivity. In this connection, the project will encourage existing retail outlets to sell fish meal, soya bean meal and oil cakes in addition to wheat bran and rice polish that they commonly sell. Besides, mineral and vitamin mixture will be promoted by distributing it to the pig producers through CAHWs on pilot basis. The project will also support small feed grinding units.

72. To improve the genetic quality of pigs, the project will support establishment of 64 small pig breeding units (6:1 unit) to be operated by progressive/ experienced farmers/CAHWs. In addition, the project will bear 50% cost of 25,000 improved piglets to 25,000 households. The project will also demonstrate/promote improved pig housing and compost production from pig manure. Existing artificial insemination services for pigs will be expanded by strengthening the existing boar stations (4) under DAHV and introducing cold chain facilities in each veterinary hospital of the project areas. The project will support other livestock related activities such as cattle, goat rearing and aquaculture.

73. *Meat Quality Improvement:* Although the government has established abattoirs in a few of districts, these are primarily used to slaughter cattle. Pigs are mostly slaughtered and sold under conditions of very poor hygiene in villages and small towns. This has a great implication on human health and the project would aim to raise awareness of these threats among the pig slaughterers, retailers and transporters through information campaign and imparting training on hygienic slaughtering, handling, displaying and selling of pork. In this regard, training manuals produced by ILRI will be used. The project will provide some equipment for hygienic business operation. In

cooperation with village councils, slaughter slabs would be provided to allow more hygienic slaughtering and reduce wastage of by-products.

74. **Innovation Fund:** Several societies, associations, cooperatives, public sector companies, producer companies, local agro-enterprise and innovators operate in the state. These agencies and individuals operate in an environment of limited scale, inadequate capital and inability to access latest technologies and large scale markets. This apart, in order to realise the potential of the agricultural and allied sectors, a higher scale of operations is required to enter external markets on competitive terms and/or fetch a premium price for products produced in Mizoram. The project's value chain support will facilitate expansion of production and marketing, and is envisaged to generate a new set of entrepreneurs with market linkages. In addition, higher level investment is required to establish extraction of oleoresins, capsanoids and tumerons. These need to be funded in a sub-project mode.

75. The project will prioritize the needs of youth while approving sub-projects funded by the Innovation Fund. Sub-projects of youth taking up enterprise related to aggregation and value addition will be funded on a priority and capacity building aspects will be built into this. In addition, the project will actively identify agencies that have capacity to submit sub-projects that train youth in specific vocations and provide funding for enterprise establishment coupled with technical backstopping. Such agencies will be funded using Innovation Fund.

76. In order to support these interventions, the project will establish a fund and seek proposals from interested agencies and provide funding based on a detailed business plan and agreed outcomes. This support will be available to legally registered and tax compliant local agencies that have already implemented innovative interventions requiring scale up support with demonstrated ability to bring own funds to part finance the proposal. The operational details of the Innovation Fund will be provided in the Project Implementation Manual.

#### **Sub-component 2.2 - Market access infrastructure**

77. A major constraint for the development of market-orientated agriculture is poor road access to production areas. Although almost all villages are now connected by all-weather roads, these tend to run along the ridges where settlements are located. Much of the land with good potential for the development of plantation and other permanent crops are in valley bottoms and on the lesser steep slopes. However, such areas often have no road access, making it difficult to supply inputs and extract crops. Farm link roads are therefore a major priority of the government. However, many of the roads that have been built, either by DoA or using village labour funded via MGNREGS. These have been constructed without proper survey and design leading to poor quality, high gradient and largely unpaved; these are not resilient to intense monsoon seasons or extreme events exacerbated by climate change. Rural roads, therefore, often get washed away, buried, or become impassable depending on conditions.

78. The farm link roads to be built under the project will be of better quality, with proper side and cross drainage and climate resilient measures to connect to high potential agriculture areas, horticulture clusters and mithun villages. The unit cost will be based on Schedule of rates of Prime Minister's Grameen Sadak Yojana (PMGSY) and PWD standard rates. To ensure all weather road, the project will hire consulting engineers to plan, survey, and design and supervise the works to achieve higher quality and climate resilient roads which will also give reliability and reduce maintenance cost. The project will not construct new roads but will improve the existing roads by upgrading with proper drainage, increased formation width and base course. In addition, climate proofing measures, such as climate resilient drainage at critical areas, maintaining better slopes, increased size of drainage for increased discharge, and bio-engineering measures will be incorporated in the design.

79. The project will rehabilitate and improve a total of around 200 km of earth road (with proper side slopes and cross drainage and base course) using the funding facilities available under CSS and upgrade 200 km of existing earth roads with base course to PMGSY and PWD gravel road standards using IFAD funds. These roads would be built with all climate resilient features such as protection of

slopes, grass-turfing, adequate number of drainage crossings, side drains, etc. Roads, once constructed, will become the responsibility of the VCs who would maintain them via MGNREGS, community labour contributions and funds from local government. There is also provision in the project budget to pay for maintenance during the project period. With a view to building the capacity of the Engineering section of the DOA, the project would provide 4 person-month of technical training in constructing resilience in rural roads and use of design software, 4 motor cycles and one 4 WD field vehicle, 4 sets of computers with printers and 4 set of Total Stations for survey. Selection criteria for construction of agriculture link roads include: (i) maximum number of households benefiting from the link road; (ii) maximum command area for agricultural activities; (iii) type of agricultural practice with preference given to settled agriculture, horticulture and plantations and wet rice terraces; and (iv) length of road – minimum 3 km and above as shorter length can be rehabilitated by the Government fund.

### **C. Project Management and Knowledge Services**

80. The Department of Agriculture (DoA) will establish a society under the Chairmanship of the Chief Secretary, named Society for Climate Resilient Agriculture in Mizoram (SCRAM) which will be the lead implementing agency for the project. State budget allocations for the project and IFAD loan proceeds will flow through the Agricultural department. The Secretary, Agriculture will be co-chair of the society and the Director, DoA will be the Mission Director.

81. GoM will appoint a Joint Director level Officer from the technical department on a fulltime basis as the Chief Executive Officer of the society and will be designated as the State Project Director (SPD). Appointment of a technical person from the line department is considered most appropriate given need to coordinate with line departments, ICAR, and FAO and to supervise field level technical activities. S/he will report to the Secretary, Agriculture through the Director Agriculture. The SPD will be delegated with administrative and financial powers for timely planning and execution.

82. A technical team comprising Deputy Director level officers drawn from the Departments of Agriculture, Horticulture, Animal Husbandry and Soil and Water Conservation will be attached full time for this project. These four officer will be on deputation and will be responsible for co-ordinating implementation in one district each apart from their normal technical functions at the state level. These officers will also be the focal points to coordinate with the respective line departments. In addition, the project will also engage professionals at the state level on a contract basis for Financial Management, Planning & Monitoring, Knowledge Management; and Gender & Community institutions. Allocations will also be made for short term engagement of Procurement Specialists, Statutory and Internal Auditors, Agriculture Engineer and Agriculture and Horticulture officers.

83. Additionally, as most of the commodities proposed for value chain are horticulture related, the project will support the setting up of a Marketing Unit in the Horticulture Department consisting of a three member team of Specialists in (i) Market Intelligence, (ii) Agribusiness/market linkage and (iii) Policy & Research. This team will have a dual line reporting to Director, Horticulture and the SPD.

84. The project will establish DMUs at each project district which will be housed within the District Agriculture Office with DAO as the DPM. GoM will also post a team of officers comprising an Agriculture Officer, a Horticulture Officer, and a Veterinary Officer for each DMU on a deputation basis to deal exclusively with the project activities. DPM will report to SPD for FOCUS related implementation. The project will also engage a Planning and Monitoring Officer, a Finance and Accounts Officer and the required junior professionals and office staff at the district level on a contract basis. For effective implementation of the project, it is important that all staff positions from village level up be filled up promptly. Currently at the Block/Circle level there are 20 vacancies for Agriculture, 13 for Horticulture and 15 for Veterinary staff and at the Village level there are 43 vacancies for Agriculture, 58 for Horticulture and 40 for Veterinary against the sanctioned positions. The state government will ensure that these positions are filled up before the launch of the project. The project will fund these positions for the first three years after which the GoM will cover their costs.

85. The project will fund capacity building of PMU and DMU staff, development of a computerised accounting system and a Management Information System. The project will allocate funds for engaging Specialist Organizations / Experts to help the project management in conceptualising various project interventions and to provide expert technical advice. The project will also fund contracting of specialist agencies for conducting impact evaluation and other surveys and to support preparation of a Project Completion Report. The details regarding project management, implementation arrangements are described in Appendix 5.

86. Knowledge Management: The project will develop a Knowledge Management strategy and action plan. This will include internal learning through regular progress review meetings, and participatory M&E at the community level, Information will be shared at the village level via a village notice board, posters and leaflets. Knowledge will also be shared with external stakeholders and the wider development community through the generation of knowledge products, such as newsletters, briefs, training materials, technical manuals, booklets, posters, videos, etc. As FOCUS is a two state project, an annual Knowledge sharing workshop will be organised for exchange of knowledge between both the project states. The project will also aim to be a platform for learning for the other states in the region wherever *jhum* is being practiced and where there is an increasing focus on market-orientated production. A project website will be established as a knowledge sharing tool, with information on good practices and innovations shared with NITI Ayog, DEA and Ministry of Development of North east region (Ministry of DoNER) and also displayed on the IFAD Asia website.

87. Capacity Building and Knowledge Sharing: The project will be working on both *jhum* improvement and settled agriculture. In order to generate concurrent impact data and to demonstrate the effectiveness of these approaches, the project will engage with a Specialist Organisation which has expertise in upland farming systems as well as good knowledge of the region. This exercise will also generate knowledge that may be useful for informing the policies and practices of other states in the NER. The project has allocated USD 250,000 to generate knowledge on the evolution and sustainability of upland farming systems and their capacity to respond to climate change. The ICAR Regional Centre in Barapani with specialisation in Research and the Regional ATARI which co-ordinates the work of all KVKs in the NER have been identified by the Project as the most suitable agency to be engaged for this purpose. Both these institutions come under the ICAR, GoI. It is, therefore, proposed that the GoM will sign an agreement with ICAR detailing the terms of engagement. The responsibilities will be divided between the ICAR Regional Centre, Barapani and the ATARI as follows:

- a. Regional Centre of ICAR which has a sub-centre in Kolasib will be responsible for: (i) demonstration of settled agriculture models on a micro-watershed basis in about 50 ha per district; (ii) technical backstopping for project activities in the field related to *jhum* and settled agriculture; (iii) evaluating impact of project's settled agriculture activities; (iv) knowledge sharing by way of regional workshops to disseminate the results impact assessment studies; and (v) knowledge sharing by way of regional workshops to disseminate the results of action research conducted by KVKs under the supervision of ATARIs.
- b. Agriculture Technology Application Research Institute (ATARI) through the KVKs in all the district will be responsible for (i) action research on settled agriculture on *jhum* land in various microclimates of Mizoram in collaboration with local research agencies; (ii) supply of quality planting materials; (iii) development of improved varieties of seeds (paddy) using local seeds; (iv) technical backstopping and training of village level workers; and (v) establishment of demonstrations of pig breeding units, stall fed goat units and backyard poultry hatchery units.

88. The Deputy Director General (Extension) will be responsible for overall management of the knowledge generation and dissemination activities to be conducted by the ICAR, Regional Centres and sub-centres and ATARI and KVKs. A technical assistance agreement will be signed between ICAR and GoM to implement these activities.

89. Technical Assistance: IFAD will provide a grant of about USD 450,000 to GoM for identified areas of technical assistance for the project. The major activities envisaged in this include; (i) preparation of training materials and conducting training of Veterinary Officers in animal production related issues covering pigs, cattle, goats and poultry; (ii) preparation of training materials and conducting ToT in implementing Sloping Agricultural Land Technology (SALT); (iii) preparation of training materials and conducting ToT related to terrace rice cultivation; (iv) preparation of training materials and conducting TOT for establishment of private nurseries of high quality planting materials; (v) engagement of Specialist Consultants in Highland farming systems, Agro-forestry, soil and water conservation, organic certification, animal production and to formulate policy reforms related to Agricultural Produce Marketing Committee Act; (vi) prepare a long term weather data based agro-climatic atlas for Mizoram; (vii) development of a computerised MIS and the support and training of MIS staff in its operation; and (viii) support for project monitoring and evaluation including baseline survey and end-line survey with impact assessment. GoM has agreed to engage Food and Agriculture Organization of United Nations (FAO) to implement these activities in view of its well established expertise in these fields. A FAO engaged consultant has joined the mission and is in the process of preparing a technical proposal including budget. FAO will submit the technical proposal to the state government which will review and submit to IFAD for approval. Thereafter GoM will enter into a TA Agreement which among other things will provide details on the activities, work plan, payment modalities and reporting requirements.

#### **D. Interaction between project components**

90. The linkages among the four key sub-components of components 1 and 2 are shown in Table 1 below.

91. The Better *Jhum* and conservation subcomponent focuses on improved productivity of current *jhum* on account of fertility improvement measures, soil and water conservation works, including both, physical and biological measures. The project will support tree crops and the traditional crops in order to increase the period of cultivation on a *jhum* plot and thereby increase *jhum* cycle. This intervention will enable the farmers to sustain their activity and take up settled agriculture as a means of improving income levels and reduce dependence on *jhum*. The value chain component will facilitate aggregation of the traditional produce for marketing outside the state and the marketing support will facilitate improved marketing of traditional produce.

92. The settled agriculture sub-component will promote conversion of *jhum* into settled agriculture, thereby increasing the *jhum* cycle and reduction in *jhum* practice. Settled agriculture will not only promote traditional varieties but also crops that have markets outside the state. Improved package of practices and improved seeds of traditional varieties will improve productivity. Value chain related efforts will synchronize settled agriculture with markets so that the produce that have marketing potential are cultivated to target the premium organic market. This will increase farmers' income and further reduce dependence on *jhum*.

93. The value chain activities will not only focus on improving market access of traditional crops in *jhum* but will also provide production support for select crops with market potential. These crops will be cultivated in clusters so as to achieve economies of scale required for aggregation, primary processing and transport. This will further add value to the produce, increasing farm gate prices of agricultural commodities. The project supported livestock sector activities will also increase meat production and increase non-farm income of the households.

94. Market access plays an important role in the overall drive of the project to reduce dependence on *jhum* by improving access to productive areas with water source and better soils for settled agriculture, apart from improving connectivity between farms and markets. This will reduce the transaction costs and improve the possibilities of aggregation to cater to the markets outside the state.

**Table 1: Linkages between project sub-components**

Component /Sub-Component		1.1	1.2	2.1	2.2
		Better <i>Jhum</i> and Conservation	Settled Agriculture Promotion	Value Chain Development	Market Access Infrastructure
1.1	Better <i>Jhum</i> and Conservation		Improved productivity – fertility improvement and SWC measures	Aggregation and marketing of traditional crops	Improved traditional crop marketing
1.2	Settled Agriculture Promotion	<i>Jhum</i> converted to settled agriculture		Improved package of practices and increased production volume of selected marketable produce	Increased volume for transport of agriculture produce
2.1	Value Chain Development	Reduced dependence on <i>Jhum</i>	Premium marketable crop production		Increased farm gate price
2.2	Market Access Infrastructure	Improved access <i>Jhum</i> areas.	Improved access for settled agriculture	Transaction cost reduction for input, and output aggregation	

## E. Expected outreach, outcomes and outputs

### 1. Outreach

95. The project is expected to reach 64,500 households covering 322,500 persons. The details of the assumptions made are provided in the table below.

Component /Sub-component	Target HHs	Area (Ha)/Length (km)/No.	Overlap assumption		Net target HHs	Assumption
			%	HHs		
<b>Component 1</b>						
<i>Jhum</i> - Improvement	54,400	13,600	0%	0	54,400	272 villages, 200 households per village and 0.25Ha per household
Fallow management	54,400	13,600	100%	54,400	0	272 villages, 200 households per village and 0.25Ha per household
Village Forest Conservation area	54,400	2,720	100%	54,400	0	272 villages and 20 Ha per village
Landless support	10,880	5,440	100%	10,880	0	272 villages, 40 households per village and 0.5 Ha per household
Terrace rice cultivation support	10,880	5,440	85%	9,248	1,632	272 villages, 40 households per village and 0.5 Ha per household
Existing settled agriculture support	5,440	5,440	85%	4,624	816	272 villages, 20 households per village and 1.0 Ha per household
<b>Component 2</b>						
Spice Value chain support	7,200	3,600	85%	6,120	1,080	Mizo-Chilli - 1200 ha, turmeric - 1200 ha and ginger 1200 ha, 30 clusters(1 cluster = 4 villages) and 0.5 Ha per household
Livestock support	25,784		75%	18,750	6,446	272 villages and about 92 households per village
Farm Link roads	27,200	400	100%	27,200	0	
Common Facility Centre/Collection Centres	27,200	30	100%	27,200	0	
<b>Total</b>					<b>64,374</b>	
<b>Final outreach (households)</b>					<b>64,500</b>	
<b>Final outreach (persons)</b>					<b>322,500</b>	

### 2. Outcome

96. The overall goal of the project is to increase household agricultural income of 64,500 households in Mizoram and to enhance their resilience to climate change. This goal would be

achieved through the development objective of increasing the environmental sustainability and profitability of farming systems practiced by highland farmers. The project will strengthen the capacities of state agencies and community based institutions to develop and implement climate resilient resource management systems, soil and water conservation, *jhum* improvement, existing settled agriculture improvement, diversification of land use /farming systems, crop productivity enhancement and development of climate resilient and equitable farm based value chains. The major outcomes of this project will include:

97. The major outcomes of this project will include:
- i. 70% of the *jhum* households farming for three or more years on the single plot.
  - ii. 75% of the households reporting increase in more than 100% in household income.
  - iii. Soil carbon percentage of at least 4% on *jhum* land.
  - iv. Real increase in net annual farm income (in 2017 prices) to INR 1,274.5 million.
  - v. Number of trees increased to at least 20 per ha on *jhum* land
  - vi. 64,500 households reporting adoption of environment friendly sustainable and climate resilient technologies (use of agro-forestry, soil and water conservation, improved planting material and integration with livestock.
  - vii. Gross returns from spices increased to INR 277 million.
  - viii. Gross returns from livestock increased to INR 267.9 million.

### **3. Outputs**

98. The specific outputs of this project will include:
- i. 100% of the villages (272) with completed participatory land use plans.
  - ii. 108,800 farmers trained on better *jhum* and fallow management.
  - iii. 27,200 farmers trained on settled agriculture.
  - iv. 40,800 ha under SWC by *jhum*, fallow and settled agriculture.
  - v. 5440 ha under community conservation areas.
  - vi. 5,440 households benefitting from support to landless.
  - vii. 7,200 households participating in organized spice value chain.
  - viii. 25,000 households benefitting from pig rearing.
  - ix. 48,000 households reporting improved access to markets.
  - x. 400 km of farm link road improved.

## Appendix 5: Institutional aspects and implementation arrangements

### A. Introduction

1. IFAD projects in India use three models of project management: (i) project management structure built into the existing corporations; (ii) a separate project management structure built into the line department; and (iii) a separate society established for implementation. The advantages of working with the corporations and societies include the ability to retain unspent funds at the end of the fiscal year enabling these institutions to start project activities without waiting for budget release. The GoM has opted for the Society model in view of its stated advantages for implementing various other programmes. For example, Mizoram State Rural Livelihoods Mission which is registered as a society implements the National Rural Livelihoods Programme and this society is attached to the Rural Development Department. Similarly, societies have been formed under the Health Department, Education Department and e-governance departments for implementing projects/programs.

### B. Project Management

2. At the central level, the Department of Economic Affairs (DEA) would be the nodal agency for the project. Two broad principles would govern the management structure for this project. They include: (i) alignment to the existing government structure; and (ii) flexibility to make changes based on the requirements that may arise during the implementation phase. The project would be aligned to the existing government structure by making the DoA of the GoM as the state level lead implementing and nodal agency. Two options for alignment with the Agriculture Department were considered. These include: (i) establishing a project management unit within the Agriculture Department; and (ii) establishing a new society under the Agriculture Department. In view of the flexibility, the society structure provides in terms of carrying over the unspent balance of the previous year to the next year and in terms of human resource engagement, the option of establishing a society under the Agriculture Department was considered appropriate.

3. **State level Project Management:** In order to implement this project, GoM would establish a society named Society for Climate Resilient Agriculture in Mizoram (SCRAM) under the DoA. This strategy of establishing a separate society keeps it outside the government line department structure and makes it possible to bring in persons of repute as members of the Governing Council. This society would be registered under the Societies Registration Act and would have its own bye laws and financial rules. SCRAM would have adequate authority to enter into partnership agreements/contracts with agencies, FIGs, Village Councils and other committees under the Village Councils.

4. The Chief Secretary of the State of Mizoram will be the Chairperson and the Secretary Agriculture will be the Co-chairperson. The Governing Council of the Society will have the Principle Chief Conservator of Forests, the Secretary-Horticulture, the Secretary-Rural Development, the Secretary-Planning and Programme Implementation, the Secretary-Finance, the Secretary-Animal Husbandry and Veterinary Services, the Secretary-Soil and Water Conservation, the Secretary-Revenue and Land Settlement and the Deputy Commissioners of project districts as the core members. The Governing Council may co-opt additional members based on the requirement. GoM will appoint a Joint Director or above level officer from the line department with adequate seniority and experience in coordinating agriculture and allied activities on a fulltime basis as the Chief Executive Officer of the society. S/he will also be an *ex-officio* Secretary of the Society.

5. The Governing Council of the society will be responsible for: (i) ensuring legal compliance and preparing, reviewing and approving overall policies of the society including administrative, human resource and financial policies; (ii) providing direction and guidance for project implementation; (iii) facilitating coordination and convergence between the project and other government programmes; (iv) reviewing and approving overall AWP&B of the project; and (v) reviewing implementation performance of the project.

6. The project management responsibility would be vested with a Project Management Unit (PMU) within the Society with the Chief Executive Officer/Secretary of the society as the SPD. S/he will report to the Director, DoA who will be the Mission Director. State budget allocations for the project from IFAD loan proceeds, IFAD grant, and GoM counterpart funds for IFAD loan will flow through the Agriculture Department to the Society by creating a separate line item in its annual budget.

7. Overall, PMU would be responsible for compliance to the stipulation of Financing Agreement signed between Gol and IFAD. More specifically the PMU will be responsible for (i) programme planning, implementation and monitoring; (ii) financial management and procurement; (iii) management and administration and (iv) co-ordination with Gol and IFAD, as follows:

- a. Programme planning, implementation and monitoring/ reporting: organizing project coordination meeting; preparing and submitting AWP&B after consolidating AWP&Bs of districts and a procurement plan for review by IFAD; conceptualizing, supervising and monitoring project activities and their progress towards achieving physical, financial and outcome related targets; establishing an effective MIS and M&E system to track project progress; undertaking knowledge management activities;
- b. Financial management and Procurement: incorporating the budget requirements of the project into the overall budget of the GoM and ensuring flow of funds to the society; ensuring release of funds to the DMUs and line departments for implementing project activities; operating Project Accounts for timely release of funds to the districts, line departments and other partners; receiving statement of expenditure and supporting documents related to fund release and keeping an account of fund release and utilization; preparing overall project financial statements; evaluating bids, and finalizing and executing contracts with service providers and suppliers of goods and services for implementing various project activities.
- c. Management and Administration: liaising with the State administration and line agencies to ensure coordination and convergence to facilitate project implementation; establishing DMUs in each project district within the District Agriculture Office and recruiting staff for PMU and DMUs; preparing and submitting progress reports semi-annually and annually to IFAD; establishing an effective MIS and M&E system to track project progress.
- d. Reporting and co-ordinating with Gol and IFAD: Preparing and submitting withdrawal applications to Gol/CAAA for onward transmission to IFAD; ensuring preparation and submission of annual audit reports and financial statements to IFAD and ensuring compliance to the audit observations; preparing RIMS data for submission to IFAD.

8. The society would be provided with senior technical staff of the rank of Deputy Directors. A Deputy Director-Agriculture, a Deputy Director-Horticulture, a Deputy Director-Animal Husbandry, and a Deputy Director – Soil and Water Conservation would be posted to the PMU on deputation. In addition, a Finance and Accounts Specialist (FAS), Manager - Planning and M&E, Manager – Knowledge Management and Manager – Gender and Community Institutions and other support staff would be engaged on contract basis. Staff appointments, except those on deputation, would be fixed term contracts of at least three years and the candidates would be recruited from the open-market based on professional competence and experience. The proposed project management structure for this project in Mizoram is provided in Annex 1.

9. The society while recruiting staff would give preference to women subject to other things being equal. SCRAM is yet to develop a set of personnel policies guiding engagement of staff. Important personnel policy related actions to be initiated by SCRAM include: (i) categorization of posts and fixing a pay scale for each position; (ii) fixing leave structure and leave encashment benefits in line with societies established for managing development projects in the State; (iii) fixing travel and daily subsistence allowance structure; (iv) fixing deputation allowance to seek experienced staff from the government departments; (v) fixing provident fund and medical insurance benefits; and (vi) incorporating gender sensitive policies in recruitment.

10. **District Management Units (DMU):** The project would establish a DMU in each district within the District Agriculture Office headed by the DPM. A small team of professionals would be recruited to facilitate project implementation. DMUs would function as an outpost of SCRAM in each project district. DMUs would be authorised to release funds based on the sanctioned AWP&B.

11. The DMUs would be responsible for: (i) coordinating with the circle level officers and the FIGs to prepare AWP&B for circle and incorporating the same into the district AWP&B; (ii) obtaining required sanctions for implementing activities; (iii) releasing funds to the FIGs and other implementation partners; (iv) receiving utilization certificates from the FIGs and other implementation partners and reconciling their accounts; (v) collecting, collating and analysing MIS and M&E data for the district for onward submission to PMU and for providing feedback to implementation partners; (vi) ensuring convergence between project activities and activities of other line departments in the project villages; (vii) conducting audit of books of accounts of FIGs and other implementation partners on a sample basis and submitting reports; (viii) maintaining books of accounts related to project expenditure of the district and prompt settlement of advances with PMU; and (ix) ensuring compliance to audit observations.

12. DPM would be responsible for: (i) coordinating with the PMU with regard to implementation of project activities; (ii) coordinating with the District Administration for convergence and support; (iii) supervising field level activities of block/circle level officers, FIGs and other implementation partners; (iv) releasing funds to the FIGs and other implementation partners as per the approved AWP&B; (v) ensuring convergence between project activities and activities of other line departments; (vi) functioning as a focal point to resolve issues faced by implementing partners and block/circle level officers and village level workers; (vii) reviewing field level activities and submitting reports to the Deputy Commissioner/PMU on a regular basis; and (viii) overall management of the DMU as per the directions of SPD including personnel and administrative functions.

13. A technical team comprising officers of mid-level seniority drawn from the Departments of Agriculture, Horticulture, Animal Husbandry and Soil and Water Conservation would be attached full time for this project. In addition, the project would also engage professionals on a contract basis. GoM would also post an Agriculture Officer for each project district on a full-time basis to deal exclusively with the project activities who would be the Field Coordinator of the project. The project would also engage a Planning and Monitoring Officer, a Finance and Accounts Officer and the required junior professionals at the district level on a contract basis.

14. The project would fund capacity building of PMU and DMU staff, development of a computerised accounting system and a Management Information System. The project would allocate funds for engaging Specialist Organizations / Experts to help the project management in conceptualising various project interventions and to provide expert technical advice. The project would also fund contracting of specialist agencies for conducting baseline survey, impact evaluation and other surveys and in preparation of a Project Completion Report.

## **C. Project Coordination Mechanisms**

### **1. State Level Coordination**

15. The Governing Council of SCRAM would also function as the state level Project Steering Committee (PSC) for this project. The Chief Secretary, GoM would be the Chairperson of the PSC. The PSC would meet once in six months to review progress, provide overall guidance and policy support and to facilitate inter-departmental coordination specifically with regard to convergence. All the members of the Governing Council would be the members of the PSC. PSC would invite representatives from the National Bank for Agriculture and Rural Development (NABARD), civil society and Technical Experts of repute to participate in the PSC meetings as Special Invitees. The SPD would be the member secretary of the PSC. Project coordination mechanism for this project in Mizoram is provided as Annex 2.

16. PSC would meet on a half yearly basis and its function would be to secure interdepartmental coordination and linkages for the project. It would: (i) review progress of the project on the basis of the reports submitted by SCRAM; (ii) resolve any problems requiring interdepartmental coordination with the line agencies and banks which require higher level of intervention; (iii) resolve any policy bottlenecks that impact project implementation and (iv) review AWP&B as prepared by SCRAM to ensure adequate budgetary provisions.

17. GoM would also establish a Project Management Committee (PMC) headed by the Secretary, Agriculture with the Director, DoA as the Co-Chairperson. The Directors of relevant technical departments such as Director-Horticulture, Director – Agriculture Research and Extension, Director – Animal Husbandry and Veterinary Services, Director – Soil and water conservation, and Conservator of Forests as the members and the Chief Executive Officer of the society as the Member Secretary. The PMC would meet quarterly and would be responsible for: (i) reviewing and resolving any problems in the project implementation relating to coordination with the line agencies and banks which require higher level of intervention; (ii) liaise with other large schemes of the government such as NLUP and SRLM to ensure better co-ordination on the ground (iii) approving action plans for Central Sector Schemes and integrating these action plans into the AWP&B of the project; and (iv) ensuring release of GoM counterpart funding and IFAD loan proceeds to the society; (v) provide a forum for dialogue between the state level policy makers and the field level implementers; (vi) review issues arising out of the District level Coordinating Committee reports, monitoring reports, impact assessment studies and evaluation reports and give policy directions to resolve the issues; and (vii) ascertain ways and means of internalizing the lessons learned from the project delivery mode into the regular government programmes.

## **2. District Level Coordination**

18. The project would also establish a District Project Coordination Committee (DPCC) in each project district. The DPCC would meet quarterly to discuss the project implementation progress, constraints and remedies. The most important function of this committee is to ensure flow of MGNREGS funds to the Village Councils for implementing Land and Water related activities. The DPCC would be chaired by the Deputy Commissioner / District Collector of the respective project district and the DPM would be the Vice Chairperson. The members of the DPCC would include: (i) District Horticulture Officer; (ii) District Animal Husbandry Officer; (iii) District Forest Officer; (iv) District Soil Conservation Officer; (v) Project Director-DRDA; and (vi) Block Development officers of project blocks. Planning, M&E and Convergence Officer would be the Secretary of this committee. Based on the need, representatives of NABARD and Lead Bank would also be invited to participate in the DPCC meetings. A representative from PMU may attend any of the DPCC meetings if and when required.

## **3. Block Level Coordination**

19. A Block Project Coordination Committee (BPCC) would be established in each block of the project area. The BPCC would meet bimonthly to discuss approval and review of the MGNREGS activities and their convergence with project activities. This committee would be chaired by the Block Development Officer and the Circle/Block Agriculture Officer would be the Member-Secretary. The members of BPCC would include: (i) Chairpersons of all project Village Councils; and (ii) All block/circle level officers.

## **D. Implementation Partners**

20. **Village Councils:** Village Councils are the most important grassroots institutions. Village Councils in Mizoram are democratic institutions and are responsible for decentralised governance at the grassroots' level. These councils would be the focal point for implementation of the project activities mainly with regard to taking free, informed and prior consent for implementing the activities. Village Councils are empowered with powers to allocate land for *jhum* cultivation and also to implement MGNREGS activities. This project being a *jhum* improvement project would have to

coordinate with the Village Council for taking up improvement on *jhum* land. The activities related to participatory land use planning, allocation of land appropriate for *jhum* and settled agriculture based on remote sensing maps will be taken up by the project along with the Village Councils.

21. **Site Allotment Advisory Boards (SAAB):** In Mizoram, the government has established a SAAB in each of the villages vested with powers to identify land in consultation with the Village Councils and make recommendations for allotment of periodic patta for five years to persons interested in taking up settled cultivation. Thereafter, this committee monitors the activities on the allotted land. This committee makes recommendations for issuance of permanent patta of 99 years lease after ensuring settled cultivation on these lands is undertaken by the persons to whom land is allotted. The project would use these committees as partners in allocating land to the poorest households undertaking *jhum* cultivation.

22. **Farmer Interest Groups:** The project will form FIGs for: (i) *jhum* and fallow management; (ii) wet rice cultivation; (iii) support to land less; (iv) support to existing orchards; and (v) value chain crops production. FIGs would comprise of rural households interested in taking up a common economic activity. These FIGs will comprise of 10-20 members and each FIG will open a bank account for receiving project benefits. The project would use the existing FIGs and also promote new FIGs for implementing project activities.

23. **Self Help Groups/Societies/Associations:** The project would also support SHGs that have been promoted under various government programmes. These SHGs are women groups that take up a common activity. These SHGs would be used to implement non-farm activities and livestock related activities. In addition, there are several associations such as the Young Mizo Association, and the services of these agencies would be used depending upon the project need during the implementation.

## E. Implementation Arrangements

24. The project would use a multi-pronged approach to implement project activities using the grassroots level institutions and also the community level workers. The grassroots level implementation partners include community based organizations operating in the villages and those that would be promoted under the project. These include the Village Councils, Site Allotment Advisory Boards, FIGs, SHGs and Societies. These community based organizations would be supported by Lead Farmers, CRPs and CAHWs. The project intends to identify and support these community level workers through training and establishment of demonstrations. Block/Circle level officers of the line departments would be the main link between the Village level workers and the DMU for planning, implementation facilitation and supervision.

25. Capacity building: The project intends to build capacity of implementing agencies at three levels. The project would engage FAO to prepare training curriculum and training materials and to train the trainers using a ToT modality. Once the trainers are trained, the project would train all the technical staff at the district and sub-district level. Thereafter, the project would train the block/circle level officers and village level workers to build their capacity. These block/circle level officers and village level workers community level workers would be the focal points in the villages for implementing project activities using the Lead farmers and CRPs.

26. Land use Planning: The first stage of this activity would be implemented by the PMU. The project would use the Remote Sensing Application Centre in the state to prepare land use maps and land suitability classification maps. These maps would be the basic documents for the community to plan *jhum* cultivation and other settled agriculture related activities taking into account the slope and other parameters. These maps would also facilitate the community to identify the boundaries of the village forest areas and to take up conservation related activities. These maps would also be used to identify the soil and water conservation activities in the village forest conservation areas. . The project would train the Lead farmers and members of community based organizations to use the land use maps. Thereafter, Block/Circle level officers along with village level workers would facilitate the

community to make plans for *jhum* and settled cultivation and also obtain consent of the community at large for project interventions.

27. Jhum Improvement and settled agriculture: Lead farmers would be the focal point for this intervention. Lead farmers would be trained and thereafter facilitated by the Block/Circle level officers to start the nurseries of horticultural and tree crops required for settled agriculture. Lead farmers would promote FIGs comprising members of *jhum* cultivating households. The FIGs would be the main vehicles for implementing this activity. These FIGs would be provided with project support for implementing activities related to soil fertility improvement, nursery establishment, soil and water conservation activities, and cultivation of plantation and tree crops.

28. Value chain Development- Production Support: The project would identify and train CRPs to act as focal points to start cultivation of identified value chain crops in a cluster. CRPs would be provided with project support for nursery establishment and to deliver extension messages related to Good Agriculture Practices to the community. The project would introduce digital delivery of extension and using this software, a data base would be developed to facilitate the procurers from outside the state to get information on area under cultivation, expected yield and package of practices used. CRPs would also be responsible for digital delivery of extension, and also for entering data into the database.

29. Value chain development – Marketing Support: The project would support marketing related activities such as buyer seller meets, trade fairs, exhibitions, etc. This activity would be implemented by PMU and DMU officials taking into account marketable crops. PMU and DMU officials would also invite entrepreneurs from outside the state and link them up with local persons to establish a system of aggregation of produce. The project would also support establishment of a marketing unit Department of Horticulture in order to ensure production that is linked to market demand.

30. Livestock Support: CAHWs would be the focal points for implementing this activity. The project would train the CAHWs and after training a system of vaccination of all livestock with a small payment for services of CAHWs would be put in place. These CAHWs would be the village level workers of the project to implement livestock related activities. Block/Circle level officers with support from the officials of PMU and DMU would implement the livestock related activities including demonstration.

31. Market Access: The project would implement the market access activities (agriculture link roads) using contractors selected through competitive bidding. The community based organizations would be used to identify the infrastructure needs and the locations. Based on these initial assessments, PMU would engage contractors for construction of these roads under the supervision of qualified and experienced Consulting Engineers.

32. Innovation Fund: PMU would take the lead in implementing this activity by seeking proposals from experienced agencies that have implemented innovative activities. An open invitation calling for proposals would be issued to all interested parties. The proposals received would be appraised by the PMU and selected proposals would be funded by the project.

33. Knowledge Generation and Sharing: The project would engage ICAR in Mizoram to generate knowledge on various aspects of upland agriculture through action research using local institutions. The knowledge generated would be shared through documentation and regional level workshops.

34. Technical Assistance: The project would engage FAO to provide technical assistance in both the states. It would involve training of trainers in new technologies related to soil and water conservation and settled agriculture including value chain promotion. Technical assistance would also cover provision for handholding and also M&E related functions.

## **F. Implementation Plan**

35. The project implementation will comprise the preparatory and implementation phase. The major activities required for implementing the project are detailed below. The phasing plan is provided as Annex 3.

## **1. Preparatory Phase**

### **a. Administrative**

#### Pre-Loan Negotiation Phase

- Issue a notification declaring DoA as the lead implementing and nodal agency.
- Register a society (SCRAM) to implement FOCUS with Chief Secretary as the Chairperson and Secretary Agriculture as the Co-Chairperson.
- Finalize Personnel Policies of SCRAM.
- Finalize Financial Regulations of SCRAM.
- Appoint a Joint Director or above level officer as the Chief Executive Officer of SCRAM and also as the SPD.
- Call for meeting of the Governing Council of SCRAM to approve the personnel policies and Financial Regulations.
- Obtain clearance from the Chief Secretary for engaging Food and Agriculture Organization to provide technical assistance using IFAD grant funds.
- Process a file through the Department of Finance for Chief Secretary to request DEA to release the initial advance to be released by IFAD to GoM, and GoM in turn to release this amount to the SCRAM through DoA.
- Coordinate with the Principal Secretary, Department of Environment, Forest and Climate Change to get a government order issued denotifying at least 20 important tree species from felling and transit regulations throughout the state in consonance with the national agro-forestry policy and the national sub-mission on agro-forestry.
- Obtain permission from GoM to transfer the responsibility of co-ordinating marketing of horti-agri crops to Department of Horticulture that are currently with Department of Commerce and Industry.
- Place the project details before the Chief Secretary and request the Chief Secretary to constitute a State Delegation to negotiate the legal agreements.
- Comply with conditions of Project Readiness Checklist of DEA and submit the same to DEA and IFAD.
- Obtain permission from appropriate authorities and select persons to be engaged by SCRAM on both deputation and contract basis for both PMU and DMUs.
- SCRAM to obtain permission from appropriate authorities and fill in all vacant positions in Blocks/Circles and Village level workers.

#### Post Loan Negotiation Phase

- Initiate steps to include FOCUS budgetary requirements for 2018-19 into the state budget by creating a separate budget line under the DoA.
- Conduct an orientation programme for all PMU staff and DAOs with field visits to IFAD project sites.
- Prepare a Project Implementation Manual and get the same approved by the Governing Council of SCRAM.
- Place the project details along with signed minutes of the loan negotiations before the State Cabinet and obtain approval.
- Coordinate with FAO and review the Technical Assistance agreement and obtain approval from the Governing Council /Project Steering Committee and sign an agreement with FAO.
- Coordinate with ICAR and jointly prepare a Technical Assistance Agreement and obtain approval of the Governing Council/Project Steering Committee and sign an agreement with ICAR.
- Establish District level Project Coordination Committee with the Deputy Commissioner as the Chairperson.
- Call for a meeting of Deputy Commissioners of project districts and brief them about the proposed project activities and their role in project implementation.

- SCRAM to obtain approval from its Governing Council to issue a circular to all the Deputy Commissioners to facilitate convergence of MGNREGS and other government programmes with FOCUS.

#### Post Loan Effectiveness Phase

- Conduct a start-up workshop at state level to launch the project.
- Go shall release an amount equivalent to the initial authorised allocation of received from IFAD through Gol to SCRAM for pre-financing project activities. Thereafter, funds required for project implementation shall be released to SCRAM as a part of the yearly budgetary exercise. Initial authorised allocation will be adjusted in instalments during the last 2-3 years of project implementation. This will enable SCRAM to provide required advances to the implementing agencies and to ensure project implementation without disruption due to budgetary constraints.

### **b. Financial Management and Procurement**

#### Pre-Loan Negotiation Phase

- Open a bank account.
- Release INR 2 crore out of agreed INR15 crore of endowment grant to SCRAM immediately after opening a bank account to undertake the start-up activities. GoM to make budgetary allocation in the budget of 2018-19 for the balance INR 13 crore which will have to be released in two instalments during 2018-19.
- Prepare AWP&B for the Financial Year 2018-19 and obtain concurrence from IFAD before obtaining approval from the Governing Council of SCRAM. Include the same in the budget of the DoA as grant-in-aid to SCRAM. Refer to AWP&B of PY1 provided in PIM.
- SCRAM to obtain approval of its Chairperson for procurement of vehicles and equipment as per the list approved for retroactive financing.
- SCRAM to purchase furniture and equipment covered under the retroactive financing.

#### Post Loan Negotiation Phase

- SCRAM to appoint a qualified and experienced Chartered Accountant/Cost Accountant as the Finance and Administration Specialist.
- Establish an accounting system using Tally.

#### Post Loan Effectiveness Phase

- SCRAM shall delegate powers to the DPMs and the District Finance and Accounts Officers to operate the bank accounts. District level procurement will be made in accordance with the financial powers vested with the respective DPM.
- Release funds to Districts as per AWP&B. Districts to release funds to FIGs and others as per approved AWP&B.

### **c. PMU and DMU Establishment**

#### Pre-Loan Negotiation Phase

- Obtain agreement from the Department of Finance/Department of Personnel for deputation of regular government staff to the society, engagement of contractual staff for the PMU and DMU and also engagement of contractual staff for the district, circles and village level workers against approved vacancies.
- Obtain permission from appropriate authorities to implement a step up promotion policy for all deputation posts in SCRAM as per the current GOM regulations.
- Obtain permission for getting a Superintending Engineer to the DoA for execution of agriculture link road activities or to delegate the powers of the Superintending Engineer to the current Executive Engineer of the DoA.
- Call for expression of interest from interested line department technical officers to work as technical specialists in both PMU and DMUs. Prepare a shortlist, interview the candidates and select officers on deputation.
- Review the Terms of Reference of staff to be engaged and place it before the Governing Council for approval of staff requirements, salary scale proposed and the process of staff recruitment. Refer PIM for terms of reference of key staff.



- PMU to undertake training of all block and circle level staff using the trainers trained by FAO and training manual prepared by FAO.

**b. Land Use Planning**

- Entrust the task of preparing land use maps for each village and also village resource maps (in case of villages without village resource maps) to the Remote Sensing Centre.
- Provide assistance to enhance capacity of the Remote sensing centre to upgrade its capacity to assist in land use planning activities of the project.
- Conduct training of the Village Councils to understand the land use maps and also to make land allocation for *jhum* and other activities based on these maps.
- Based on the need, prepare 3 D models of the land use maps and undertake participatory land use planning exercise to allocate steep slopes for maintaining tree cover and moderate slopes for *jhum* and plantation crops.

**c. Better *Jhum* and fallow management**

- Identify a Lead Farmer in each project village in consultation with the Village Councils This task will have to be taken up by the Circle/Block level staff and Village level workers of the line departments.
- Youth (including women) and progressive farmers to be preferred as Lead Farmers.
- Take a commitment letter from the selected Lead Farmer to support project activities in the villages and to be the project contact point in the villages.
- Orient the Lead Farmers on their role in project implementation and their role in supporting FIGs and project target households.
- Conduct a training for all Lead Farmers to undertake nursery management and also train them in use of better seed and seedling, fertility management in *jhum*, low cost soil and water conservation measures, linear planting, environmental impact of *jhum* cultivation, FIG formation and management for better *jhum* and fallow management.
- The project has allocated INR 50,000 to support each Lead Farmer. Seek a plan from each Lead Farmer on utilization of this support for establishing a nursery or any activity that will become a model activity for the community.
- Provide support to the Lead Farmers in two instalments after signing an agreement with each Lead farmer. The amount to be released directly to the bank account of Lead Farmers in two instalments and should be based on the implementation of the agreed plan.
- Lead Farmers and Village Level workers to conduct a meeting of *jhum* farmers interested in taking up *jhum* and establish a FIG comprising about 20 farmers and each FIG member having about 20 associate members. Only one FIG per village will be established covering all *jhum* households.
- Each FIG to open a bank account and prepare two plans covering: (i) *jhum* cultivation during the next cycle; and (ii) *jhum* to be left fallow.
- FIG to be trained in low cost soil and water conservation, better seeds and seedling, tree plantation, linear planting, fertility enhancement measures and techniques to continue cultivation on the land for more number of years.
- The project support for better *jhum* in about 0.25 ha of land of each *jhum* farmer and also 0.25 ha of fallow land to flow through FIG bank account.
- Each FIG to submit a plan for: (i) better *jhum*; and (ii) fallow management indicating the activities to be undertaken and the costs separately from; (i) centrally sponsored schemes; (ii) IFAD project; and (iii) beneficiary contribution.
- Once the plan is approved by the DMU, FIGs to start implementation and the project to release funds directly to the bank account of FIGs based on progress in work.
- In instances where water harvesting measures are required, the Lead Farmer will support the FIGs to prepare plans for the same and access funds either from the project or from other centrally sponsored schemes.

- FIG support will be repeated during the third year of implementation subject to the farmers continuing the cultivation activities on the same *jhum* plot and taking up soil and water conservation activities.

**d. Support to Village Conservation Areas**

- Lead Farmer and the Village level workers in consultation with the Village Council to identify village conservation areas of about 20 Ha per village.
- A FIG for village forest conservation to be established and a bank account to be opened.
- FIG to prepare a plan for village forest protection, establishing nursery and for replanting of high value trees.
- The project to release funds based on approved plans and also based on progress in implementation

**e. Support to settled Agriculture – Terrace Rice Cultivation**

- The Lead Farmer and the Village Level workers of the line departments to form a FIG comprising the terrace rice cultivation farmers. Each FIG to consist of about 10-20 farmers and each FIG member to have 20 associate members. Each household to get support for 0.5 ha.
- Each FIG to open a bank account and prepare a plan covering terrace rice cultivation.
- FIG to be trained in SRI, use of better climate resilient seeds, azolla, rice and fish cultivation, in situ fertility management techniques and double cropping.
- Once the plan is approved by the DMU, FIGs to start implementation and the project to release funds directly to the bank account of FIGs based on progress in work.
- In instances where water harvesting measures are required, the Lead Farmer will support the FIGs to prepare plans for the same and access funds either from the project or from other centrally sponsored schemes.

**f. Support to settled Agriculture – Upland Farming**

- The Lead Farmer and the Village Level workers of the line departments to form a FIG comprising the terrace rice cultivation farmers. Each FIG to consist of about 10-20 farmers and each FIG member to have 20 associate members. Each household to get support for 1.0 ha.
- Each FIG to open a bank account and prepare a plan covering upland farming.
- FIG to be trained in use of better horticultural practices, intercropping, water harvesting, soil fertility management.
- Once the plan is approved by the DMU, FIGs to start implementation and the project to release funds directly to the bank account of FIGs based on progress in work.
- In instances where water harvesting measures are required, the Lead Farmer will support the FIGs to prepare plans for the same and access funds either from the project or from other centrally sponsored schemes.

**g. Support to landless**

- The Lead Farmer and the Village Level workers of the line departments to form a FIG comprising landless farmers (farmers without tenurial rights) the terrace rice cultivation farmers. Each FIG to consist of about 10-20 farmers. Each household to get support for 0.25 ha.
- Each FIG to seek allocation of land from the Village Council for undertaking settled agriculture.
- Each FIG to open a bank account and prepare a plan covering upland farming /horticulture development.
- FIG to be trained in use of better horticultural practices, intercropping, water harvesting, soil fertility management.

- Once the plan is approved by the DMU, FIGs to start implementation and the project to release funds directly to the bank account of FIGs based on progress in work.
- In instances where water harvesting measures are required, the Lead Farmer will support the FIGs to prepare plans for the same and access funds either from the project or from other centrally sponsored schemes.
- FIG to apply to the Revenue Department for issue of temporary patta.

#### **h. Value chain – Production support**

- Identify clusters for undertaking cultivation of selected value chain crops.
- Identify two CRPs in each cluster in consultation with the Village Councils. . This task will have to be taken up by the Circle/Block level staff and Village level workers of the line departments.
- Youth (including women) and progressive farmers to be preferred as CRPs. CRPs should have good knowledge about cultivation of selected value chain crops.
- Take a commitment letter from the selected CRPs to support project activities in the villages and to be the project contact points in the villages.
- Orient the CRPs on their role in project implementation and their role in supporting FIGs and project target households.
- Conduct a training for all CRPs to undertake nursery management, fertility management, low cost soil and water conservation measures, linear planting, environmental impact of *jhum* cultivation, and FIG formation and management.
- Each CRP to prepare a plan for developing nursery of selected value chain crop and project to provide support to these CRPs to emerge as nursery entrepreneurs in the clusters.
- The CRPs and the Village Level workers of the line departments to form a FIG comprising the value chain farmers. Each household to get support for 0.5 ha.
- Each FIG to open a bank account and prepare a plan covering value chain crop cultivation.
- FIG to be trained in use of better cultivation practices, intercropping, water harvesting, soil fertility management.
- Once the plan is approved by the DMU, FIGs to start implementation and the project to release funds directly to the bank account of FIGs based on progress in work.
- In instances where water harvesting measures are required, the Lead Farmer will support the FIGs to prepare plans for the same and access funds either from the project or from other centrally sponsored schemes.

#### **i. Value chain – Marketing support**

- PMU to establish a Marketing Unit in the Horticulture Department.
- The Marketing Unit to identify youth interested in the aggregation of farm produce and marketing.
- The Marketing Unit to establish contacts with the companies from outside the state and assist the entrepreneurs of the state to establish market linkages.
- The marketing Unit to identify local units of processors and value addition units and make plans for quality improvement, expansion and rehabilitation.
- The Marketing Unit to identify community (i.e. FIGs) interested in setting up agro processing units in project locations.
- The Marketing Unit to develop market linkages and establish contract farming arrangements with the farmers.
- The Marketing Unit to facilitate farmers and entrepreneurs attend trade fairs and exhibitions, and organise buyer-seller meets and market exposure visits.
- The Marketing Unit to establish linkages with IDH India and introduce digital delivery of extension.

- The Marketing Unit to identify service providers for facilitating organic certification, sustainable agriculture or good agriculture practices to target premium markets.
- The Marketing Unit to identify locations for constructing common facility centres /collection centres and facilitate construction using project funds.

**j. Value chain – Livestock support**

- Identify a CAHW in each village in consultation with the Village Councils. This task will have to be taken up by the Circle/Block level staff and Village level workers of the line departments.
- Youth (including women) and progressive farmers to be preferred as CRPs. CRPs should have good knowledge about livestock rearing.
- Take a commitment letter from the selected CAHWs to support project activities in the villages and to be the project contact points in the villages.
- Orient the CAHWs on their role in project implementation and their role in supporting livestock farmers.
- Conduct a training for all CAHWs in livestock management practices, preventive care, vaccination and first aid.
- CAHWs to conduct vaccination and deworming of pigs and all livestock.
- CAHW to identify persons interested in starting pig breeding unit, conduct training of these persons and provide support for establishment of breeding units.
- Identify persons for purchase of piglets with 50% project assistance and DMU to provide support for supply of piglets.
- Start demonstrations of sweet potato cultivation and supply of fish meal, soya beam meal and oil cakes for supporting pig rearing.
- Mithun and other livestock initiatives to be explored.
- Animal Husbandry and Veterinary Services Department to provide a plan for strengthening of boar stations and expansion of artificial insemination of pigs. The project to provide support to the department for these activities.

**k. Innovation Fund**

- Innovation fund guidelines to be reviewed and approved by the Project Management Committee.
- Call for concepts to provide funding under Innovation Fund.
- Review the concepts and seek detailed proposal from the selected agencies.
- Review the detailed proposals and sanction the proposals.
- Provide funding, monitor the performance and evaluate the results. Market Access
- The Engineering Section of the Agriculture Department to identify road stretches for upgradation into gravel roads.
- Prepare detailed design incorporating climate resilient features and Bill of Quantities and seek IFAD's approval in case the estimated cost exceeds the prior review threshold.
- Invite tender and evaluate the tender and submit the results to the appropriate approving authority of SCRAM and also to IFAD in case the estimated cost exceeds the prior review threshold.
- Sign a contract with the selected contractors.
- Execute road construction work

**3. Project Management**

**a. Supervision**

- PMU and DMU to undertake supervision of the field level activities and ensure implementation of project activities as planned.
- PMU to allocate an officer as the Field Coordinator for each district.

- PMU to submit regular reports to PMC and the Governing Council of SCRAM.
- Action taken report to be submitted on the recommendations of IFAD's Supervision Mission reports within 30 days from the date of receipt of management letter.

**b. Preparation of AWP&B**

- PMU to provide indicative budget for each DMU.
- Based on the yearly micro-plans of each villages indicative budget, AWP&B for each year to be prepared and submitted to PMU for approval.
- PMU to consolidate and send the same to IFAD for comments and no-objection by 30 January every year.
- Based on comments of IFAD, PMU to rework AWP&B and present it to the Governing Council for approval.
- Based on this, include the AWP&B into the budget of GoM for IFAD and GoM contribution of the project.

**c. Fund flow**

- As per the AWP&B seek release of funds from GOM (IFAD and GoM).
- Fund to flow from PMU to DMU and other government agencies: The fund recipients to submit statement of expenditure every month certified by the authorised signatory of DMUs and other government agencies.
- Funds to flow from DMUs to FIGs and entrepreneurs: The fund recipients to submit statement of expenditure authorised by the Block/Circle Officers.

**d. Monitoring and Evaluation**

- FAO to engage an Agency specialized in M&E for conducting Baseline and impact assessment survey. Baseline survey to be undertaken during the first year of the project.
- FAO to engage an agency for developing computerised management information system.
- PMU to conduct annual outcome survey in collaboration with DMUs every year starting from second project year and submit a report by end January every year.
- Maintain pictorial evidence of pre-project and post scenarios with respect to activities implemented under the project. Take google pictures of the *jhum* plot and other plots in each village every year for comparison purposes.

**e. Knowledge Management**

- Identifying emerging best practices and contributing to the knowledge management related activities of the project.
- Prepare documentation of best practices and lessons for knowledge sharing and also place it on the web site of the project.
- Undertake impact of project interventions on effectiveness of government programmes that have been converged with the project.
- Develop knowledge sharing platforms for knowledge dissemination amongst DMUs and line departments.
- Document replications resulting from such knowledge dissemination exercise.
- Coordinate with ICAR to conduct regional workshops to disseminate the results of the *jhum* cultivation and settled agriculture.

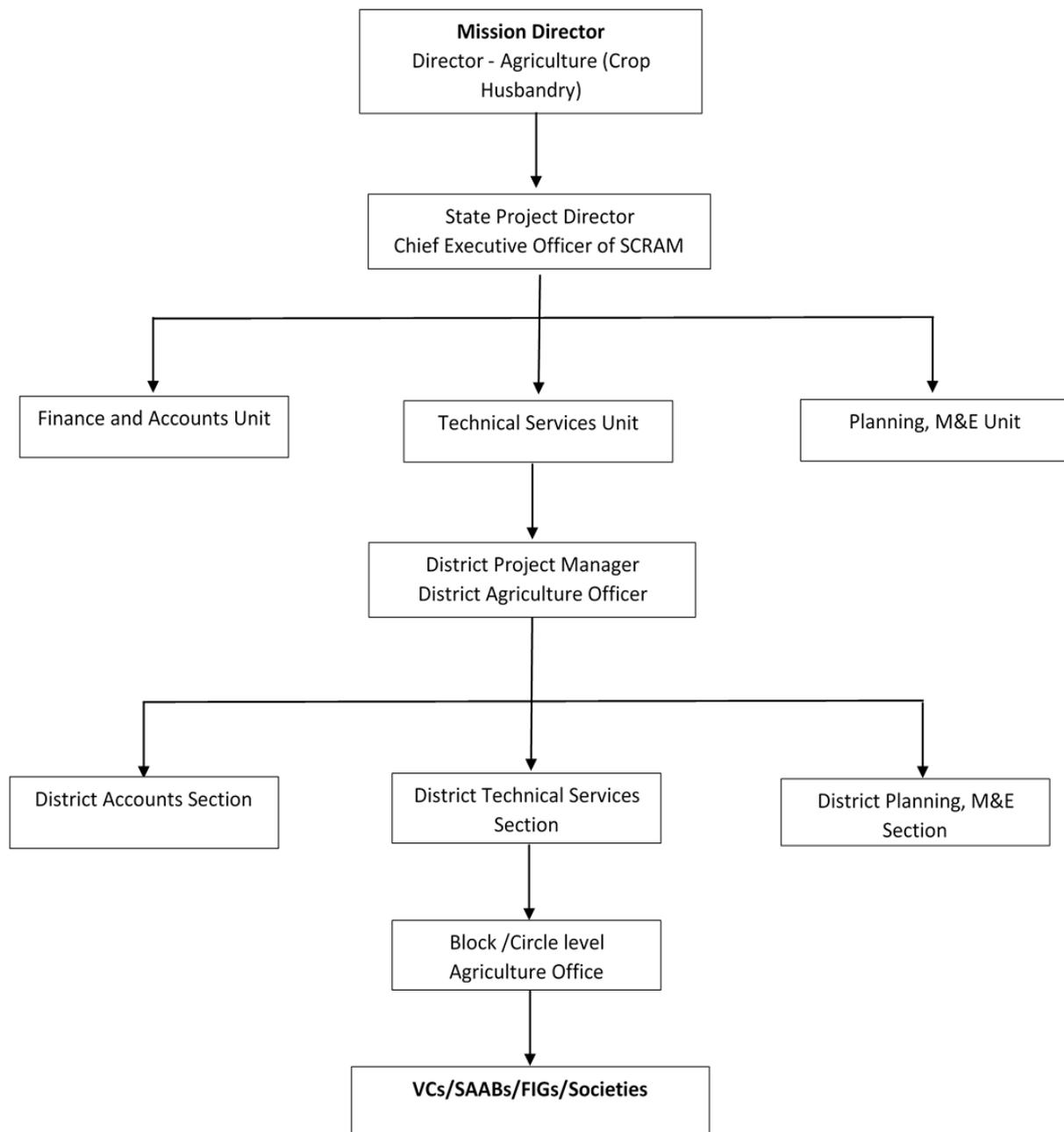
**f. Reporting**

- Submit half yearly and annual progress reports to IFAD within 45 days of end of the reporting period.
- Submit half yearly financial statements to IFAD within 45 days of end of the reporting period.
- Submit ORMS (RIMS) report to IFAD by end march every year.
- Submit Audited annual report with financial statements and management letter to IFAD by 30 September every year

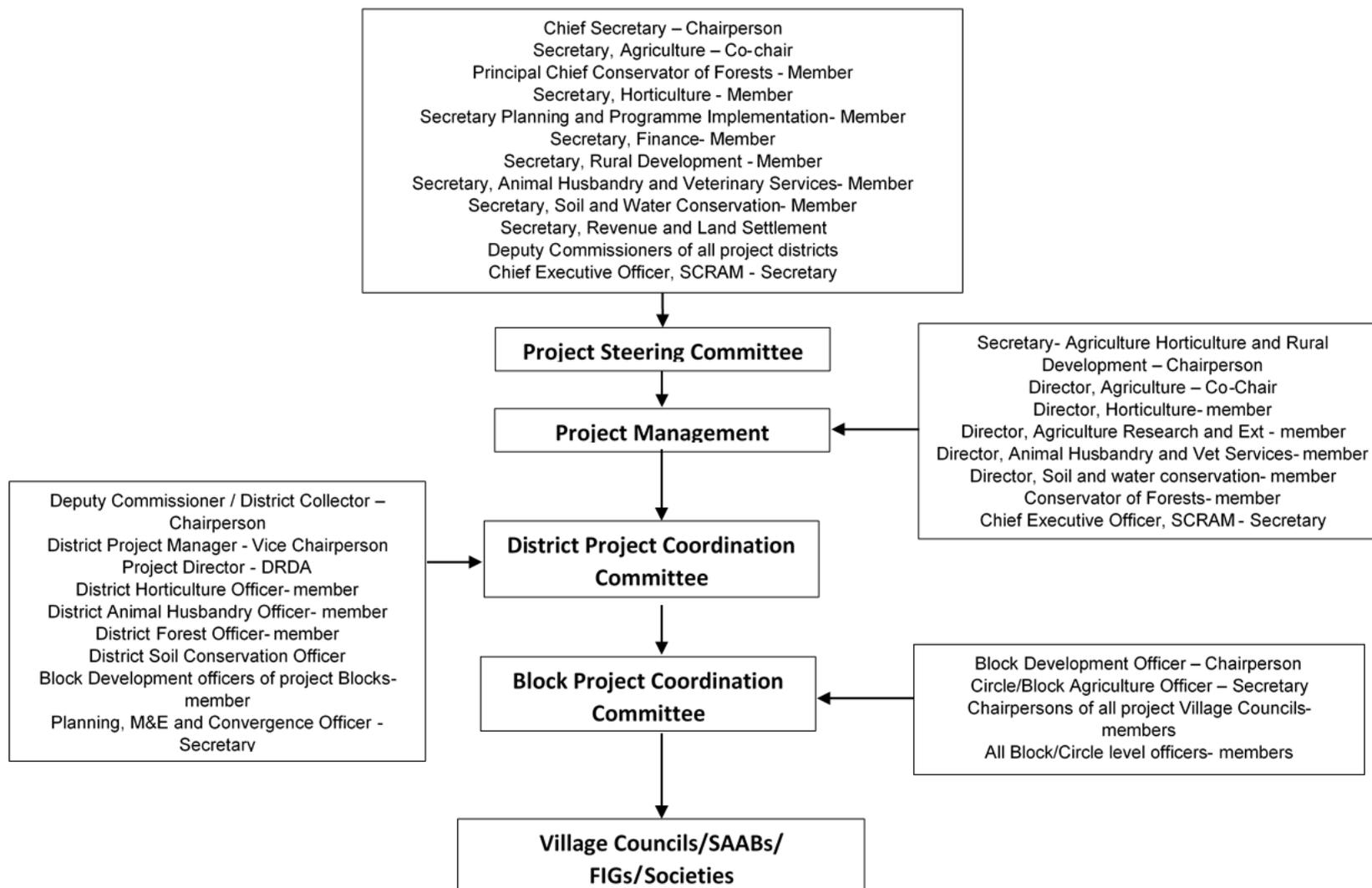
**g. Project Closing**

- Conduct a project completion impact assessment survey during the last quarter of the last project year
- Prepare a Project Completion Report and submit it to IFAD- end of last project year
- Make only committed expenditure during the period between project closing date and loan closing date.
- Reconcile and submit all withdrawal applications.

### Annex 1: Project Management Structure



### Annex 2: Project Coordination Structure



**Annex 3: Project Phasing Plan**

S. No.	Activity	Pre project	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Project Closing
			2018-19	2019-20	2020-21	2021-22	2022-23	2023-24							
<b>Preparatory activities</b>															
	Registration of SCRAM														
	Appointment of SPD														
	Appointment of State Level Project Implementation Team (PMU staff)														
	Orientation of PMU staff and DCs in New Delhi														
	Appointment of FAS														
	Appointment of District Project Implementation Team (DMU staff)														
	Orientation of DMU and block staff														
	Opening bank accounts														
	Review and approval of financial regulations of SCRAM														
	Review and approval of PIM														
<b>FAO - Technical Assistance (TA)</b>															
	Preparation of a TA agreement														
	Approval of TA agreement by GoM and IFAD														
	Signing an agreement with FAO														
<b>ICAR - Knowledge Generation and Dissemination</b>															
	Preparation of a draft MoU with ICAR														
	Approval of MoU by GoM and IFAD														
	Signing an agreement with ICAR														
<b>Capacity Building</b>															
<b>Training of trainers by FAO</b>															
	Preparation of training modules and materials														
	ToT on SALT														
	ToT on TRC														
	ToT on fruits and nuts nursery management														

S. No.	Activity	Pre project	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Project Closing
			2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	
	ToT on spice nursery management								
	ToT on animal husbandry								
	ToT on spice cultivation								
	<b>Training of field staff</b>								
	Training on SALT								
	Training on TRC								
	Training on fruits and nuts nursery management								
	Training on spice nursery management								
	Training on animal husbandry								
	Training on spice cultivation								
	<b>Component 1: Improvement <i>jhum</i> management</b>								
	<b>Sub-component 1.1: Better <i>jhum</i> and conservation</b>								
	<b><i>Jhum</i> improvement (first year <i>Jhum</i>)</b>								
	Obtain FPIC								
	Lead farmer identification and training								
	Lead farmer support - nursery development								
	Land use plan preparation and training								
	Allocation of <i>jhum</i> plot and FIG formation								
	FIG support and training								
	Low cost SWC structure construction								
	Supply of seeds and planting materials								
	<b>Fallow management (first year fallow)</b>								
	Allocation of fallow <i>jhum</i> plot								
	Low cost SWC works								
	Supply of seeds and planting materials								
	<b>Village Forest Conservation</b>								
	Allocation of VFC for development								
	Development of nursery								

S. No.	Activity	Pre project	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Project Closing
			2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	
	Low cost SWC works								
	Water source protection works								
	Planting of seedlings and management								
	<b>Sub-component 1.2: Support to Settled Agriculture</b>								
	<b>Terrace Rice Cultivation</b>								
	FIG formation and training								
	Supply of seeds and planting materials								
	Irrigation support								
	<b>Upland farming</b>								
	Identification of <i>jhum</i> plot for upland farming								
	FIG formation and training								
	Low cost soil and water conservation works								
	Supply of seeds and planting materials								
	<b>Landless support</b>								
	Identification of a <i>jhum</i> plot for farming								
	FIG formation and training								
	Low cost SWC works								
	Planting of seedlings and management								
	<b>Component 2: Value chain and market access</b>								
	<b>Sub-component 2.1: Value chains</b>								
	<b>Production support</b>								
	Cluster identification								
	CRP support (nursery management)								
	FIG formation and training								
	Supply of planting materials								
	<b>Marketing support</b>								
	Establishment of marketing unit								
	Participation in trade fair and exhibitions								
	Exposure visits								

S. No.	Activity	Pre project	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Project Closing
			2018-19	2019-20	2020-21	2021-22	2022-23	2023-24							
	Buyer seller meets														
	Promotion agro processing units (bamboo etc.)														
	Organic certification														
	Contract farming and market linkages														
	Construction of collection centres/CFCs														
	<b>Livestock support</b>														
	CAHW support - vaccination														
	Boar station support														
	Pig breeding unit support														
	Pig rearing support														
	Other Livestock support														
	Demonstrations														
	<b>Innovation fund support</b>														
	Approval of innovation fund guidelines														
	Call for proposals														
	Appraisal of proposals														
	Sanction and implementation														
	Monitoring and evaluation														
	<b>Sub-component 2.2: Market access infrastructure</b>														
	Planning, survey and design for link roads														
	Invite tenders & award works														
	Execution of works														
	Maintenance of defective works														
	<b>Knowledge Generation and Dissemination</b>														
	Settled agriculture in 50 ha on watershed basis														
	Impact assessment of settled agriculture interventions														
	Demonstrations														

S. No.	Activity	Pre project	Year 1			Year 2			Year 3			Year 4			Year 5			Year 6			Project Closing
			2018-19			2019-20			2020-21			2021-22			2022-23			2023-24			
	Regional level workshop for knowledge dissemination																				
	<b>Planning, MIS and M&amp;E</b>																				
	Engagement of an agency for MIS development																				
	Development of MIS software																				
	Baseline survey																				
	AWP&B and Procurement Plan submission																				
	Annual outcome survey																				
	Submission of ORMS																				
	End-line survey																				
	Project Completion Report																				

## Appendix 6: Planning, M&E, learning & knowledge management

### A. Logical Framework and Annual Work Plan & Budget (AWP&B)

1. The project logframe prepared as per IFAD's guidelines show the main activities that lead on to the outputs, outcomes and goals (Annex 1). The logframe will be the basis for preparing the AWP&B each year. The logframe will demonstrate a clear discernible *theory of change* with outputs contributing to outcomes and subsequently impacts at goal level of the project. The logframe that is included in the detailed design report will be refined periodically to reflect changes and modifications that become necessary during the course of project implementation. Particular attention will be paid to revise the logframe targets and indicators during the Mid-Term Review (MTR) of the project.

2. AWP&B will be consolidated by the PMU with inputs from District Project Management Unit (DMU). In formulating its input for the AWP&B, the DMU will consolidate proposals for activities that have come from project villages. The AWP&B is key planning document for FOCUS and will serve as the instrument for identifying specific targets and activities and in relating these to project outcomes and objectives. The overall responsibility for the preparation of the AWP&B would be assumed by the SPD and the DPM in each district supported by M&E staff in PMU and DMU. The AWP&B would be presented as an integrated plan (but identified separately for each district).

3. The PMU would coordinate the preparation of a consolidated AWP&B which would be finalized with the approval of the Project Steering Committee (PSC). The AWP&B would be submitted to IFAD for its concurrence. If required, the PMU may propose adjustments or revision in the AWP&B during the relevant project year. The AWP&B can be disaggregated into quarterly segments for ease of implementation and follow-up. It would be also the foundation for monitoring the progress at the activity level and financial resource allocation and utilisation. IFAD guidelines would be used for the preparation of the AWP&B. *The AWP&B guidelines will be included in the Project Implementation Manual (PIM).*

### B. Monitoring & Evaluation (M&E) in FOCUS

4. The main purpose of setting up an M&E system in any IFAD-funded project is to provide comprehensive, frequent, periodic and reliable data and information for sound result-based management and decision-making by the project management. The M&E system is designed to inform project management of whether implementation is going as planned and what corrective actions are needed in planning, target setting, budget allocation, etc. M&E system will generate relevant knowledge based on analysis and disseminate lessons learned in a targeted and strategic manner to comprehend achievements in development objectives of the project. The M&E system is expected to perform and achieve four essential objectives: (a) to monitor and manage project progress; (b) assess project outcomes and impact; (c) capture and disseminate lessons learned and good practices; and (d) build local/community capacities for participatory M&E. However, the M&E system would operate in four interlinked domains:

a) *Setting up the M&E system* by identifying information needs to guide the project strategy, ensure effective operations and meet external reporting requirements (of IFAD and Government) – *prime responsibility* of the Manager Planning and M&E in the PMU supported by the Deputy Manager MIS and Manager KM, CI, Gender and IP, with advice from the TA team (FAO). It will also be very useful to get inputs from IFAD at this stage. If needed an M&E expert can be employed as a short term consultant. The system and processes involved will be documented in the form of project M&E guidelines, which will form part of the PIM;

b) *Implementing the M&E system* - gathering and managing information/data – information will need to be collected from the four DMU, the district offices of partner line agencies, the block level Agricultural and Animal Husbandry Assistants, and from the 272 project villages. At the district level the M&E focal persons (Planning and Monitoring Officers in the DMU) will have prime responsibility

in monitoring of the progress of physical implementation against project targets and the AWP&B, along with collecting some key outcome data from each village - especially concerning changes in land use. Information on project outcomes and the results of processes will be collected via Annual Outcome Surveys (AOS) commissioned by the PMU M&E units and implemented via contracted enumerators and a data analyst. Impact evaluation surveys at project start-up, mid-term and completion will be contracted to an external agency;

c) *Involving project stakeholders in critical reflections* - once information has been collected it would be analysed and discussed by project stakeholders (via monthly/quarterly/half-yearly/annual meetings)– prime responsibility of the Manager Planning and M&E, who will interact with project implementing partners including partner line agencies for a smooth information flow and results generation. This will include preparation of monthly/quarterly/half-yearly/annual physical and financial progress reports against AWP&B targets;

d) *Communicating results of M&E* to all stakeholders including policy makers, project participants, Government and IFAD. The key combined M&E results will include Annual Progress Report, Mid-Term Review Report and Project Completion Report<sup>27</sup>. As part of good practice M&E such report will include details of project implementation and adequate information about what has been achieved and worked well. However, in the end, what makes the difference is how people interact, how ideas are shared and developed, and by doing so, how people are motivated and supported to learn and contribute to benefit all by meaningfully investing in rural people.

5. **M&E framework.** FOCUS will set up its M&E system following IFAD's M&E guidelines<sup>28</sup>. The basic M&E framework to support in development of M&E system is the systematic collection, analysis and reporting of information/data at three different levels of project implementation results: **(i) outputs** (from inputs and activities); **(ii) outcomes**; and **(iii) impact**, encompasses result-chain approach. A key element of the M&E framework is the M&E matrix - an expanded version of the logframe which identifies exactly when information will need to be collected and the methods of collection. The overall M&E framework will also include other M&E tasks annually or during the course of project implementation. These include conducting / reporting Annual RIMS (1<sup>st</sup> and 2<sup>nd</sup> level results), Annual Outcome Surveys, and Baseline & Completion Impact Assessments. The project will also carry out a Mid-Term Review and draft a Project Completion Report following IFAD guidelines.

6. **Output monitoring** will measure the progress of activities and achievement of outputs against annual targets in the annual work plan & budget (AWP&B) for each project component. AWP&B outlines the inputs and activities to be undertaken and data on outputs would be collected or measured for each indicator at the end of each month/quarter/year. This can be linked to the financial expenditure on the concerned activities, and data will be stored and report via a computerised Management Information System (MIS). The type of output data to be collected and monitored will be carefully dovetailed with the **project logical framework indicators**. The computerised MIS will also record village profiles for each village where the project is working, which will be drawn up before work starts to collect basic human, economic and natural resource information against which progress can be measured. The Participatory Land Use Plan (PLUP) will form part of this benchmark information and the MIS will record the implementation of the PLUP. Physical and financial progress data and reports for each component/sub-component in each village will be recorded in the computerised MIS. Data would be collected by partner line agencies, the Village Committee, the AFAs, VFAs and community service providers such as Lead Farmers and CAHWs. Where required data will be disaggregated by gender, age and social groups, particularly related to training and access to services. Output monitoring data is provided in Annex 2.

7. Although output monitoring would appear to be a straightforward process, the experience of a number of IFAD projects in India and elsewhere have highlighted the need to pay adequate attention

---

<sup>27</sup>For each of these reports, IFAD's appropriate guidelines would be provided and IFAD will support the project in understanding and applying these guidelines.

<sup>28</sup>See *Managing for Impacts in Rural Development – A Guide for Project M&E*, IFAD.

to the details of how data is collected (formats used, frequency of data collection, etc.) and reported. Overlapping components can mean households participate in more than one activity with the risk of double counting when calculating the number of households reached by project services. These problems can be overcome by training of staff responsible for progress reporting to use a common reporting format and carefully defining how participating households will be counted. The PMU M&E Unit will take the lead in harmonizing the different formats for data collection and reporting, and it at all possible a list of all households in each village will be maintained in the MIS - referenced by village geocode numbers and the head of household's national identify card (Aadhar card) number.

8. **Outcome monitoring** measures the immediate changes coming about as a result of project interventions. A few outcome indicators are shown in the project logical framework, but others will need to be added to create a results chain of evidence of change linking project outputs to the objective and goal. However, it is difficult to collect information from all households on indicators such as improved soil moisture, adoption of improved methods or increases in sales of commercial crops, the project will conduct Annual Outcome Surveys (AOS) as per IFAD's guidelines<sup>29</sup>. An AOS involves interviewing a sample of 400 to 800 farmers/households with a short questionnaire. Outcome surveys may also be carried out on a thematic basis in FOCUS in order to cover a specific area of project intervention, such as a specific value chain (e.g. spices or milk production). Thematic Outcome Surveys (TOS) are needed where the number of households involved in the value chain or sub-sector are too few to generate a reliable sample in an AOS<sup>30</sup>. Outcomes for innovation sub-projects would be reported by the contracted implementing agencies using indicators agreed at the time that these sub-projects are commissioned.

9. Related to outcome monitoring is **process monitoring**, which involves monitoring the processes leading to outputs and outcomes. Examples of specific areas where progress monitoring will be useful in FOCUS may include adoption and effectiveness of village level planning, functioning of farmers' organisations and community service provision. Information on these may be gathered via Participatory M&E or PME (see section on PME below), as well as from the records of VCs and FOs. A consolidated report on the progress of village LUP is included in the logframe as an outcome level indicator. In addition, the project can undertake specific studies related to social inclusion, natural resource governance, traditional knowledge, etc.

10. **Impact monitoring or evaluation** is the process which will assess the contribution of project activities in achieving the overall goal of the project. The main tool for impact evaluation will be baseline and end-of-project surveys of project households. These surveys will be coordinated by the PMU M&E unit and FAO will contract an external agency with specific expertise in such assessments. The indicator data to be collected by these surveys include those shown at objective and goal levels in the project logframe, as well as on outcomes and outputs in order to show evidence of a results chain from project activities, through outputs and outcomes to objectives and goals. This helps relate changes in impact indicators to participation in project activities and delivery of project outputs, and also to other logframe. *Draft ToR for impact evaluation surveys have been included in PIM.*

11. Information on two of the indicators at objective level in the project logframe are not suitable for data collection via a sample household survey. The first of these is an indicator for the vegetation in *jhum* fallow land. This would be measured in terms of the density of plants and diversity of plant species (for diversity the Shannon index could be used). This work would need to be contracted to an agency with expertise in biology and upland ecosystems with surveys of sample sites being carried out at baseline, mid-term and completion.

12. The second indicator is the increase in farm income and income for farm households per day that they work. Although this question could be included in a household survey (or data collected in

---

<sup>29</sup>See Designing and Implementing ANNUAL OUTCOME SURVEYS -- a guide for practitioners –IFAD, 2016.

<sup>30</sup>For example, if only 3,000 households are involved in dairy value chains, this is only 5% of the total of 62,000 participating households. An AOS may only cover 600 sample project households, of which around 30 (5%) would be involved on milk production, which is rather few to provide a reliable sample. Moreover a thematic survey can be more focused and so obtain more detailed information on the particular value chain interventions and resulting outcomes.

the survey on farm inputs and outputs), experience shows that this is unlikely to yield useful data. Farm households are rarely able to report input and output data for individual crops with any degree of accuracy. This is made even more difficult for projects in upland area where households are rarely able to report on crop areas (land areas are not measured or known) and volumes of inputs and outputs. It is therefore proposed that this data be collected by a small team of agricultural economists using a range of tools such as focus group discussions and case studies. The validity of key information from these sources will be confirmed using data from AOS and other surveys. Such key information could include the mix of crops grown, input use and overall production levels.

13. **Participatory Monitoring and Evaluation (PME):** This tool will be used particularly for outcome monitoring. At project level, one of the strategies could be to organise an annual workshop in which the participating *jhum* and settled agriculture farmers, livestock producers, women, progressive farmers, representatives from FOs, private sector representatives, partner line agencies, and banks, etc., would be given the opportunity for sharing their views about the project and identify mechanisms for improvement. In PME, the primary stakeholders - the project target communities – are active participants in all stages of project cycle, not just sources of information. PME will also focus on building the capacity of the local communities to analyse, reflect and take decisions and actions. PME attempts to provide opportunities for joint learning of various stakeholders at various levels of the project cycle. PME facilitates greater stakeholder commitment and ownership on the project activities, in turn empowering them to take corrective actions to help themselves. In the field implementation and community level, participatory M&E is a kind of social process; it generally involves intense negotiations between different target communities having different needs, expectations and worldviews. In a way PME is also a kind of grassroots political process which addresses issues of equity, power and social transformation. Above all, PME could be a highly flexible process, continuously evolving and adapting to the programme specific circumstances and needs. PME is but the building block for successful M&E system in all IFAD projects and the project staffs will be oriented and sensitized on the need for sharing of project information and knowledge on regular basis with all stakeholders including the project target communities with open mind and transparent attitudes.

14. **RIMS indicators.** The Results and Impact Management System (RIMS)<sup>31</sup> of IFAD generates annual report tables on a number of first and second level results indicators that correspond to the output and outcome indicators (of the project logframe). IFAD has produced a standard list of these indicators, but only some of these will apply to an individual project. Prior to mid-term review, the project will report on only the *first level results*, but after the mid-term report it will report on *second level indicators*. IFAD's RIMS Handbook (now being up-dated) provides clear guidelines on whole range of conducting, measuring and reporting RIMS results. The selection of first level indicators and second level indicators will be done on the basis of specific project characteristics or relevance to FOCUS, which the project would develop and discussed during project start-up workshop. All indicators would be reported on sex-disaggregated basis and to the extent relevant differentiation of results by gender, age and other social groups would be made. Draft *RIMS indicators are included in the PIM*. New RIMS core indicators are provided in Annex 3.

15. **Mid-Term Review (MTR).** A mid-term review would be conducted at the end of project year three (PY 3), to assess the progress, achievements, constraints and emerging impact and likely sustainability of project activities and make recommendation and necessary adjustments for the remaining project period. The MTR would be carried out jointly by FOCUS and IFAD, and will also assess the role of the implementing agencies, community institutions, the private sector, etc.

16. **Project Completion Review and Report.** At the end of the project, the PMU will draw up a Project Completion Report (PCR) based on IFAD's guidelines<sup>32</sup> for project completion. IFAD will provide support to the project in this work. IFAD will carry out a PCR Validation on the basis of the

---

<sup>31</sup>RIMS First and Second Level Results Handbook, IFAD, and April 2014. This is now under revision

<sup>32</sup> Guidelines for Project Completion Review, IFAD, October 2015. This includes stakeholder workshops to gather feedback on results and lessons learned

project PCR at least 3 months before the loan closing. IFAD's Independent Office of Evaluation (IOE) may also undertake a formal Evaluation of the project well after the closure of the project (which is usually known as Project Performance Assessment or PPA).

17. **Annual Outcome Survey (AOS).** The AOS is a short and quick household survey that is undertaken annually by project staff. This aims to provide regular or timely information about results that can be used to take corrective action during project implementation. In particular, the AOS is intended to set out to identify positive and negative changes taking place at the household level, provide early evidence of project success or failure, and also assess targeting efficiency. These changes are measured relative to non-project households and normally an AOS covers a small sample of 200 to 400 households selected randomly in project areas (project beneficiaries) and 200 to 400 households selected randomly in non-project areas (non-beneficiaries, to be used as a comparison group).

18. **Special thematic/diagnostic studies.** The project may carry out, or commission, a number of relevant thematic special studies. The project will allocate budget in its AWP&B and some of the thematic studies could include, for example, health and nutrition among the tribal population; social inclusion and exclusion; access to, and management of, common property resources; forest/ NTFP based livelihoods; and migration dynamics. All the studies must be carried out through gender lens.

### C. Gender and vulnerable groups in M&E

19. Integrating gender dimension in M&E and reporting on gender through sex-disaggregated data is imperative in all IFAD projects. Integrating gender into M&E system helps to measure the extent to which a project has addressed the different needs of women and men, and has made an impact on their lives and overall social and economic well-being. It also facilitates to improve project performance during implementation, allows for mid-term course correction, and makes it possible to derive lessons for future projects. Project reports will clearly identify the extent to which the project has reached women and men the degree to which they have benefited from project activities and outputs. This involves gender disaggregation of data on project activities and outputs to see if women have fully participated in group membership, group leadership, training, livelihoods activities, credit activities and enterprise support. Further, gender disaggregation is needed to see if women have benefited in terms of outcomes - such as increasing production - or impacts - increased income and assets. As some indicators are better measured on a household basis, these need to be disaggregated by gender of the household head. Special studies may also be undertaken on measures to reduce women's drudgery and on other issues regarding women's welfare and empowerment (for example access to health services, and household decision making). Some ideas of gender-sensitive monitoring indicators<sup>33</sup> in FOCUS could be developed using the followings (Table 1):

**Table-1: Examples of gender-sensitive indicators for M&E**

Particulars	Questionnaire / issues to identify gender-sensitive indicators
Gender division of labour	<ul style="list-style-type: none"> <li>- What is the gender division of labour or work burden at the household level? In other words, who is more responsible for working in the household, women or men?</li> <li>- When the project got started, have men started sharing household work with women, or do women now have to work more?</li> </ul>
Gender differences in access and control over resources (e.g. income, employment, land, social services)	<ul style="list-style-type: none"> <li>- Who controls income in the household? Do the man and woman equally contribute in decision making on expenditure relating to household income?</li> <li>- Who participated in the project training more, female or male? What have been the outcomes of training in applying the knowledge to household economics?</li> <li>- In whose name is the land under the household control? Do both man and woman equally contribute in deciding the types of crops to be grown in the household land?</li> <li>- What different kinds of social services do the man and woman receive or enjoy? What influences do these services have into the woman's health and ability to access information?</li> </ul>

<sup>33</sup> Modified from M&E Manual Guide for IFAD funded Projects in Vietnam.

Particulars	Questionnaire / issues to identify gender-sensitive indicators
Gender differences in information and knowledge	<ul style="list-style-type: none"> <li>- Are there gender differences in accessing the same information (about amount of information and how to access)?</li> <li>- Are there any differences in economic opportunities between man and woman due to different amount of information accessed?</li> </ul>
Decision making patterns in the household and community	<ul style="list-style-type: none"> <li>- Who in the household has the decision power? (Compare with the contribution of man and woman in the total household income; whether person contributing the most in total income has the decision power).</li> <li>- The participation of female and male in activities of community (the voice and respectfulness opinions in community activities).</li> </ul>
Women and men's attitude and self-confidence	<ul style="list-style-type: none"> <li>- The difference between female and male about self-confidence in all different project and community activities (on participation and responsibility).</li> </ul>
Gender differences in vulnerability and coping strategy	<ul style="list-style-type: none"> <li>- Differences in dealing problems and in adjusting to external shock.</li> </ul>

20. **Vulnerable groups in M&E.** The vulnerable categories are women-headed households (WHH), households having person with disability (PwD) and households where members have migrated away. In line with IFAD's targeting strategy and Policy on Engagement with Indigenous and Tribal People, the M&E system will capture the following indicators:

- No. of traditional /indigenous crop varieties recovered and conserved.
- Area under traditional /indigenous crop varieties and changes over the project period.
- No. of traditional soil and water conservation technologies replicated.
- No. of traditional settled agriculture technologies replicated.

#### D. Implementation Responsibilities of M&E

21. **M&E Staff:** The project will recruit staff experienced in M&E for the PMU and DMUs. As already mentioned, the M&E staff would be trained appropriately by the project and IFAD. In the first year of the project, the M&E staff will focus on establishing a functional M&E system for the project. This would include reviewing the results framework and indicators with the project management and IFAD to ensure that they are relevant, refining the M&E plan and M&E matrix, assessing staff training needs on M&E, organising M&E training at all level (PMU, DMU and village), coordinating and conducting the baseline survey, designing the various reporting formats, developing databases, setting up the MIS, and training of the VCs and village level staff on some elements of data to be monitored, etc. From the second year, the M&E staff will amongst others focus on timely conduct of AOS, annual RIMS Report, etc. (see also under step by step implementation arrangements).

22. The PMU Planning and M&E Manager will be responsible for coordinating project planning - such as consolidation of the AWP&B. This person will also oversee the preparation and submission of project reports (such as Annual/Half Yearly Progress Report, RIMS and AOS) - with support from the Manager KM. IP, Gender and IP. M&E staff would also support the PD during IFAD supervision, implementation support, MTR and PCR missions, and will organise all data and information relating to the project for reference by the IFAD missions.

23. **Technical support agency for M&E.** The project may obtain the services of a technical agency via the proposed FAO TA. This technical agency would build the capacity of the project M&E staff and provide specialised advice and backstopping. Capacity building in M&E for project staff will be undertaken through structured orientation training programme, refresher training, and information sharing.

24. **Key M&E tasks and implementation arrangements during project implementation cycle.** The overall key M&E tasks and implementation steps during various cycles of project implementation are summarised in Table 2 below:

**Table-2: Summary of key M&E tasks for FOCUS**

Key stages of project cycle	Key M&E tasks <sup>34</sup>
Project initiation (loan effectiveness) to project start-up workshop (usually PY 1)	<ul style="list-style-type: none"> <li>• Recruitment of all M&amp;E staff</li> <li>• Review the project design/detail project report in relation to M&amp;E with key stakeholders;</li> <li>• Review the PIM in relation to the section on M&amp;E and KM in particular;</li> <li>• Develop a detailed M&amp;E plan and system including appreciation of project M&amp;E culture and practices that would be emerging taking into consideration the various project results chain;</li> <li>• Review / develop various M&amp;E formats (data collection and reporting formats);</li> <li>• Undertake and complete the baseline surveys (outsource/procure an agency);</li> <li>• Develop project MIS (outsource the task / procure an agency);</li> <li>• Prepare the KM strategy and action plan; integrate M&amp;E and KM.</li> <li>• Prepare the knowledge management strategy and link it up with</li> <li>• Put in place necessary conditions and capacities for M&amp;E to be implemented.</li> </ul>
Main implementation period	<ul style="list-style-type: none"> <li>• Ensure all data and information needs for management and key stakeholders are regularly met;</li> <li>• Coordinate information gathering and analysis, as also data storage and data management;</li> <li>• Facilitate and support regular review meetings and processes with all implementers and stakeholders;</li> <li>• Prepare for and facilitate the project reviews/ review meetings (monthly/ quarterly/ half-yearly/yearly or annual);</li> <li>• Coordinate/prepare for supervision missions; implementation support missions, etc.; prepare the action taken report on recommendations of IFAD's missions.</li> <li>• Organise meeting of IFAD mission and government during supervision missions, etc.</li> <li>• Conduct focused studies on emerging questions including documentation of good practices and missed opportunities (those not working well; suggest alternatives);</li> <li>• Disseminate / communicate project results with various stakeholders;</li> <li>• Prepare/undertake and ensure timely submissions of various reports as per IFAD's norms and requirements including documentation of success case studies, half-yearly/annual progress report, Annual Outcome Survey, Annual RIMS Report, etc.</li> <li>• Prepare the draft Exit Strategy cum Post Project Sustainability.</li> <li>• Consolidate the various types of supervision mission and implementation support mission feedback.</li> </ul>
Mid-term	<ul style="list-style-type: none"> <li>• Collate information for the mid-term review (MTR);</li> <li>• Coordinate for conduct of the MTR;</li> <li>• Facilitate internal review processes to prepare the external review processes.</li> <li>• Adjust the M&amp;E system as required.</li> <li>• Revise the draft exit strategy and post-project sustainability.</li> <li>• Organise project workshop to review, share and disseminate changes proposed at MTR with all project staffs and partners.</li> </ul>
Phasing-out and Completion	<ul style="list-style-type: none"> <li>• Assess what the implementers and communities can do to sustain project interventions, impacts and M&amp;E/KM activities could be sustained after closing down; implement these specific ideas; revise and update the project exit strategy and post-project sustainability strategy or action plan.</li> <li>• Undertake end-line surveys / impact studies (outsource/procure an agency)</li> <li>• Organise workshops to review the key elements of project exit and post-project sustainability strategy.</li> <li>• Organise workshops and field studies with key stakeholders to assess project impacts; identify lessons learned for next phase of the project and/or other projects to be designed in future.</li> <li>• Prepare the Project Completion Report (PCR) as per IFAD's guidelines.</li> <li>• Facilitate and coordinate IFAD's PCR validation mission.</li> <li>• Organise closure workshop to share and disseminate lessons learned with all key stakeholders.</li> </ul>

<sup>34</sup>Should be read along with the overall KM tasks to have link between M&E and KM

25. **Annual M&E Activities Calendar.** The key M&E activities and reporting requirements to be performed by the project by date/month are illustrated below. This does not include the higher level project coordination meeting such as Project Steering Committee (PSC) meeting.

<i>Key activities</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>
Annual Progress Performance Review												
AWP&B preparation and submission												
Annual Progress Report												
Half-yearly Progress Report												
Annual RIMS Report submission												
Annual Outcome Survey Report submission												
Annual Audit Report submission												
Quarterly Results Report Preparation (Outputs)												
Quarterly Review Meetings at PMU												
Focus Groups and Key Informant Interviews (Theme or Output based)												
Monthly physical & financial data collection/ MIS entry												
Village PME meetings												

26. **Management Information System (MIS).** The project will establish an MIS system in the first year of project implementation. The MIS would generate, monthly, quarterly and annual progress reports on physical and financial progress and on project outputs and outcomes - and may have a GIS interface so that key data can be shown on maps. The MIS may, if feasible, be developed include information on individual households and so track their participation in different project activities. However experience shows that it would be wise to be cautious in developing a very comprehensive MIS system. Attempting to gather and record a large amount of detailed information can result in data overload, with no time to check to accuracy and validity of data entered, and no time to properly analyse and interpret the information in the MIS.

27. The Manager Planning and M&E staff would work with the PMU Deputy Manager MIS. Via the FAO TA component, suitable software/computing company would be contracted to develop the MIS software (or adapt an existing package) and then train staff and provide continuing support. The FAO TA will provide assistance in the process of drawing up a system specification and will be responsible for its procurement. FAO will also engage an agency to set up computerized MIS. It is likely that the system will need to be modified in the light of practical experience and emerging needs. In each district there will be an Assistant Manager Planning, M&E and MIS who will be responsible for operation of the MIS in the DMU. However much data will be actually entered by other people (such as the staff of partner line agencies and DMU Agricultural Officers. If tablet computers are used down to the village level, then VCs, AFA, VFA, Lead Farmers and CAHW may all enter data. In this case, a major part of the job for MIS staff at the district level will be helping these people enter accurate and complete data, and checking on data quality (this work may need additional staff in the DMUs). Once the system is operation the FAO shall employ a specialist to monitor the performance of the system who shall take a lead in adapting and refining the system so that it works better and meets the needs of project management. To do this will require close contact with the team in the software

supplier. The TA will also pilot the use of tablet computers for field data collection and monitoring. This pilot must take place before the system is rolled out across the project.

## **E. Reporting and Communicating Project Results**

28. As part of the MIS, the PMU will develop common reporting formats to be used by all the project entities. All data would be gender disaggregated and the analytical reports are to be used for taking timely corrective actions and to learn from implementation experiences to further improve project management effectiveness and efficiency. As required, monthly, quarterly and annual reports may be produced at different levels within the Project. For IFAD corporate reporting the following are needed: Half-yearly progress Report (only against the AWP&B), Annual Progress Report, RIMS Annual Reports and AOS.

29. Monthly Progress Reports (MPR) will be prepared from the project MIS developed to generate information at the village levels for reporting to the DMU and onward to the PMU. Information in the report will contain component/sub-component wise physical and financial progress against annual targets. This report will form the basis for monthly progress reviews at all levels and subsequently feed to the quarterly progress report.

30. Quarterly Progress Reports (QPR) will have physical and financial progress with information on challenges encountered in implementation and corrective actions and solutions to address constraints as well as communities response to project initiated activities. QPR would also be useful for consolidating RIMS Annual Report each year to be carried out for a calendar year (1<sup>st</sup> January to 31<sup>st</sup> December - although the RIMS reporting period is now flexible).

31. Half yearly and Annual Progress Reports (HR/APR) will be prepared from information compiled by the PMU on component/sub-component wise physical and financial progress, and loan category wise financial progress. The information will be generated via the project MIS and could contain summarised information and data from villages and findings from PME and annual outcome surveys, showing progress towards development objectives, usefulness of training, benefits from component/sub-component interventions, gender issues and knowledge management. The reports could be dovetailed with case studies of successful interventions. The PMU will prepare the half-yearly progress report by the end of October (primarily progress against the AWP&B) and a more detailed annual progress report by April end to mid-May every year and send to IFAD India Country Office and other stakeholders. *PIM will contain model format or guideline for preparing the Annual Progress Report.*

32. RIMS Annual Report. The key RIMS indicators corresponding to the project outputs and outcomes by components are included in the project's Logical Framework and will be reported annually in a table format by the end of January every year. In the first year the project information on RIMS first level indicators (list of indicators included in RIMS Handbook) associated with outputs would be reported. After mid-term review the report will include 2<sup>nd</sup> level indicators.

33. Annual Outcome Survey (AOS) Report: Each year the project will undertake AOS and report to IFAD. The first AOS will be done in the second year of project implementation after completing a full first year of project implementation. The AOS would be for a calendar year of January to December. Each year the project will submit the AOS report by February.

34. Mid-Term Review Report (MTR): IFAD in cooperation with the GoM and FOCUS would undertake a mid-term review by the fourth year of the project lifecycle (or as would be specified in financing agreement) to review project achievements and implementation constraints including issues relating to loan administration and financial management. Any corrective measure would be addressed at MTR. A mutually agreed action plan will be prepared based on the MTR findings.

35. Project Completion Report (PCR): As the project reaches completion point, the PMU would prepare a draft Project Completion Report based on IFAD's Guidelines for Project Completion. IFAD and the Government will then carry out a Project Completion Review and validation based on the

information in the Project Completion Report and other data. This review is usually done during the intervening period of project completion date and loan closing date.

36. Case studies on project innovations and success stories<sup>35</sup>: The project will undertake case studies of project innovations and success stories on regular basis and report them through Annual Progress Report and in newsletters published by IFAD and other agencies. The project will also report them and communicate through its IFAD Asia webpage managed by IFAD and on the project's own webpage.

## F. Learning and Knowledge Management (KM)

37. **KM Staffing**: In line with IFAD's policy, learning and knowledge management would be key element in FOCUS with integrated approach in which M&E will feed to generating learning for the project and from the project. While the KM functions in the project would be cross-cutting and would be responsibility of every sector head or manager, the project will KM focal person in PMU - the Manager KM, CI, Gender and IP, who would have relevant training and experience in KM. *An outline of the ToR of the KM focal person will be provided in the PIM.*

38. **Knowledge Management in FOCUS**. The project will prepare a Knowledge Management Strategy building on IFAD's Knowledge Management Strategy in the first year of project implementation. This will be the responsibility of the Manager KM, CI, Gender and IP, Staff responsible for KM activities at the district level would undergo training on KM.

39. The project **learning system** would comprise of various activities relating to M&E and KM functions. Some of these would include monthly, quarterly and annual review meetings; capturing information on progress, lessons and finding solutions for implementation constraints. KM and lesson learning would be used as a tool for internal learning by project stakeholders such as staff of various implementing agencies, participating villagers and farmers, both women and men. This will involve a series of regular meetings at village/cluster, block/circle (where useful), district and state levels. At these meetings, progress of project activities will be reviewed and learning from success and reasons for failure identified. Participatory tools such as "most significant change", "story telling" and "participatory monitoring and evaluation" (PME) may be used at these meetings.

40. The project will be encouraged to learn from KM culture and practices of experiences of other IFAD projects in India. A tested approach in sharing knowledge are "Learning Routes" - a continuous process of in-the-field training that seeks to broaden and diversify the markets of rural technical services, placing special value on the best experiences and knowledge of institutions, associations, communities and rural families. Each Route is organized thematically around experiences, case studies and best practices on innovative rural and local development. The project will have the opportunity of accessing the learning routes experiences from other IFAD projects in the country.

41. **Enhancing Use of Knowledge from M&E**. In all IFAD-funded projects, each monitoring and evaluation activity has a purpose. The significance of M&E in projects are critical; when done and used correctly, M&E contributes to strengthening the basis for managing results, foster learning and generate knowledge for all the stakeholders including IFAD, Government and Communities. Thus, knowledge gained from M&E is at the core of IFAD-funded projects. IFAD and government will use and apply learning from M&E to improve the overall performance and quality of results of ongoing and future projects and strategies. M&E is now oriented to generating knowledge and learning. Projects are now designed with emphasis not only on the inputs, outputs and processes but on development results as outcome. The project would use its M&E data and information for improved learning, enhancing accountability of the project for learning, use the knowledge and learning from M&E for project planning, implementation and improved monitoring, and document innovations and success stories so as to contribute in the overall local, national and global knowledge pool in development particularly in the areas of rural development and poverty eradication in the era of climate change.

---

<sup>35</sup>IFAD's Communication Division has brought out a guideline for preparing case studies in the field. This will be provided at the time of start-up workshop.

42. **Knowledge Products, Dissemination and Communication.** FOCUS will generate various knowledge products such as publications, documented case stories, photo documentation, videos, charts, manuals, posters, etc. However, for meaningful learning and knowledge sharing, knowledge products should be of quality with clearly identified audience and purpose. The characteristics of good knowledge products<sup>36</sup> have the following elements:

- Based on an assessment of needs and demand for the product among targeted users to ensure relevance, effectiveness, usefulness and value of the knowledge product.
- Designed for a specific audience, taking into consideration functional needs and technical levels.
- Relevant for decision-making needs.
- Knowledge products brought out timely.
- Written in clear and easily understandable language.
- Data is presented in a clear and coherent manner; all data and information being from project M&E without any bias, both successful and failure cases.
- Knowledge products developed through participatory process and validated through quality assurance processes with relevant stakeholders or peer reviewed appropriately.
- The knowledge products should be easily accessible to the target audience through most effective and efficient means, and timely.
- Consistency in presentation of products to enhance visibility and learning.

43. Practical tips for developing knowledge products from project M&E and dissemination of the products could include the following steps:

- Identify the target audiences and their information needs.
- Collect and keep at hand the contact information of all key stakeholders.
- Identify and determine the types of knowledge products to be developed (keep in mind the availability of project resources for this purpose as also the capacity of the project to develop the knowledge products, directly or through outsourced).
- Select and determine types of knowledge products that meet the target audience's information needs.
- Identify language requirements per product and audience.
- Determine most likely efficient forms and dissemination methods for each knowledge product.
- Monitor feedback and measure results of dissemination efforts as also quality of knowledge products.

44. **Knowledge Sharing and Learning Culture.** The project will endeavour to capture and disseminate lessons learned, successful case studies and document good practices. The project will adopt various knowledge sharing methods and tools including designing and facilitating knowledge events such as meetings and workshops. FOCUS will adopt some of the best practices in knowledge sharing and learning culture of IFAD funded projects in India around the followings:

- Building strong network by conducting periodic workshops/seminars/conferences on key thematic issues relevant to the project.
- Conduct monthly/quarterly/half-yearly/yearly review meetings of key stakeholders.
- Developing skills and competencies of project staffs to improve human resources in the areas of knowledge management.
- Tailoring knowledge management activities closely to the needs of project staff and stakeholders.
- Developing and actively using project website, newsletter, etc. and contributing in the IFAD Asia website.

---

<sup>36</sup>Adopted from the "Handbook on Planning, Monitoring and Evaluating for Development Results", UNDP, 2009

- Adoption of specific knowledge sharing methodologies and tools<sup>37</sup> with capacity building components, such as: tools treasure hunt, video storytelling, speed sharing, chat show, jumpstart storytelling, World Café, Peer Assist, etc.

45. **Linking with Research Institutions for knowledge and learning.** The project will be working on both *jhum* improvement and settled agriculture in two states. In order to generate concurrent impact data and to demonstrate the effectiveness of these approaches, the project will engage with a Specialist Organisation which has expertise in upland farming systems as well as good knowledge of the region. This exercise will also generate knowledge that may be useful for informing the policies and practices of other states in the NER. The project has allocated USD 250,000 to generate knowledge on the evolution and sustainability of upland farming systems and their capacity to respond to climate change. The ICAR Regional Centre in Barapani with specialisation in Research and the Regional ATARI which co-ordinates the work of all KVKs in the NER have been identified by the Project as the most suitable agency to be engaged for this purpose. Both these institutions come under the ICAR, GoI. It is, therefore, proposed that the GoM will sign an agreement with ICAR detailing the terms of engagement. The responsibilities will be divided between the ICAR Regional Centre, Barapani and the ATARI as follows:

- a) Regional Centre of ICAR which has a sub-centre in Kolasib will be responsible for: (i) demonstration of settled agriculture models on a micro-watershed basis in about 50 ha per district; (ii) technical backstopping for project activities in the field related to *jhum* and settled agriculture; (iii) evaluating impact of project's settled agriculture activities; (iv) knowledge sharing by way of regional workshops to disseminate the results impact assessment studies; and (v) knowledge sharing by way of regional workshops to disseminate the results of action research conducted by KVKs under the supervision of ATARIs.
- b) Agriculture Technology Application Research Institute (ATARI) through the KVKs in all the district will be responsible for (i) action research on settled agriculture on *jhum* land in various microclimates of Mizoram in collaboration with local research agencies; (ii) supply of quality planting materials; (iii) development of improved varieties of seeds (paddy) using local seeds; (iv) technical backstopping and training of village level workers; and (v) establishment of demonstrations of pig breeding units, stall fed goat units and backyard poultry hatchery units.

46. The Deputy Director General (Extension) will be responsible for overall management of the knowledge generation and dissemination activities to be conducted by the ICAR, Regional Centres and sub-centres and ATARI and KVKs. A technical assistance agreement will be signed between ICAR and GoM to implement these activities.

---

<sup>37</sup> Details are available at "*Introducing Knowledge Sharing Methods and Tools: A Facilitator's Guide*" by Allison Hewlitt and Lucie Lamoureux. IDRC-IFAD, 2010

## Appendix 6, Annex 1: Logical Framework – Mizoram

Results Hierarchy	Name	Indicators			Means of Verification			Assumptions (A) / Risks (R)
		Baseline	Mid-Term	Endline	Source	Frequency	Responsibility	
<b>Outreach</b>	-Number of persons receiving services promoted by the project	0	128,000	322,500	Project MIS	Yearly	M&E Unit	
	-Number of youth receiving services promoted by the project	0	7,680	19,350				
	Number of HH reached	0	26,600	64,500	Project MIS	Yearly	M&E Unit	
<b>Goal:</b> Income of 64,500 farm households in hill areas of Mizoram increased and their resilience to climate change enhanced	% of HH <i>jhum</i> - farming for 3 or more years continuously on single plot	0		70%	Impact assessment	Baseline End-line	M&E Unit Commissioned Study	A) economic growth and social stability
	Number of HH reporting increase of >100% in household incomes	0	19,950	48,375	Impact assessment	Baseline End-line	M&E Unit Commissioned Study	
<b>Development Objective:</b> Environmental sustainability and profitability of <i>the</i> farming systems in hill areas enhanced	% soil carbon			4%	Soil carbon test	Baseline Annual	M&E Unit	(R) Climate change and/or better non-farm opportunities makes farming unattractive.
	Real increase in net farm income (in 2017 prices) in million INR	0	666.1	1,274.5	TOS	Baseline MTR End-line	M&E Unit Commissioned Study	
	Number of trees increased at least 20 per ha in <i>jhum</i> plot	0	10#/ha	20#/ha	TOS	Baseline MTR End-line	M&E Unit Commissioned Study	
<b>Outcome 1:</b> Improved farmers' capacities to manage upland farming sustainably	<u>Number of HH reporting adoption of environmentally sustainable and climate resilient technologies and practices</u> <sup>38</sup>	0	26,600	64 500	Project MIS	Yearly	M&E unit	(A) Producers are able to finance the continued investments required to climate proof their farms
<b>Outputs:</b>								
a. Participatory Land Use Planning conducted	No of VC with completed PLUP and land suitability maps	0	272	272	Project MIS	Yearly	M&E unit	

<sup>38</sup>Climate resilient technologies and practices refer to agro-forestry, soil and water conservation, improved planting material, integration with livestock

Results Hierarchy	Name	Indicators			Means of Verification			Assumptions (A) / Risks (R)
		Baseline	Mid-Term	Endline	Source	Frequency	Responsibility	
b. improved production system	No. of farmers (W/M) trained on better <i>jhum</i> and fallow management	0	54,400	108,800	Project MIS	Yearly	M&E unit	(A) Access to reliable technical advice and planting material is secured
	No farmers trained (W/M) on settled agri	0	13,600	27,200	Project MIS	Yearly	M&E unit	
	Area in ha under SWC, by <i>jhum</i> , <i>jhum</i> fallow, settled agriculture	0	20,400	40,800	Project MIS	Yearly	M&E unit	
c. Village forest conserved	Area under CCA managed by VC	0	5,440	5,440	Project MIS	Yearly	M&E unit	(A) Effective convergence with Govt prog to build the assets of the poorer HH
d. Access of poorest households	No of HH benefitting from support to landless	0	5,440	10,880	Project MIS	Yearly	M&E unit	
<b>Outcome 2:</b> Increased volume of marketed crops and livestock, with improved returns to producers	Gross returns from spices (million INR)	0	93.1	277.0	Project MIS	Yearly	M&E Unit Commissioned Study	(R) High transaction cost due to small volume and remote location
	Gross returns from livestock (million INR)	0	138.5	267.9				
<b>Outputs:</b>	No participating HH in organized spice value chain	0	3,600	7,200	AOS	Annual	M&E unit	(R) Implementation of APMC Act prevents new types of market linkages and reduces farm-gate prices.
a. Spice producers are integrated in national and international spice markets								
b. Increased productivity of pig production	Pig off-take number	0	15,000	25,000	AOS	Annual	M&E unit	
c. value-chain clusters developed	Number of clusters	0	15	30	AOS	Annual	M&E unit	
<b>Outcome 3:</b> Improved access to markets	<u>Number of farmers reporting improved physical access to markets</u>	0	20,000	48,000	AOS	Annual	M&E unit	(A) Operation and maintenance by communities and Govt is effective.
<b>Outputs:</b>	<u>Length and type of access road rehabilitated in km</u>	0	150	400	Project MIS	Quarterly	M&E unit	
a. Rural roads rehabilitated								

Underlined indicators are IFAD RIMS indicators

**Appendix 6, Annex 2: FOCUS: Monitoring Indicators for MizoramState**

	Description	Unit	Project Target	AWP&B Target	Annual Achivt	AWP&B Target	Annual Achivt	AWP&B Target	Annual Achivt
<b>A. Better <i>Jhum</i> and Conservation</b>									
1.1	Village level consultation	VC	272						
1.2	Number of FIGs organised	#	272						
1.3	Land use maps prepared	district	4						
1.4	Training of VC members:	VC	272						
		Male							
		Female							
1.5	Training of lead farmers:	persons	272						
		Male							
		Female							
1.6	Fallow management with legume crops	ha	13,600						
1.7	Current <i>jhum</i> improvement	ha	13,600						
1.8	Number of farmers trained in <i>jhum</i> and fallow	Persons	108,800						
		Male							
		Female							
1.9	Construction of low cost SWC works	ha	27,200						
1.10	Planting materials supplied	households	54,400						
1.11	Area under village forest	ha	5.440						
1.12	Water sources protected	sites	816						
1.13	No. of traditional crops recovered and conserved	No							
1.14	Area under traditional crop varieties	Ha							
1.15	No. of traditional SWC technologies replicated	No							
1.16	No. of	No							
<b>B. Support to settled agriculture</b>									
2.1	Number of FIGs organised	FIG	272						
2.2	Number of farmers trained:	Persons	27,200						

	Description	Unit	Project Target	AWP&B Target	Annual Achivt	AWP&B Target	Annual Achivt	AWP&B Target	Annual Achivt
		Male							
		Female							
2.3	Support to WRC/TRC	ha	10,880						
2.4	Support to existing orchards	ha	5,440						
2.3	# of fingerlings supplied	1,000#	1,632						
2.4	# of FIGs for the Landless	FIG	272						
2.5	SWC Bunding	ha	8,160						
2.6	Bench terracing	ha	800						
2.7	# of WHS constructed	#	272						
2.8	Seeds & seedlings provided	households	5,440						
2.9	No. of traditional settled agriculture technologies replicated								
<b>C. Value-chain development</b>									
3.1	FIGs promoted for 3 crops	FIG	360						
3.2	CRPs engaged	Persons	60						
		Male							
		Female							
		Youth							
3.3	Training of FIG members:	persons	7,200						
		Male							
		Female							
3.4	Planting materials to CRPs	CRP	60						
3.5	Supply of planting materials to farmers	households	7,200						
3.6	Aggregation/ common facility centres	#	30						
3.7	Agro-processing units	#	15						
3.8	Pig-breeding units set up	#	64						
3.9	Distribution of cross-bred piglets	households	25,000						
3.10	Vaccinations of								
	-Pigs	Pigs	420,000						
	-Poultry birds	birds	1,925,000						
	-Cattle	Cattle	110,000						
3.11	Training of VFAs:	persons	50						
		Male							
		Female							

	Description	Unit	Project Target	AWP&B Target	Annual Achivt	AWP&B Target	Annual Achivt	AWP&B Target	Annual Achivt
3.12	CAHW training:	Persons	544						
		Male							
		Female							
3.13	Livestock farmers training:	persons	30,600						
		Male							
		Female							
3.14	Improvement of meat-market chain	#	544						
3.15	No. of innovation sub-projects implemented	No.	30						
3.16	No. of persons benefitting from innovation sub-projects	Persons							
		Male							
		Female							
		Youth							
<b>d. Market access infrastructure</b>									
4.1	Rehabilitation of earth road	km	200						
4.2	Gravelling of existing earth road	km	200						
4.3	Road maintenance	Km/year							
5.0	Project outreach								
5.1	Number of hh covered	households							
5.2	Number of persons covered, total	Persons							
		Male							
		Female							
5.3	Number of youth covered, total	persons							
		Male							
		Female							

**Appendix-6, Annex-3: New RIMS Core Indicators: FOCUS (Target groups are Indigenous People)**

		<b>Output indicators</b>			<b>Outcome indicators</b>		
<i>Areas of thematic focus</i>	<i>Target</i>	<i>No</i>	<i>Title</i>	<i>Legend</i>	<i>No</i>	<i>Title</i>	<i>Legend</i>
Outreach: To increase the income of farm households and enhance their resilience to climate change in hill areas of Mizoram and Nagaland		1.1	Number of persons receiving project services	Male Female			
		1.a	Number of households reached;	Youth IP 1/ <b>C</b>			
		1.b	Total number of hh members				
<b>SO 1:increase poor rural people's productive practices</b>							
Access to natural resources		1.1.1	Number of persons whose ownership or user rights over natural resources have been registered in national cadasters and / or geographic information management systems	Male Female Youth	1.2.1	Percentage of persons or households reporting improved access to land, forests, water or water bodies for production purposes	Male Female Youth
Access to agricultural technologies and production services		1.1.2	Number of ha of farmland under water related infrastructure constructed and rehabilitated	ha	1.2.2	Number of households reporting reduced water shortages vis-à-vis production needs	Male Female Youth
		1.1.3	Number of rural producers accessing production inputs and /or technological packages	Male Female Youth	1.2.3	Number of households reporting adoption of improved inputs, technologies or practices	Male Female Youth
		1.1.4	Number of people trained in production practices and /or technologies	Male Female Youth	1.2.4	Number of households reporting an increase in production	Male Female Youth
Inclusive financial services		1.1.5	Number of persons in rural areas accessing financial services (savings, credit, insurance, remittances, etc)	Male Female Youth	1.2.5	Number of households reporting using rural financial services	Male Female Youth
		1.1.6	Number of financial service providers supported in delivering outreach strategies, financial products and		1.2.6	Number of partner financial services providers with portfolio risk >30 days below 5%	

		<b>Output indicators</b>			<b>Outcome indicators</b>		
<i>Areas of thematic focus</i>	<i>Target</i>	<i>No</i>	<i>Title</i>	<i>Legend</i>	<i>No</i>	<i>Title</i>	<i>Legend</i>
			services to rural areas				
		1.1.7	Number of persons in rural areas trained in financial literacy and /or use financial products and services	Male Female Youth	1.2.7	Number of financial service providers with operational self-sufficiency above 100%	
Nutrition		1.1.8	Number persons or households provided with targeted support to improve their nutrition	Male Female Youth	1.2.8	Number of women reporting improved quality of their diets	Youth Female
<b>SO 2: Increase poor rural people's benefits from market participation</b>							
Diversified rural enterprises and employment opportunities		2.1.1	Number of rural enterprises accessing business development services	Male Female Youth C	2.2.1	Number of New jobs created	
		2.1.2	Number of persons trained in income generating activities or business management	Male Female Youth C	2.2.2	Number of supported rural enterprises reporting an increase in profits	
Rural producers organisation		2.1.3	Number of rural producers organisation supported	C	2.2.3	Number of rural producers organisation engaged in formal partnership, agreements or contract with public or private entities	
<b>SO 3: Strengthen the environmental sustainability and climate resilience of poor people's economic activities</b>							
Environmental sustainability and climate change		3.1.1	Number of groups supported to sustainably manage natural resources and climate related risks		3.2.1	Number of greenhouse gas emissions avoided and or sequestered	
		3.1.2	Number of people provided with climate information services	Male Female Youth	3.2.2	Number of persons or households reporting adoption of environmentally sustainable and climate resilient technologies and practices	Male Female Youth
		3.1.3	Number of persons accessing technologies that sequester carbon or reduce greenhouse gas emissions	Male Female Youth	3.2.3	Number of households reporting a significant reduction in the time spent for collecting water or fuel	Male Female Youth

		<b>Output indicators</b>			<b>Outcome indicators</b>		
<i>Areas of thematic focus</i>	<i>Target</i>	<i>No</i>	<i>Title</i>	<i>Legend</i>	<i>No</i>	<i>Title</i>	<i>Legend</i>
<b>Policy</b>							
Policy, cross-cutting		Policy 1	Number of policy relevant knowledge products completed		Policy 3	Number of existing or new laws, regulations, policies or strategies proposed to policy-makers for approval, ratification or amendment	
		Policy 2	Number of functioning multi-stakeholder platforms supported				

1/ IP Indigenous people; C mandatory indicators

## **Appendix 7: Financial Management and disbursement arrangements**

### **A. Summary Risk Assessment**

1. During design, a Financial Management (FM) risk assessment has been completed in accordance with Financial Management Division (FMD) guidelines. The assessment was developed after visiting the Department of Finance (DoF), Office of the Auditor and Accountant General of Mizoram (AG), Finance Section of the DoA. Additional meetings have been held in the districts. No Public expenditure and financial accountability assessment (PEFA) has been conducted at Mizoram State level. The inherent risk assessment is based on the latest national PEFA conducted in 2010 and on a series of financial and performance audit reports issued by the Mizoram AG in the last few years. Due consideration has been given to the Transparency International (TI) survey of 2016 on the perceived level of corruption in India.

2. The 2010 PEFA discloses the “status of arts” in the organization of the Public Financial Management (PFM) function in the country at federal level highlighting results, issues and planned reforms to improve support to national development. While the overall budget management function is sufficiently efficient, internal and external audit functions are in need of substantial improvements. No information has been provided on donor practices in the country.

3. At Mizoram State level, PFM still needs to be completely developed. The public sector organizational function is in place but substantial efforts are required to modernize the PFM. The accounting, internal control and reporting functions appear to be particularly weak, budgeting needs improvement and internal audit is not undertaken. The only FM efficient function appears to be the external audit performed by AG which however operates in a quite challenging environment. There is a need to increase the level of accountability and control over the use of public financial resources and drastically reduce cash transactions in the public sector by use of bank transfers.

4. Within the Mizoram State, a specific analysis has been conducted on DoA which was initially meant to host the PMU. Given the organizational limitations assessed, it has been decided to create a society for the implementation of the project. The results of the assessment outline that DoA is not sufficiently efficient from an FM perspective. Absence of any clear budgeting, accounting and reporting procedures, as well as limited capacity in the implementation of schemes, indicate the need to improve its organizational arrangements.

5. Mizoram is a “Special Category State”, in this case all external assistance that is received in foreign currency by India and is passed from the Union to the State as rupee grant for the 90% of the external assistance amount and as rupee loan for the balance 10%. The loan is repayable in 15 years, with foreign exchange risk or interest rate risk towards the external financier absorbed by the central government. Despite the “medium” risk reported in TI Corruption Perception Index of 2016, corruption continues to be perceived as a major obstacle to efficient and equitable development.

6. A society will be registered by the DoA under the Societies Registration Act, 1860. The society will be based at Aizawl and have offices at the four districts in which the project will be implemented. The Chief Secretary will be the Chairperson of the society with the Secretary, Agriculture as the co-chair. The district offices will be based in the District Agriculture Office with the District Agriculture Officer (DAO) as the District Project Manager (DPM). The finance and accounting staff at the Project Management Office (PMU) and the districts will be engaged from the open market. The PMU will have a senior person as the Finance & Accounts Specialist and supported by an Accounts Officer. One Accounts Officer will be engaged for each of the districts. The project will fund capacity building of PMU and DMU staff and development of a computerised accounting system. The audit of the society will be carried out by the AGs office at Aizawl.

7. Based on the combination of inherent with control risks, explained in detail in the following paragraphs, the overall FM risk rating assigned to new project in the North East at this stage is **HIGH**. Risk mitigation measures are specifically described in the subsequent pages; the implementation of some of these may be considered as condition precedent to withdrawal.

## B. Financial Management Risk Assessment

### Inherent risk at country level

8. The latest available PEFA is dated 2010 and is related to the central government only. No specific information on Mizoram, but the document gives useful information to understand PFM in the country context.

9. Credibility of budget: While the budget classification system is uniform throughout the country, the revenue estimates to finance it are precise, the extra budgetary expenditures are reported and external funded financing is duly considered, substantial overdraft of expenditures over approved budget are recorded. Other areas for improvement include the presence of variation in the composition of expenditures in relation to the approved budget, and limited ability of the central government to monitor the financial positions of each state.

10. Policy based budgeting: A clear calendar for budget preparation exists and relevant circulars are issued by Ministry of Finance. However the link between investment and recurrent costs is weak and its persistence undermines the policy aspects of the budget.

11. Predictability of the budget (tax management) and budget execution: Despite the articulated and documented tax policies and exemptions, their applicability is largely subject to the discretion of administrative authorities. The system for debt management and its monitoring is adequate as well as the management of public sector employees' salaries. The monitoring of non-salary expenditures is in need of improvements.

12. Internal audit: The internal audit function is not independent; it is conducted in a routine manner and does not focus on systemic issues to help management in improving efficiency and effectiveness of operations. Internal audit recommendations are not necessarily binding for implementation.

13. Accounting, Recording and Reporting: At the federal level the accounting function is well established and efficient both in terms of information provided and timely submission. Year-end financial statements, in the form of Finance Accounts, are presented to legislature with a time lag of 8-10 months. Accounting standards used are the national ones which are not fully aligned to IPSAS.

14. External scrutiny and audit: There is a detailed scrutiny process run by the legislature before discussion and approval of the annual budget law. CAG audits all government departments and public entities every year as prescribed by the law, but the submission of audit reports to legislature is delayed up to 12 months after the end of the fiscal year. There is a limited scrutiny of audit reports followed by a limited implementation of audit recommendations.

15. The following table summarizes the features of the public finance management system, based on the PEFA methodology:

Criteria	Assessment
Credibility of the budget  <b>PEFA score: B-</b>	<ul style="list-style-type: none"> <li>Increased alignment between actual expenditures and approved budget;</li> <li>Still substantial misalignment between actual composition of expenditures and approved budget;</li> <li>Forecast of revenue to finance budget very realistic as well budget classification;</li> <li>Monitoring and clearance of arrears remains an issue.</li> </ul>
Comprehensiveness and transparency	<ul style="list-style-type: none"> <li>Comprehensiveness of Information Included in Budget Documentation;</li> <li>Government operations completely reported;</li> <li>Limited fiscal analysis;</li> </ul>

<b>PEFA score: B+</b>	<ul style="list-style-type: none"> <li>Adequate public access to key fiscal information.</li> </ul>
Policy-based Budgeting <b>PEFA score: C-</b>	<ul style="list-style-type: none"> <li>While budget preparation is a participative exercise, there is still a lack of multi-year perspective in fiscal planning, expenditure policy and budgeting.</li> </ul>
Predictability and control in budget execution <b>PEFA score: C-</b>	<ul style="list-style-type: none"> <li>Taxation codification leaves room for interpretation;</li> <li>Problematic collection of arrear tax payments;</li> <li>Adequate cash and debt management;</li> <li>Payroll controls to be enhanced;</li> <li>Internal audit function is not independent.</li> </ul>
Accounting, recording and reporting <b>PEFA score: B+</b>	<ul style="list-style-type: none"> <li>Reconciliations and production of reports are regular exercises, the quality needs to be improved as the information provided is not complete;</li> <li>Financial statements are prepared timely and the information provided is complete. Standards used for accounting are not completely in line with IPSAS.</li> </ul>
External Scrutiny and audit <b>PEFA score: C</b>	<ul style="list-style-type: none"> <li>Annual audit reports are submitted to the legislature with delay; limited follow up for the implementation of recommendations;</li> <li>The annual budget law is properly scrutinized, while the examination of audit reports is limited.</li> </ul>
Donor Practices <b>PEFA score : N/A</b>	<ul style="list-style-type: none"> <li>2010 PEFA did not scrutinize donor practices</li> </ul>

#### Inherent risks at Mizoram State and DoA level

16. Some of the observations mentioned in the PEFA of 2010 are outlined also in the latest available report of the “Comptroller and Auditor General of India on States Finances of Mizoram State”, related to the year ended 31 March 2014 to 2016. The information provided gives adequate insight of trends in the PFM area at State level.

- a. Government needs to mobilize additional revenues to contain the deficit, expand the tax-base and reduce tax administration costs. Additional efforts should be undertaken to ensure timely release of central assistance by taking timely action on required conditions for disbursement.
- b. Government should focus on expenditure management to bring qualitative improvement in the public spending. There is a need to apply due prudence in expenditure pattern so that resource gap remains within manageable controls of the fiscal capability of the State.
- c. The increase in market borrowed funds puts at risk debt sustainability. Proper arrangements should be put in place to ensure proper monitoring and management of borrowed funds.
- d. A performance based system of accountability should be put in place in State owned enterprises as to ensure profitability and improve efficiency in services. Loss-making companies should be restructured.
- e. Government should put in place an effective mechanism to ensure financial discipline and prepare realistic budget. Budgetary control should be strengthened in all Government departments where savings/excess persisted in the last few years.
- f. Finance Department should ensure strict compliance to procedures as well as its own instructions to honour Public Finance accountability norms. The heads of departments should ensure that departmental accounts are prepared and submitted for audit.
- g. In 2014-15 only 72.29% of the total State expenditure was reconciled. Similarly, only 23.79% of total revenues was reconciled. In 2015-16 70.77% of the total State expenditure was reconciled whereas only 15.48% of the revenues was reconciled.

17. Considerations on DoA: Based on such discussions, it was observed that: (i) financial management practices in DoA are performed in a basic and fragmented way; (ii) budget process preparation is weak but is performed; (iii) internal control system is absent; (iv) the accounting

function covers only part of the activities; (v) financial reports are not prepared; (vi) expenditures vouchers are passed to the Accountant General's Office which compiles the DoA financial reports; (vii) no control on the reliability and completeness of the information provided by DoA to the Accountant General's Office; (viii) presence of large number of cash transactions; and (ix) no regular bank reconciliations. As a result of the above mentioned shortcomings, the inherent fiduciary risk associated with the public financial management system at State and DoA level is considered **high**.

18. Considering the weakness identified in the existing public entities, for project's implementation proposes an autonomous public Society governed by its bye-laws. It will be staffed in its administrative/financial section with resources hired on the market. The use of the PFM is limited to external audit by the AG. The PIM will detail the procedures to be used for project's administration.

### Control risks

19. Overall, the new project in the NE region will be operating in a rather high inherent risk environment due to the persistence of some weaknesses in the public sector financial management systems as outlined in the PEFA analysis. The proposed financial management arrangements for the project incorporate a number of measures intended to reduce such risks to acceptable levels and ensure that (i) the programme funds are used for intended purposes in an efficient and effective way; (ii) reliable and timely financial reports are prepared; and (iii) programme assets and resources are safeguarded from unauthorized or wasteful use. After mitigation, the overall programme fiduciary risk remains **high**.

### Summary of FM risks and mitigating actions

Summary of Programme Fiduciary Risk Assessment at Design			
	Initial Risk Assessment	Proposed Mitigation	Final Risk Assessment
<b>Inherent Risk</b>			
1. TI Index	<b>M</b> Index: <b>40</b> in 2016 (ranked <b>79</b> out of 176 surveyed countries)	-	<b>M</b>
2. RSP Score	<b>M</b> Score: <b>4.00</b> (2016) <sup>39</sup>	-	<b>M</b>
<b>Control Risks</b>			
1. Organization and Staffing	<b>H</b>	<ul style="list-style-type: none"> <li>• Adequate finance staff of PMU with clear job description and accountability lines at central and district level.</li> <li>• Specific training.</li> <li>• Comprehensive, user-friendly PIM.</li> </ul>	<b>M</b>
2. Budgeting	<b>H</b>	<ul style="list-style-type: none"> <li>• To ensure inclusion of project specific budget line in the annual State budget</li> </ul>	<b>M</b>
3. Funds flow and Disbursement Arrangements	<b>H</b>	<ul style="list-style-type: none"> <li>• Ensure timely release of budget to the Society project account</li> <li>• Support early release of the DA advance in RBI to the State</li> <li>• Ensure timely release of counterpart funding</li> <li>• The initial contribution of the Govt as endowment fund will act as a</li> </ul>	<b>H</b>

<sup>39</sup><http://www.ifad.org/operations/pbas/>

		buffer and will be used in case of delay/ irregularity in release of funds.	
4. Internal Controls	H	<ul style="list-style-type: none"> <li>• Segregation of fiduciary -sensitive duties;</li> <li>• Periodic reconciliations;</li> <li>• Restricting access to accounting files and documents;</li> <li>• Periodic count of inventories and fixed assets.</li> </ul>	H
5. Accounting Systems, Policies & Procedures	H	<ul style="list-style-type: none"> <li>• Finance &amp; Accounts Manager and the Accounts Officers at central and district level will need to be proficient in the use of the accounting software;</li> <li>• Back-up of accounting records;</li> <li>• Use of registry of fixed assets;</li> </ul>	M
6. Reporting and monitoring	H	<ul style="list-style-type: none"> <li>• Project Implementation Manual (PIM) to detail reporting and monitoring requirements and rules;</li> <li>• Use of financial statements templates consistent with IFAD reporting requirements.</li> </ul>	H
7. Internal Audit	H	<ul style="list-style-type: none"> <li>• Support internal audit through the hiring of an internal audit company for regular review;</li> <li>• Hiring of a dedicated staff to follow up on the implementation of internal audit recommendations</li> <li>• Project management to act on internal audit findings and recommendations.</li> </ul>	H
8. External Audit	M	<ul style="list-style-type: none"> <li>• The auditor will be AG as per Gol rules;</li> <li>• Ensure prompt implementation of auditor's recommendations.</li> </ul>	M
<b>Programme Fiduciary Risk @ Design</b>	<b>H</b>		<b>H</b>

### C. Financial Management and disbursement arrangements

20. **Finance unit organization of the Society at central and district level.** The DOA, will be the Lead Programme Agency. A society under the Societies Registration Act, 1860 will be registered at Aizawl which will implement the project. The proposed society will be named as the Society for Climate Resilient Agriculture in Mizoram (SCRAM). SCRAM will have a PMU at Aizawl and District Management Units at the four districts in which the project will be implemented.

21. A FAS and an Accounts Officer (AO) shall be recruited by the project at the PMU for the project period. The incumbents will have a sound knowledge of accounting systems and preparation of financial statements. Computer literacy will be essential and experience in using an accounting software will be essential. They will be responsible for accounting, reporting and management of all disbursements to the districts and claims from IFAD and the Government. The FAS shall be responsible for the preparation of the project's consolidated financial statements, review of financial reports and getting audit completed within the stipulated time. The ToR for the FAS and the AO are provided in the PIM.

22. At the district level a Finance and Accounts Officer (F&AO) shall be recruited by the project who will be in charge for the accounting and record keeping of all financial transactions at the district level

and will be responsible for reporting to the PMU, management of all disbursements to the communities and claims to the PMU.

23. **Budgeting.** The PMU, after consultation with its district offices, shall prepare its annual budget linking all the planned activities at the head office and district level to the cost categories outlined in the schedule II of the Financing Agreement. The annual budget of the project will be included into the budget of the DoA by creating a separate line in the State Government's budget. IFAD will provide an initial advance to the Government. This advance will serve as part of the counterpart funding from the GoM. In addition, the Government will deposit a sum of INR 150 million towards the corpus of the proposed society as endowment grant. The endowment grant is meant to be a buffer fund available with the society in case there are delays in release of funds or if funds are blocked in advances, the liquidation of which is delayed. The endowment grant will ideally be invested by the society in term deposits and it will be utilized only in case regular funds as budgeted are not available and as soon as the budgeted funds are available the endowment grant should be reinstated to the original amount by repaying the amount withdrawn from it. The endowment grant may be used the Government as part of its counterpart funds during the last stages of the project period.

24. **Disbursement arrangements and Flow of Funds.** The loan and grant funds from IFAD will be designated in USD and not SDR as has been the practice hitherto. A Designated Account in USD will be opened by the Government at the Reserve Bank of India (RBI) in which funds will flow from IFAD. In India, generally the Government pre-finances IFAD funded projects and the amount of initial advance is managed by the CAAA. Considering the weak fund position in Mizoram state, it is proposed that the State Government firm up the budget requirements for the domestic counterpart funding in accordance with extant rules and procedures on the subject. The advance funding from IFAD to the Designated Account is fixed at USD 3 million. This is equivalent to about six months of projected allocation. It was proposed in the design report that the GoM will transfer the estimated budget chargeable to the identified missions / centrally sponsored schemes (CSS) to the Society. However, considering the fact that the funds from the four CSS (RKVY, ATMA, PMKSY and MOVCD) may have to be transferred directly to the beneficiaries in accordance with the terms of the scheme, such amounts need to be tracked and reported as counterpart funding under the project. The government counterpart fund besides the CSS and the taxes and duties on goods and services shall be contributed by the GoM in a timely manner. The project will have a separate bank account at each of the implementing units wherein the amounts received from GoM including IFAD and its own share will be deposited and used for project activities. SCRAM will submit WAs for the IFAD financed eligible expenditures as per the procedures and formats agreed with IFAD to the Office of CAAA, Ministry of Finance, GoI. Since money will also flow to the proposed community groups, they will also be required to open separate bank accounts. The funds from the SCRAM account both from the PMU and the DMUs will be utilized directly.

25. Disbursements to the district offices shall be made by the PMU. The funds from the district offices shall be advanced/dispensed to the communities through the community organizations or directly depending on the activities. These organizations shall be required to provide utilization certificate for each quarter based on which further releases shall be made. The districts shall provide expenditure statements to the PMU every month based on which the PMU shall prepare and submit withdrawal applications every quarter after consolidating the actual expenditure incurred at the PMU and districts. The counterpart funds, other than salaries to the GoM staff, (which will be paid directly by the Government) will also be made available by the GoM to the PMU account from which expenditure will be incurred. Thus there will be a single project account in all implementing units from which all funds would be spent. GoM will provide the details of expenditure incurred by it directly (salaries and allowances) towards the project, to enable consolidation and reporting of total expenditure of the project. SCRAM will submit Utilisation Certificates to the nodal department for the eligible expenditures under the CSS budget.

26. **Internal controls.** Procedures and record maintenance at all levels will be based on GoM procedures as well as other specific project's procedures documented in the PIM. The PIM shall include specific provisions in respect of internal controls, PFS preparation procedure, financial reporting arrangements between the districts and the PMU, contract management, financial reporting and audit requirements. The FAS shall play a pivotal role for the effective implementation of the overall internal control system. As far as possible all transactions will be by way of and through bank (cheques and direct transfers). There will be stringent limitations on cash transactions and it will be used only in exceptional cases with prior permission of the Competent Authority.

27. **Accounting systems, policies, procedures and financial reporting.** The project will follow a double entry cash system of accounting. The accounts will be computerized at all levels (PMUs and DMUs). The F&AOs at the DMUs will submit monthly reports based on which the FAS at the PMU shall be responsible for the preparation of consolidated quarterly financial reports. The FAS shall be also responsible for the preparation of the annual financial statements of the project which will be subject to external audit. The half yearly reports prepared by the FAS shall be submitted to the attention of the Project Steering Committee and forwarded to IFAD.

28. The financial statements of the project shall be prepared in accordance with the requirements of International Public Sector Accounting Standards-Cash (IPSAS). The financial statements of the project for each fiscal year should consist of (i) yearly and cumulative statements of sources and application of funds, which should disclose separately IFAD funds, Government funds and beneficiary contribution; (ii) the Balance Sheet which should disclose bank and cash balances that agree with the statement of sources and application of funds, fixed assets and liabilities; and (iii) yearly and cumulative SOEs by withdrawal application and category of expenditures. SCRAM shall also prepare a statement of the actual expenditure against the budget and the variance thereof by components and categories, annually and cumulative. SCRAM shall prepare and deliver to IFAD such financial statements within three months of the end of each Fiscal Year. The aforesaid statements duly audited should be delivered to IFAD within six months of the end of each Fiscal Year.

29. **Internal Audit.** SCRAM will appoint an independent Chartered Accountant or a firm of Chartered Accountants to undertake internal audit at all implementing levels (PMU/ DMUs/ COs) from the first year of its operations. The internal auditors will, besides the financial audit, will review the systems of internal control and suggest improvements, if required, thereto. The internal audit should also include statutory compliances. The terms of reference for the internal audit are included in the Project Implementation Manual. The TOR will include key aspects of financial management and procurement. The internal auditors will submit quarterly reports to the SPD (SPD). Corrective follow up action shall be taken by the FAS at the PMU and the DMUs. The action taken report shall be submitted to the SPD and the internal auditors. The internal auditors will evaluate action on previous internal audit reports, and effectiveness thereof and report on the compliance thereof in the subsequent report. The SPD will place the reports and its action taken reports before the Project Management Committee every six months. The quality of internal audit reports submitted by the internal auditors in the first year of implementation will be reviewed by the Review Mission/ IFAD ICO and if these reports are found to lack quality, SCRAM may be requested to make alternate arrangements, acceptable to IFAD, for conducting the internal audit during the subsequent years,

30. The program shall also explore the possibility of engaging interns in the finance unit of the project from the local University who are undergoing or having completed their post graduate course in commerce. These interns will support implementation of the internal audit recommendations. The interns who perform well may be engaged by the project when there is a vacancy or the need arises to do so.

31. **External Financial Audit.** It is proposed that the GoM shall engage the AG's office at Aizawl to perform the audit of SCRAM. This shall include the audit of the PMU and all district offices. The GoM is requested to write to the AG's office requesting them to undertake the audit of the project for which

concurrence of the CAG, New Delhi will be required. The audit shall be in accordance with Article 9 of the IFAD's General conditions and the IFAD's *Guidelines on Project Audits (for Borrowers' Use)*. The appointment of the auditor shall be through a fair, transparent and competitive process. The terms of reference of the auditor shall follow IFAD approved Audit Terms of Reference. The auditors shall adopt the International Standards of Auditing while auditing and reporting on the Project Accounts. The audit report shall contain a clear expression of the auditor's opinion regarding the financial statements. It should include a financial statements audit, a compliance audit and should include a Management Letter. It should also include a section on the project's compliance with loan covenants, particularly those dealing with financial matters. The auditor shall review the project accounts including the financial statements and the SOEs and give an opinion on the same. In addition, the audit report shall address: (a) the adequacy of accounting and internal controls, including the internal audit mechanism, for monitoring expenditures and other financial transactions and ensuring safe custody of the project assets and (b) the adequacy of documentation maintained by the project for all transactions. Through the management letter, the auditor will identify deficiencies in the project accounting records, procedures, systems and internal controls and make appropriate recommendations for improvement. It will also include any significant matters that come to the auditor's attention and might have a material impact on project implementation.

32. The audited statement of accounts along with the audit report and the Management Letter shall be furnished by the project to IFAD within six months of the end of each Fiscal Year. The project shall submit the reply to the management letter of the auditors within one month of receipt thereof. The Project shall maintain an Audit Log in respect of the audit observations and get it validated by the auditor during the subsequent audit or earlier.

33. **Taxes.** The proceeds of the IFAD financing is not to be used to pay taxes which will be part of the contribution of GoI and GoM to the project. Social security benefits if any (employee's portion) and income tax (employee deductions) are eligible for IFAD financing. GST has become effective from July 2017. The project shall use a reimbursement percentage which takes into account the approximate tax applicable to the expenditure category.

**Annex 1**

**Financial Management Assessment Questionnaire (FMAQ)**

<b>Project: India Fostering Climate Resilient Highland Farming Systems in the North East</b>	<b>Date : 11 Apr 2017</b>
<b>Implementing Entity: A new Society to be created under the auspices of DoA</b>	
<b>Assessment completed by: C.Mainella, Finance Officer</b>	

	<b>Topic</b>	<b>Response</b>	<b>Remarks</b>
<b>1.</b>	<b>Organization and Staffing</b>		
	<b>Implementing Entity</b>		
1.1	Which entity is the LPA? What is the entity's legal status?	A new public Society to be created	
1.2	Will financial management of the programme be the responsibility of the LPA or be undertaken within the-PIU?	The Society will be the PIU of the project and FM will be under its responsibility	
1.3	Has the entity implemented a donor financed programme in the past - if so, please provide details?	No – the Society will be created for this purpose	
	<b>Staffing</b>		
1.4	What is the (proposed) organizational structure of the accounting department?	The Society will be structured with a central office in the Mizoram capital staffed with two people in Finance. One person in charge for finance will be deployed in each of the district offices.	
1.5	Identify the (proposed) accounts staff, including job title, responsibilities, educational background and professional experience.	The Society will be staffed in the central office with a Finance Accounts Specialist and an Accounts Officer. The district branches of the Society will be staffed with a Finance and Accounts Officer. All workforce assigned to FM will be hired in the market.	
1.6	Are written position descriptions that clearly define duties, responsibilities, lines of supervision, and limits of authority for all of the officers, managers, and staff?	These details will be included in the PIM, to be developed.	
1.7	Is the finance and accounts staff adequately qualified and experienced?	Relevant qualification and experience will be detailed in the PIM	
1.8	Are the programme accounts and finance staff trained in IFAD procedures?	n/a – too early	
1.9	Are any Finance Staff appointed on contract What is the duration of the contracts Indicate key positions not contracted yet, and the estimated date of appointment	Finance staff has not yet been appointed. Finance Staff of the project will be contracted for periods of one year renewable.	

Topic		Response	Remarks
1.10	What is training policy for the finance and accounting staff?	Training opportunities will be created for finance staff.	
1.11	Is there evidence that finance staff are regularly transferred to other Government departments At what frequency are personnel transferred?	n/a	
<b>2.</b>	<b>Budgeting</b>		
2.1	Who is responsible for preparation and approval of programme budgets?	The project's planning unit will coordinate budget preparation, with input from all programme parties and beneficiaries	
2.2	Are programme budgets prepared for all significant programme activities in sufficient detail to provide a meaningful tool with which to monitor subsequent performance?	Relevant details to be included in the PIM	
2.3	Are procedures in place to plan programme activities, collect information from the units in charge of the different components, and prepare the budgets?	Relevant details to be included in the PIM	
<b>3</b>	<b>Funds Flow/Disbursement Arrangements</b>		
3.1	Does the Implementing Entity have previous experience of using imprest fund and donor funding SOE procedures? Were there any problems or issues encountered by programme staff in the operation of the imprest fund or SoE procedures in the past?	The Society will operate only bank project accounts at central and district level. DA will be managed by CAAA in Delhi as per normal procedures.	
3.2	Does the Implementing Entity have experience in the management of disbursements from IFAD or other donors? Have there been the major problems in the past in receipt of funds by the entity?	n/a	
3.3	Does the entity have/need to develop capacity to manage foreign exchange risks?	The exchange risk of current projects is managed by the central bank. No issues are foreseen.	
3.4	Are the beneficiaries required to contribute to programme costs? How are payments made for the counterpart funds? If counterpart funds are to be contributed in kind (in the form of labour), are proper guidelines formulated to record and value the labour contribution?	Yes – mainly in kind	

Topic		Response	Remarks
3.5	Is part of the programme implemented by communities or NGOs? Does the PCU have the necessary reporting and monitoring features built into its systems to track the use of programme proceeds by such agencies?	Most possibly yes. Relevant reporting arrangements will be stipulated in the contracts.	
3.6	Describe (proposed) programme funds flow arrangements; (attach flow chart and explanation of the flow of funds from IFAD, government and other financiers.	The funds flow arrangement will be set-up in accordance with Gov. rules. DA will be maintained in RBI managed by CAAA. The possibility of transferring IFAD advance directly to GoM is being assessed.	For details please refer to Appendix 7
3.7	In which bank will the Imprest Account be opened?	Central bank - RBI	
3.8	Are the (proposed) arrangements to transfer the proceeds of the financing (from the government / Finance Ministry) to the Implementing Entity satisfactory?	Both IFAD and GoM funding for the new Society will need to be included in the annual GoM budget. Funds shall be transferred to the project account of the Society.	
<b>4.</b>	<b>Internal Controls</b>		
4.1	Segregation of duties - are the following functional responsibilities performed by different units or persons: (i) authorization to execute a transaction; (ii) recording of the transaction; and (iii) custody of assets involved in the transaction?	Relevant details to be included in the PIM	
4.2	Are the functions of ordering, receiving, accounting for, and paying for goods and services appropriately segregated?	Relevant details to be included in the PIM	
4.3	Are bank reconciliations prepared by someone other than those who make or approve payments?	Relevant details to be included in the PIM	
<b>5.</b>	<b>Accounting Systems, Policies and Procedures</b>		
5.1	Does the entity have an integrated accounting system that allows for the proper recording of programme financial transactions, including the allocation of expenditures in accordance with the respective components, disbursement categories, and sources of funds? Will the programme use the entity accounting system?	The Society will purchase an accounting software to be installed both at central and district level. Software customization will foresee compliance to IFAD requirements and integration of central and district info	
5.2	Are controls in place concerning the preparation and approval of transactions, ensuring that all transactions are correctly made and adequately explained?	Relevant details to be included in the PIM	

5.3	Is the chart of accounts adequate to properly account for and report on programme activities and disbursement categories?	Relevant details to be included in the PIM	
5.4	Can cost allocations to the various funding sources be made accurately?	Relevant details to be included in the PIM	
5.5	Are the General Ledger and subsidiary ledgers reconciled and in balance?	Relevant details to be included in the PIM	
5.6	Are all accounting and supporting documents retained on a permanent basis in a defined system that allows authorized users easy access?	Relevant details to be included in the PIM	
5.7	What is the basis of accounting (e.g., cash, accrual)?	Given the limited experience and skills available it is suggested cash basis of accounting	
5.8	What accounting standards are followed?	National standards	
5.9	Does the programme have an adequate policies and procedures manual to guide activities and ensure staff accountability?	Relevant details to be included in the PIM	
5.10	Do procedures exist to ensure that only authorized persons can alter or establish a new accounting principle, policy or procedure to be used by the entity?	Relevant details to be included in the PIM	
5.11	Is there a written policies and procedures manual covering all routine programme financial management activities? Are manuals distributed to appropriate personnel?	Relevant details to be included in the PIM	
<b>Payments</b>			
5.12	Are all invoices stamped PAID, dated, reviewed and approved, and clearly marked for account code assignment?	n/a - Relevant details to be included in the PIM	
<b>Cash and Bank</b>			
5.13	Does the organization maintain an adequate, up-to-date cashbook, recording receipts and payments?	Relevant details to be included in the PIM.	
5.14	Are bank and cash reconciled on a monthly basis?	Relevant details to be included in the PIM	
5.15	Positions of authorized signatories of programme bank accounts.	Relevant details to be included in the PIM	
<b>Safeguard over Assets</b>			
5.16	Is there a Fixed Asset accounting system, with a Fixed Asset Register, fully implemented - as part of an integrated accounting system Is the system maintained up to date?	Relevant details to be included in the PIM	

5.17	Are there periodic physical reconciliation of fixed assets and stocks?	Relevant details to be included in the PIM	
	<b>Other</b>		
5.18	Has the programme advised employees, beneficiaries and other recipients to whom to report if they suspect fraud, waste or misuse of programme resources or property?	Relevant details to be included in the PIM	
5.19	Do policies and procedures clearly define conflict of interest and related party transactions (real and apparent) and provide safeguards to protect the organization from them?	Relevant details to be included in the PIM	
5.20	Do controls exist for the preparation of the programme payroll and are changes to the payroll properly authorized	Relevant details to be included in the PIM	
<b>6.</b>	<b>Reporting and Monitoring</b>		
6.1	Does the reporting system need to be adapted to report on the programme components?	n/a	
6.2	Does the programme have established financial management reporting responsibilities that specify what reports are to be prepared, what they are to contain, and the frequency of production?	Relevant details to be included in the PIM	
6.3	What is the frequency of preparation of financial statements? Are the reports prepared in a timely fashion so as to be useful to management for decision making?	It will be requested the preparation of 6 monthly un-audited financial statements	
6.4	Do the financial reports compare actual expenditures with budgeted and programmed allocations?	They will - Relevant details to be included in the PIM	
6.5	Are financial reports prepared directly by the automated accounting system or are they prepared by spreadsheets or some other means?	It will be requested extensive customization of the accounting software to automate to a large extent reporting preparation.	
6.6	(In case of need of consolidated financial statements) Is the accounting system sufficiently equipped to ensure proper consolidation of entities' financial data?	It will be requested extensive customization of the accounting software to automate to a large extent reporting preparation	
	<b>Information Systems</b>		
6.7	Is the financial management system computerized?	Yes, it will be	
6.8	Can the system produce the necessary programme financial reports?	Yes, it will be	
6.9	Is the staff adequately trained to maintain the system?	Yes, it will be	
6.10	Are adequate systems in place to "back up" financial records	Yes, it will be	

<b>7. Internal Audit</b>			
7.1	Is there an internal audit department in the LPA?	No	Internal audit will be performed on a quarterly basis by a qualified person/ firm. A staff will be responsible for follow up on the implementation of recommendations
7.2	What are the qualifications and experience of internal audit department staff?	n/a	
7.3	To whom does the internal auditor report?	n/a	
7.4	Will the internal audit department include the programme in its work programme?	n/a	
7.5	Are actions taken on the internal audit findings?	n/a	
<b>8. External Audit</b>			
8.1	Who is the external auditor of the entity?	AG	AG –Office of the Auditor General
8.2	Are there any delays in audit of the entity? When are the audit reports issued?	Assurances have been given for timely submission of reports	
8.3	Is the audit of the entity conducted according to the International Standards on Auditing?	No – in accordance to national rules and procedures.	
8.4	Were there any major accountability issues brought out in the audit report of the past three years? Were there any issues noted in prior audit reports related to the operation of project imprest accounts or use of SOE procedures?	n/a	
8.5	Will the entity auditor audit the programme accounts or will another auditor be appointed to audit the programme financial statements?	AG directly	
8.6	Has the programme prepared acceptable terms of reference for an annual programme audit?	AG will execute its statutory TORs, IFAD/project may request additional assurances	

**Comments:**

34. The decision to create a new Society to act as PIU of the project has been taken after having assessed the current fiduciary environment of public entities which may potentially be lead implementing agencies. The State PFM is not yet sufficiently equipped to manage externally funded projects using country systems. The Society will be organized following ring-fenced modalities to the extent possible. Main linkage with the current PFM system will be the use of AG as project's auditor. AG appears to be a strong and independent institution able to accomplish its mandate. Considering environmental and project specific factors, FM risk at the current stage is assessed as HIGH.

## **Appendix 8: Procurement**

### **A. Country Level Procurement Framework**

1. In India, there is no law exclusively governing public procurement of goods by the departments and ministries at the Central level or at the State level. Rules and directives in this regard are provided in the General Financial Rules (GFR). An important number of instructions, issued by the Central Vigilance Commission (CVC), supplement these regulations. No central authority exists that is exclusively responsible for defining procurement policies, overseeing compliance and grievance redressal systems. A limited control and oversight functions are exercised by the Comptroller and Auditor General (CAG) and the CVC. As per the rules and procedures on procurement stipulated in the GFR, the Departments have been delegated full powers to make their own arrangements for procurement of goods and each of the Department has issued office orders to define the process. In the Government departments, no dedicated staff are available with procurement skills. In the absence of required procurement expertise, a Department can procure goods through the Central Purchase Organization, Directorate General of Supplies and Disposals (DGS&D). Tenders for contracts above a threshold size are issued and are reported by the respective departments. While the advertisements for procurement for goods, works and services are published, the data on actual procurement and the award of the contracts by the Departments are not publicly available but could be obtained under the Right to Information Act.

2. A complaint mechanism for protests/grievances redressal does not exist. The contract provisions provide for dispute resolution through mutual consultation for the contracts awarded. In case the mutual consultation is not successful, the affected party (usually the contract winner) can initiate arbitration under Indian Arbitration and Conciliation Act, 1996 to settle the disputes and/or differences. The option for complaint/protest available to the unsuccessful bidders is usually to approach the judiciary. However, considering the backlog of cases at the lower level civil courts and higher judiciary, the costs/time delays are not proportional to the value of the contract. Hence, protests/complaints are taken to the judiciary only in cases of large contracts.

3. While the procurement of goods and works have been generally done by the Government departments over the years, the procurement of consultancy services are new to government departments. As the consultancy services are knowledge-based, the Government departments find it extremely difficult to precisely prepare the terms of reference, deliverables, monitoring formats and contract management.

4. Gol had constituted a Task Force to examine in detail revision of procurement norms and to make suitable recommendations. The recommendations of the Task Force were accepted 'in principle' by the Gol. As part of the acceptance, Department of Economic Affairs, Ministry of Finance had prepared and circulated a Manual on Procurement of Goods, Works and Consultancy Services in August 2006. Essentially these are for the use of Central Ministries/Departments.

5. In addition, the Ministry of Finance has also proposed a Public Procurement Bill in 2013, which aims to provide the legal framework for the processes of public procurement, but it is yet to be approved by the Parliament of India.

### **2. State Level Procurement Framework**

#### **Nagaland**

6. Government of Nagaland (GoN) is implementing Asian Development Bank (ADB) assisted Water Works and Sanitation Project and a World Bank project on Health. These projects follow the ADB and World Bank Guidelines on Procurement respectively. Under the ADB project, a consultant firm was engaged for design, preparation of bid document and monitoring through International Competitive Bidding.

7. For the procurement in Government departments, there are no separate procurement guidelines or rules. The rule is contained in the General Financial Rules. Rule 160 of the GFR stipulates that, all government purchases should be made in a transparent, competitive and fair manner, without detailing out the processes involved.

8. CAG's Report for the year 2012-13 (Economic Sector Report 1 of 2014) highlights significant weaknesses in procurement and monitoring. Some of the findings are: (i) no competitive bidding system followed for procurements and firms/suppliers were not empanelled by the Department/Government for procurement - undue benefits were given to select few suppliers and contractors; (ii) Veterinary and Animal Husbandry Department forwarded supply orders of a few select suppliers without considering their credentials and without obtaining Government approval, while Agriculture and Horticulture Departments approved the select list of suppliers at the Directorate level itself; (iii) both at the Government and Directorate levels, reasons for selection/rejection of suppliers for supply of materials such as saplings, fertilizers, livestock, agri-tools etc., were not available; and (iv) no transparency in procurement which resulted in weak financial controls and management. CAG Report recommends that to ensure transparency, economy, efficiency and competitive rates, all procurements should be done after notice inviting tenders (NIT) or from Government empanelled vendors.

### **Mizoram**

9. GoM has implemented multi-State education sector projects through assistance from the World Bank. Mizoram also has an ADB project for reforms in the Public Sector undertakings. Both the externally aided projects followed the respective International Financial Institution's (IFI's) procurement regulations. Also these projects engaged Procurement Consultancy firms for design, monitoring and review of procurement processes and contract management. The post review by one of the Procurement Consultant firm for the World Bank assisted project indicated the following key issues: (i) majority of the post review contracts were noted to be non-compliant to the applicable procurement procedures and poor record keeping; (ii) weaknesses were noted in understanding of the applicable procurement procedures and record keeping; (iii) weak procurement capacity of the staff with respect to the applicable procedures; and (iv) open tendering when adopted does not fulfill all the requirements of National Competitive Bidding as stipulated in the FM&P Manual.

10. Mizoram CAG Civil Audit Report, 2 of 2015 identifies the current weaknesses in the public procurement undertaken under various Departments in the State of Mizoram. These are: (i) Guidelines of the GoI's Central Sector Scheme are not strictly followed for procurement; (ii) At the districts, maintenance of basic records of procurement like sanction orders, stock and issue register, maintenance of payment vouchers is unsatisfactory, leading to inability in verifying expenditure; (iii) Year-wise requirement from the District Authorities were not always obtained; (iv) The Memorandum of Understanding (MOU) signed by the Agriculture Department with the Oil Palm companies were without timelines or milestones for stage wise completion of the project and also penalty clause or conditions applicable in case of breach of the MOU -Some of the companies are not eligible for assistance; and (v) Purchase of goods without observing the extant GFR Codal formalities and without specific recommendations of Departmental Purchase Advisory Board.

11. From the above reviews, the overall procurement risk for the State is considered 'High'.

### **B. Procurement assessment of Lead Implementation Agency in Nagaland**

12. DoA or the allied Departments do not have the experience of implementing any external aided programmes. The staff capacities are technical or administrative in nature. There is no dedicated staff to handle procurement related functions and these are handled as per the administrative division of responsibilities. The IFAD project in Nagaland is proposed to be implemented by setting up a dedicated Society under the Agriculture Production Commissioner's office at the State level and by the District Agriculture Office at the district level. State Government has agreed to establish the Society and appoint key staff before loan effectiveness. Based on a procurement capacity

assessment undertaken in preparation of the project and the inherent issues identified in the CAG Audit reports, the overall procurement risk is considered “High”. The risk rating is due to the lack of a legal framework for public procurement, specific procedures and processes, limited experience and capacities of the DoA in implementing externally aided projects and also due to the fact that the Society responsible for implementation of IFAD project is currently not in existence and will have to be created.

### **C. Procurement assessment of Lead Implementation Agency in Mizoram**

13. DoA does not have the experience of implementing any external aided programmes, hence the staff are not exposed to the IFI Procurement processes and guidelines. The IFAD project in Mizoram is proposed to be implemented by setting up a dedicated Society under the Agriculture Department. Considerable capacity building efforts and establishing of procurement management systems and controls have to be done for the new Society. The proposed Society is currently not in existence and will have to be incorporated with sufficient staff.

### **D. Risk Mitigation measures proposed for FOCUS**

14. It is proposed to establish the following risk mitigation measures to address the High Risk assessment: (i) Engaging one Procurement Consultant on a retainership basis from outside the State with the experience and skill sets of procurement and compliance to established procurement norms of international financial institutions. As the Procurement Consultant will be engaged from the market, it should be ensured that some of the Government staff should also be involved as counterpart staff to address the issues of attrition and continuity of capacity; (ii) Appropriate and regular on site and combined procurement training of selected procurement staff in “IFAD Procurement Guidelines” to enable efficient and effective project procurement actions; (iii) Procurement manual prepared consistent with IFAD Procurement Guidelines and Procurement Handbook which will require IFAD’s concurrence. Any changes/amendments/modifications in the approved Procurement Manual also requires IFAD’s no objection- The manual could be a stand-alone document or included in the Project Implementation Manual; (iv) Procurement plan for the initial 18 months of project implementation listing out all procurement activities to be taken up by the project consolidated at the State level to be prepared and submitted along with the first AWP&B-For the subsequent years of implementation procurement covering the 12 month period will be sufficient -The procurement plan will be updated at least semi-annually or as required to reflect the actual project implementation needs - All procurement plans and its revisions will have to be approved by IFAD- Any procurement undertaken which is not as per the approved plan will not be eligible for IFAD financing;(v) Putting in place an effective contract management system which includes all contracts and its administration -The Contract Management forms to be submitted to IFAD as part of the Withdrawal Applications for IFAD loan assistance - It is to be ensured that contract management is not merely reporting the contracts but continuously monitoring the performance against the deliverables, conditions of the contract, validity and frequent review and resolution of implementation bottlenecks; (vi) Use of model Bidding Documents and contracts approved by IFAD and included in the Procurement Manual/PIM; and (vii) maintain throughout the period of implementation of the Project, a full procurement documentation and record keeping system.

15. During Supervision Missions, the post review procurements will be reviewed on a sample basis selected from the procurement plan, from the stage of preparation of bid documents till contract award and amendments to contract to identify the weaknesses, delays and ineligible procurement.

16. After putting in place the above risk mitigation measures fully and effectively, the residual risk assessment is Medium.

### **E. Procurement arrangements under FOCUS**

17. Procurement of goods, works and services under FOCUS financed from resources provided or administered by IFAD will be undertaken in accordance with IFAD’s Procurement Guidelines and Handbook (dated September 2010) and as amended from time to time as an exception to the

provisions of the General Conditions. As the project will be directly implementing Central Sector Schemes (CSSs) in Nagaland, to maintain uniformity in processes and procedures, IFAD Procurement Guidelines will also apply for the procurement from CSS funds. In Mizoram, the CSS funds will flow directly to the respective department and hence the respective Scheme guidelines prescribed by the Central Ministries will apply.

18. **National Competitive Bidding, Shopping and Direct Contracting.** Goods and Civil works will be procured using NCB, Shopping and Direct Contracting and will follow the procedures and processes defined in the Procurement Manual/Project Implementation Manual approved by Project Steering Committee and the IFAD. The PIM shall also include details of selection method to be applied in case of consultancies and services such as Quality and Cost Based Selection, Fixed Budget Selection, Least Cost Selection, Consultants Qualification Selection and Single Source Selection.

19. The procedures would be adapted and adopted in accordance with the provisions of IFAD Procurement Guidelines and the Procurement Handbook. Consistent with these Guidelines, the Programme Implementation Manual to be developed will have detailed processes, steps and documentation requirements to comply with the principles of public procurement.

20. **Standard Bidding Documents (SBD) & Standard Contract:** Standard Bidding Documents are of paramount importance for transparency, speed of the process, increase competition and creation of capacity (standardization of procedures). The SBD to be used in all local open bidding processes would be described in the PIM and it should include: (i) Time to submit bid: minimum 30 days; (ii) Bids may be submitted by post or by hand; (iii) Budget could be disclosed (if local legislation so requires); (iv) Clear instructions on how to buy bidding documents indicating address and price to buy the bidding documents - However, bidders who decide to submit a bid without having bought the bidding documents should not be disqualified, submitting their bids under their own risk; (v) Clarifications to bidding documents should be in writing only; (vi) Amendments to bidding documents should be advertised with the same procedure used for advertisement of bidding documents; (vii) Single envelope procedure for goods and works notwithstanding any other Government instructions/guidelines; and (viii) Evaluation Criteria: the bid evaluation criteria should be non-discriminatory -It should be disclosed and rigorously quantified in clear terms to define the “lowest evaluated bidder” - This allows to indisputably identify the lowest evaluated responsive bid.

21. IFAD do not prescribe any SBD and would concur with the use of available templates from other multilateral donors adapted to project requirements, so long as they are consistent with IFAD Procurement Guidelines.

### **Procurement Plan**

22. As provided in appendix I, paragraph 1 of IFAD’s Procurement Guidelines, IFAD review of and no objection to the consolidated procurement plan is compulsory and the 18 month procurement plan for the first year submitted by the PMU, FOCUS from each State must include as a minimum:

- i) A brief description of each procurement activity to be undertaken during the period and name of the implementing agency responsible for the procurement.
- ii) The estimate value of each procurement activity.
- iii) The method of procurement to be adopted for each procurement activity.
- iv) The method of review IFAD will undertake for each procurement activity indicating either post review or prior review.
- v) Proposed dates for each stage of the procurement.

23. The Procurement Plan should be prepared as a rolling Procurement Plan which captures the procurement during the entire duration of the project and revisions and modifications to the quantities, selection method and the proposed dates will be incorporated as Revision. Any changes and amendments to the procurement plan shall be subject to IFAD’s No Objection. A draft procurement plan for the first 18 months is attached as Annex 1.

### **Good governance framework**

24. All procurement for goods, works and services financed from resources funded or administered by IFAD require bidding documents and the contracts to include a provision requiring suppliers, contractors and consultants ensure compliance with IFAD zero tolerance to anti-corruption policy and to permit IFAD to inspect their accounts, records and other documents relating to the bid submission and contract performance, and to have them audited by IFAD-appointed auditors.

25. As part of the e-governance policy and framework, PMU of FOCUS in each State will disclose the following minimum documents either in its Project Website or Directorate of Agriculture Website: (i) Procurement plan and its revisions; (ii) Procurement manual; (iii) invitation for bids for goods and works for all NCB contracts; (iv) request for expression of interest for selection/hiring of consulting services, (v) contract awards of goods, works and all consultancy services, (vi) list of contracts following Direct Contracting or Single Source Selection (SSS); (vii) short list of consultants; (viii) contract award of all consultancy services; and (ix) action taken report on the complaints received. In addition, the PMU will also publish any information required under the provisions of suo-motu disclosure as specified by the Right to Information Act and the decisions of the State Information Commissioners applicable to project implementation.

### **Procurement involving community participation**

26. Due to the nature of IFAD financed projects, there is a high degree of involvement of communities in the procurement activities. Communities would be empowered to undertake procurement as a service provider or an implementing unit through Village Organizations, FIGs, and Farmer Producer Organizations under a legal framework (Grant Agreement). The operational and implementation arrangement would be defined in the Project Implementation Manual which shall include implementation, administration, financial management and procurement related activities supported by clearly defined roles and responsibilities of the intermediaries who will assist these community organizations in performing the activities. The activities which will be implemented by the community groups will be as per the design. Though the PMU or District Units will not include the community procurement in its procurement plan, it is recommended that the description and the quantum of procurement, procurement methods to be adopted will be separately listed out and attached to the Procurement Plan for monitoring.

## **F. Procurement Methods and Thresholds**

27. Procurement of Goods and Works: Methods for procurement of goods/works is established as follows:

- (a) **Goods**
  - i) National Competitive Bidding (NCB),
  - ii) National shopping
  - iii) Direct contracting
- (b) **Works**
  - i) National Competitive Bidding (NCB),
  - ii) National shopping
  - iii) Direct contracting

28. Consultancy and Services. Consulting service will include project management technical assistance, implementation support technical assistance for different components, conducting studies, mobilisation/establishment of community groups, technical training and strengthening of community groups, and monitoring and evaluation. Services would be provided by consulting firms and individual consultants. The Selection methods available for Consultancy Services and non-consultancy services are:

- Quality and Cost Based Selection
- Fixed Budget Selection
- Least Cost Selection

- Selection Based on Consultants Qualification
- Single Source Selection

29. **Selection of individual consultants.** Individual consultants are selected on the basis of their qualifications for the assignment of at least three candidates among those who have expressed interest in the assignment or have been approached directly by PMU or District units. Individuals employed by the PMU and the District Units shall meet all relevant qualifications and shall be fully capable of carrying out the assignment. Capability is judged on the basis of academic background, experience and, as appropriate, knowledge of the local conditions, such as local language, culture, administrative system, and government organization.

30. Consultancy Services and Individuals consultants may be selected on a **sole-source basis** with due justification in exceptional cases such as: (a) tasks that are a continuation of previous work that the consultant has carried out and for which the consultant was selected competitively; (b) assignments lasting less than six months; (c) emergency situations resulting from natural disasters; and (d) when the individual consultant or consulting firm is the only consultant qualified for the assignment. All proposals for contracts on Sole Source basis will require IFAD's prior review. For facilitating IFAD's prior review, justification for resorting to SSS, the detailed proposal including budget from the sole source agency/institution or individual, recommendation and approval following the Department's internal approval procedures to be submitted to IFAD.

#### **Review of Procurement Decisions by IFAD**

31. As part of the new approach to project procurement, no thresholds for each of the selection method will be prescribed. While preparing the rolling Procurement Plan, the selection method proposed to be adopted will be indicated by the project in the Procurement Plan, which will then be approved or modified by IFAD.

32. IFAD will undertake to review the provisions for the procurement of good, works and services to ensure that the procurement process is carried out in conformity with its Procurement Guidelines. For the purposes of IFAD's Procurement Guidelines, the following procurement decisions shall be subject to prior review by the Fund for the award of any contract for goods, equipment, materials, works, consultancy and services under FOCUS.

- i) Procurement of goods, materials and works
  - Prequalification documents and shortlist when prequalification is undertaken;
  - Bid Documents for goods, materials and works;
  - Evaluation Report and Recommendation for Award; and
  - Contract and amendments.
- ii) Procurement of consultancy services and services
  - Prequalification documents and shortlist when prequalification is undertaken;
  - Request for Proposal;
  - Technical evaluation report;
  - Combined (technical and financial) evaluation report and the recommendation for award; and
  - Contract and amendments.

33. **Prior Review.** IFAD Prior review threshold will be applicable for procurement valued above USD 100,000 in respect of goods and works and for procurement valued above USD 100,000 equivalent in respect of consultancy and non-consultancy services. All single source or direct contracting procurement above the threshold of USD 2,000 equivalent in each case will require IFAD's prior review. In addition, the first 3 procurement actions of PMU irrespective of the value will require IFAD's prior review.

34. **Post Review:** Procurement actions which are not subject to IFAD prior review will be reviewed either during the Supervision Missions or Implementation Support Missions to evaluate the compliances to the Procurement Guidelines and principles and contract management.

### Annex 1

### Procurement Plan for 18 months (Jan 2017 – March 2019) related to Works- Page 1 of 2

Country-India															
Project Title / Loan/Grant Ref: FOSTERING CLIMATE RESILIENT UPLAND FARMING SYSTEMS IN THE NORTH EAST (Mizoram)															
Project Executive Agency: Department of Agriculture, Government of Mizoram															
Project Implementing Agency: PMU, SOCRAM															
DATE OF GPN: .....		Thresholds: > USD 100,000 equivalent for works, and > USD 100,000 equivalent for procurement of goods and > USD 100,000 equivalent for consultancy and services require IFAD prior review . The threshold are established on a Project to Project basis and are referenced in the Letters to the Borrowers.													
STATUS AS OF (Date):															
IFAD APPROVAL DATE: Original:		Current:													
Sl. No.	Package No.	Review by Bank Prior/Post	Description of Works/Goods	Estimated Cost (Local Currency) In INR	Method of Procurement	Design/ Investigation/Specs. Completed (Date)	Final Estimate Prepared & Sanctioned (Date and Value) INR	Finalization of Bidding Document (Date)	IFAD's No Objection to Bidding Document (Date)**	Bids		Contract Award decided (Date/Value/Currency)	IFAD's No Objection to Contract Award (Date)**	Contract Signed (Date/Value/Currency) INR	
										Invitation (Date)	Opened on (Date)				
1	2		3	4	5	6	7	8	9	10	11	12	13	14	
PP	1	W1	10 km of gravelling of earth roads 3.5 m pavement width, 1 m shoulder width on either side, 20 cm base and 20 cm of wearing coarse cost including construction of cross drainage and side drains with longitudinal GPS coordinates from xx to xx	31,910,000	LCB										
R															
A															
PP		W2	10 km of gravelling of earth roads 3.5 m pavement width, 1 m shoulder width on either side, 20 cm base and 20 cm of wearing coarse cost including construction of cross drainage and side drains with longitudinal GPS coordinates from xx to xx	31,910,000											
R															
A															
PP		W3	10 km of gravelling of earth roads 3.5 m pavement width, 1 m shoulder width on either side, 20 cm base and 20 cm of wearing coarse cost including construction of cross drainage and side drains with longitudinal GPS coordinates from xx to xx	31,910,000	LCB										
R															
A															
PP		W4	10 km of gravelling of earth roads 3.5 m pavement width, 1 m shoulder width on either side, 20 cm base and 20 cm of wearing coarse cost including construction of cross drainage and side drains with longitudinal GPS coordinates from xx to xx	31,910,000											
R															
A															
PP		W5	10 km of gravelling of earth roads 3.5 m pavement width, 1 m shoulder width on either side, 20 cm base and 20 cm of wearing coarse cost including construction of cross drainage and side drains with longitudinal GPS coordinates from xx to xx	31,910,000											
R															
A															
PP	2	W1	Aggregation cum Common facility centre with equipments at District xx	1,600,000	LCB										
R															
A															
PP	1	W2	Aggregation cum Common facility centre with equipments at District xx	1,600,000	LCB										
R															
A															
PP	2	W3	Aggregation cum Common facility centre with equipments at District xx	1,600,000											
R															
A															

**Procurement Plan for 18 months (Jan 2017 – March 2019) related to Works- Page 2 of 2**

PP	1	W4	Prior	Aggregation cum Common facility centre with equipments at District xx	1,600,000	LCB																											
R																																	
A																																	
PP	2	W5					Prior	Aggregation cum Common facility centre with equipments at District xx	1,600,000	LCB																							
R																																	
A																																	
PP	1	W6									Prior	Aggregation cum Common facility centre with equipments at District xx	1,600,000	LCB																			
R																																	
A																																	
PP	2	W7													Prior	Aggregation cum Common facility centre with equipments at District xx	1,600,000	LCB															
R																																	
A																																	
PP	2	W8	Prior	Aggregation cum Common facility centre with equipments at District xx	1,600,000	LCB																											
R																																	
A																																	
PP		W9					Prior	Aggregation cum Common facility centre with equipments at District xx	1,600,000	LCB																							
R																																	
A																																	
PP		W10									Prior	Aggregation cum Common facility centre with equipments at District xx	1,600,000	LCB																			
R																																	
A																																	
PP	3	W1	Prior	2 Poultry Brooding Units of 60 sq.m area with equipments in District xxx and District XXX	1,331,000																												
R																																	
A																																	
PP		W2					Prior	One Boar Semen Station in District xxx	300,000																								
R																																	
A																																	
PP		W3									Prior	One Processing lab, store and office for AI station for pigs including refrigerator with solar unit and other equipments	2,366,670																				
R																																	
A																																	
PP		W4													Prior	One Boar Semen Station in District xxx	300,000																
R																																	
A																																	
PP		W5	Prior	One Processing lab, store and office for AI station for pigs including refrigerator with solar unit and other equipments	2,366,670																												
R																																	
A																																	
<b>Total</b>							<b>182,214,340</b>																										
*PP: Target dates agreed as per Procurement Plan R: revision 1,2 etc.																																	
** Applicable in case of 'Prior Review' by IFAD																																	
A: Actual dates RFP (Request for Proposal): Same as 'Bid Document' #Technical and Financial																																	

**Procurement Plan for 18 months (Jan 2017 – March 2019) related to Goods - Page 1of 2**

Project Title / Loan/Grant Ref: FOSTERING CLIMATE RESILIENT UPLAND FARMING SYSTEMS IN THE NORTH EAST (Mizoram)													
Project Executive Agency: Department of Agriculture, Government of Mizoram													
Project Implementing Agency: PMU, SOCRAM													
DATE OF GPN: .....		Thresholds: > USD 100,000 equivalent for works, and > USD 100,000 equivalent for procurement of goods and > USD 100,000 equivalent for consultancy and services require IFAD prior review . The threshold are established on a Project to Project basis and are referenced in the Letters to the Borrowers.											
STATUS AS OF (Date):													
IFAD APPROVAL DATE: Original:		Current:											
SL No.	Package No.	Review by Bank Prior/Post	Description of Works/Goods	Estimated Cost (Local Currency) In INR	Method of Procurement	Design/ Investigation /Specs. Completed (Date)	Final Estimate Prepared & Sanctioned (Date and Value) INR	Finalization of Bidding Document (Date)	IFAD's No Objection to Bidding Document (Date)**	Bids		Contract Award decided (Date/Value/ Currency)	IFAD's No Objection to Contract Award (Date)**
										Invitation (Date)	Opened on (Date)		
1	2		3	4	5	6	7	8	9	10	11	12	13
*PP	1	1	8 Laptops for PMU, 4 desktops for PMU (INR 600,000)	600,000.00	LS								
R													
A													
*PP	2	2	6 printer cum scanners for PMU (INR 72,000)	72,000.00	LS								
R													
A													
*PP	3		1 heavy duty photocopier (A3/A4, LAN connectivity) (INR 150,000)	150,000.00	LS								
R													
A													
*PP	2	1	9 desktop computers, 14 laptops	945,000	LCB								
R													
A													
*PP	2	2	272 GPS sets to VLWs	8,160,000	LCB								
R													
A													



India

Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Mizoram

**Procurement Plan for 18 months (Jan 2017 – March 2019) related to Services - Page 1 of 1**

<b>Country-India</b>																
<b>Project Title / Loan/Grant Ref:FOSTERING CLIMATE RESILIENT UPLAND FARMING SYSTEMS IN THE NORTH EAST (Mizoram)</b>																
<b>Project Executive Agency: Department of Agriculture, Government of Mizoram</b>																
<b>Project Implementing Agency: PMU, SOCRAM</b>																
DATE OF GPN: .....				Thresholds: > USD 100,000 equivalent for works, and > USD 100,000 equivalent for procurement of goods and > USD 100,000 equivalent for consultancy and services require IFAD prior review. The threshold are established on a Project to Project basis												
STATUS AS OF (Date):																
IFAD APPROVAL DATE: Original:                      Current:																
	SL No.	Package No.	Review by IFAD Prior/Post	Description of Services	Estimated Cost (INR)	Method of Selection	Advertising for EOI (Date)	TOR/Shortlist Finalized (Date)	RFP Final Draft forwarded to IFAD (Date)**	IFAD's No Objection for TOR Shortlist/Final REP (Date)**	RFP Issued (Date)	Proposals Received by the Project Authorities (Date)	Evaluation Finalized (Technical # Combined/Draft Contract/Final Contract) (Date)	Contract Award decided (Date)	IFAD's No Objection (Technical # Combined/Draft Contract/Final Contract) (Date)**	
	1	2		3	4	5	6	7	8	9	10	11	12	13	14	
*PP	1	1	Prior	Preparation of 4 land use maps, 242 village land suitability classification maps and institutional capacity support from MIRSAC	8,740,000	SSS	NA									
R																
A																
*PP	2	1	Prior	Technical Assistance on different thematic areas through UN FAO financed by In-Loan Grant	30,600,000	SSS	NA									
R																
A																
*PP	3	1	Post	Consultancy for 4 months on Road Survey and Design	1,200,000	CQS										
R																
A																
*PP	4	1	Post	Consultancy for 1 year for Road construction monitoring & Supervision	3,600,000	QCBS										
R																
A																
*PP	5	1	Post	Cusotmisation of accounting software for financial reporting	600,000	SSS										
R																
A																
*PP	6	1	Post	Consultant agency for design, training and marketing linkage for bamboo products	1,500,000	CQS										
R																
A																
*PP	7	1	Post	Internal audit including handholding support for PMU and DMUs	1,000,000	QCBS										
R																
A																
*PP	8	1	Post	External audit through CA firm	400,000	QCBS										
R																
A																
				<b>Total</b>	<b>47,640,000</b>											
PP: Target dates agreed as per Procurement Plan      R: revision 1,2 etc.																
** Applicable in case of 'Prior Review' by IFAD																
@ State whether (i) Single firm or individual; or (ii) Competitive. If Competitive, then state whether Quality and Cost Based Selection (QCBS) or Quality Based Selection (QBS)																
A: actual dates      #RFP (Request for Proposal): Same as 'Bid Document'      #Technical and Financial																

## Appendix 9: Project costs and financing

- Introduction:** This Appendix describes the assumptions underlying the calculation of the project costs and estimates. It presents summary and detailed cost tables and proposed financing plans. Detailed costs were presented in INR and the summary costs in USD equivalents. All these Tables were generated using the Costab ver 3.2. (Tab file: FOCUS\_mizo6.tab).
- Project period:** Annual cost estimates are presented in the corresponding fiscal year of India, ie April to March. The designed project duration is 6 years starting from the fiscal: 2018/2019.
- Annual Inflation:** In line with the estimates from The Economic Intelligence Unit, the annual domestic inflation rate has been set at 4.7% for the whole project period and that of the foreign inflation, ie USD set at 2%.
- Exchange rate:** Initial exchange rate has been assumed at INR 68 to one USD, the rate prevailing at the time of detailed design. Although the current exchange rate is at INR 65 to one USD, it is forecast that the exchange rate at the end of 2017 would be about INR 68 to one USD and the same has been set for the whole project period. No CPP option is used.
- Unit costs:** All unit costs are input in INR and are expressed in constant 2017 prices. These unit prices were provided by the GOM and also collected during the mission.
- Taxes and duties:** Taxes are applied to all expenditure categories in accordance with the provisions contained in newly introduced GST of GOI. No taxes were assumed for training and workshop and also for Grants and Subsidies. All taxes and duties have been fully accounted for and treated as a part of GOM counter-part contribution to the project. But no taxes were applied for parallel-financing items and other government-financed works.
- Physical and price contingencies:** Physical contingencies have been assumed at 7.5% for all civil work categories that are based on typical engineering estimates. Price contingencies related to annual inflation rate are applied to all expenditures.
- Costab accounts:** Expenditure and disbursement categories have been set in accordance with IFAD Circular IC/FOD/02/2013 on standardization of expenditures categories. Identical categories have also been set for procurement accounts also. These accounts are shown in Table-1 below.

Procurement accounts (PA)	Disbursement accounts (DA)	Expenditure accounts (EA)
<i>Civil works_PA</i>	<i>Civil works_DA</i>	<i>Civil works_EA</i>
<i>Equipment_PA</i>	<i>Equipment_DA</i>	<i>Equipment_EA</i>
<i>Consultancy_PA</i>	<i>Consultancy_DA</i>	<i>Consultancy_EA</i>
<i>Grants and subsidies_PA</i>	<i>Grants and subsidies_DA</i>	<i>Grants and subsidies_EA</i>
<i>Goods, services and inputs_PA</i>	<i>Goods, services and inputs_DA</i>	<i>Goods, services and inputs_EA</i>
<i>Training, workshop_PA</i>	<i>Training, workshop_DA</i>	<i>Training, workshop_EA</i>
<i>Salaries and allowances_PA</i>	<i>Salaries and allowances_DA</i>	<i>Salaries and allowances_EA</i>
<i>Operating costs_PA</i>	<i>Operating costs_DA</i>	<i>Operating costs_EA</i>

- Project costable structure:** The FOCUS project has 3 main components and 5 sub-components and accordingly the detailed cost tables have been structures as shown below in Table-2.

Components	Sub-components	Detailed cost Table Reference #
<i>A. Improved Jhum management</i>	<i>1. Better Jhum and conservation</i>	<i>1.1</i>
	<i>2. Settled agriculture</i>	<i>1.2</i>
<i>B. Value chain development and</i>	<i>1. Value chain development</i>	<i>2.1</i>

<i>market access infrastructure</i>		
	<i>2.Market access infrastructure</i>	2.2
<i>C. Project management</i>	<i>1.Project management and M&amp;E and KM</i>	3.1

Detailed cost tables contain information regarding units, quantities by year, unit cost in INR, total costs by year and activity, disbursement account and financing rules.

10. **Total project costs:** Total project costs including physical and price contingencies and taxes are estimated at USD 79.30 (INR 5,392.72 million). Taxes<sup>40</sup> account for about USD 3.89 of the total costs in the form of foregone taxes on IFAD Loan. Price contingencies account for about 8% of baseline estimates and the physical contingencies being 1% of the baseline estimates. The project costs by component are shown in Table-3 below and the details in Annex-1 & 2 of this Appendix-9.

India FOCUS_Mizoram State Components Project Cost Summary		(INR '000)			(US\$ '000)			% Total Base Costs
		Local	Foreign	Total	Local	Foreign	Total	
<b>A. Improved Jhum Cultivation</b>								
1. Better Jhum and Conservation		1,037,271.7	113,058.1	1,150,329.8	15,254.0	1,662.6	16,916.6	23
2. Support to settled agriculture		211,811.1	47,379.1	259,190.1	3,114.9	696.8	3,811.6	5
<b>Subtotal</b>		1,249,082.8	160,437.1	1,409,519.9	18,368.9	2,359.4	20,728.2	28
<b>B. Market access and value chain development</b>								
1. Value chain development		777,364.2	139,184.3	916,548.5	11,431.8	2,046.8	13,478.7	19
2. Market Access Infrastructure		1,561,810.7	545,875.8	2,107,686.5	22,967.8	8,027.6	30,995.4	43
<b>Subtotal</b>		2,339,174.9	685,060.0	3,024,235.0	34,399.6	10,074.4	44,474.0	61
<b>C. Project Management</b>								
1. Project Management		469,015.9	51,449.7	520,465.7	6,897.3	756.6	7,653.9	11
<b>Subtotal</b>		469,015.9	51,449.7	520,465.7	6,897.3	756.6	7,653.9	11
<b>Total BASELINE COSTS</b>		4,057,273.7	896,946.9	4,954,220.6	59,665.8	13,190.4	72,856.2	100
Physical Contingencies		41,301.3	17,762.4	59,063.7	607.4	261.2	868.6	1
Price Contingencies		349,670.1	30,073.4	379,743.5	5,142.2	442.3	5,584.5	8
<b>Total PROJECT COSTS</b>		4,448,245.1	944,782.7	5,393,027.8	65,415.4	13,893.9	79,309.2	109

11. Project investment costs is USD 64.92 million (82.2% of the total costs) and that of the recurrent costs is USD 14.38 million (17.8% of total costs). The project costs by component and by year are presented in Table-4 below:

India FOCUS_Mizoram State Project Components by Year -- Totals Including Contingencie		Totals Including Contingencies (US\$ '000)						
		18/19	19/20	20/21	21/22	22/23	23/24	Total
<b>A. Improved Jhum Cultivation</b>								
1. Better Jhum and Conservation		4,897.9	5,336.0	3,998.2	1,989.9	1,528.4	827.6	18,577.9
2. Support to settled agriculture		1,114.3	1,236.9	1,427.6	329.2	-	-	4,108.0
<b>Subtotal</b>		6,012.2	6,572.8	5,425.8	2,319.0	1,528.4	827.6	22,685.9
<b>B. Market access and value chain development</b>								
1. Value chain development		1,641.5	2,856.3	3,239.8	3,090.5	2,595.8	1,513.6	14,937.5
2. Market Access Infrastructure		880.9	7,199.8	7,358.8	7,468.9	8,156.9	1,974.7	33,040.0
<b>Subtotal</b>		2,522.4	10,056.1	10,598.6	10,559.4	10,752.7	3,488.3	47,977.6
<b>C. Project Management</b>								
1. Project Management		1,415.9	1,404.5	1,404.9	1,489.2	1,438.9	1,492.4	8,645.7
<b>Subtotal</b>		1,415.9	1,404.5	1,404.9	1,489.2	1,438.9	1,492.4	8,645.7
<b>Total PROJECT COSTS</b>		9,950.6	18,033.5	17,429.3	14,367.7	13,720.0	5,808.3	79,309.2

<sup>40</sup> Taxes broadly include 10% of staff salaries, 20% for vehicles and equipment, 10% for goods, services and inputs, 15% for consulting services, etc for IFAD financed categories. No taxes applied for all government-financed activities.

12. **Financing Plan:** Sources of financing of the FOCUS are (i) IFAD loan, (ii) IFAD Grant, (iii) parallel financing of GOI's centrally sponsored schemes, (iv) Convergence funds such as MGNREGA and (v) the participating beneficiaries and along with GOM's counter-part funds. The proposed financing arrangements by project components by financiers are shown in Table-5 below and also in Annex-1.

India FOCUS_Mizoram State Components by Financiers (US\$ '000)																
	he Government		IFAD Loan		IFAD Grant		Parallel finance (CSS)		Parallel Finance,GOM		Beneficiaries		Convergence		Total	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
<b>A. Improved Jhum Cultivation</b>																
1. Better Jhum and Conservation	2,932.5	15.8	8,795.0	47.3	-	-	6,165.4	33.2	685.0	3.7	-	-	-	-	18,577.9	23.4
2. Support to settled agriculture	238.5	5.8	3,220.8	78.4	450.0	11.0	-	-	-	-	198.7	4.8	-	-	4,108.0	5.2
<b>Subtotal</b>	<b>3,171.0</b>	<b>14.0</b>	<b>12,015.8</b>	<b>53.0</b>	<b>450.0</b>	<b>2.0</b>	<b>6,165.4</b>	<b>27.2</b>	<b>685.0</b>	<b>3.0</b>	<b>198.7</b>	<b>0.9</b>	<b>-</b>	<b>-</b>	<b>22,685.9</b>	<b>28.6</b>
<b>B. Market access and value chain development</b>																
1. Value chain development	1,819.6	12.2	7,680.7	51.4	-	-	2,938.0	19.7	327.2	2.2	2,172.0	14.5	-	-	14,937.5	18.8
2. Market Access Infrastructure	2,496.1	7.6	10,564.1	32.0	-	-	5,880.0	17.8	965.0	2.9	-	-	13,134.8	39.8	33,040.0	41.7
<b>Subtotal</b>	<b>4,315.7</b>	<b>9.0</b>	<b>18,244.8</b>	<b>38.0</b>	<b>-</b>	<b>-</b>	<b>8,818.0</b>	<b>18.4</b>	<b>1,292.2</b>	<b>2.7</b>	<b>2,172.0</b>	<b>4.5</b>	<b>13,134.8</b>	<b>27.4</b>	<b>47,977.6</b>	<b>60.5</b>
<b>C. Project Management</b>																
1. Project Management	3,653.6	42.3	4,992.1	57.7	-	-	-	-	-	-	-	-	-	-	8,645.7	10.9
<b>Total PROJECT COSTS</b>	<b>11,140.3</b>	<b>14.0</b>	<b>35,252.7</b>	<b>44.4</b>	<b>450.0</b>	<b>0.6</b>	<b>14,983.4</b>	<b>18.9</b>	<b>1,977.3</b>	<b>2.5</b>	<b>2,370.7</b>	<b>3.0</b>	<b>13,134.8</b>	<b>16.6</b>	<b>79,309.2</b>	<b>100.0</b>

### Abbreviations used in cost tables

#### Project financiers:

Loan	IFAD Loan financing
Grant	IFAD Grant financing
CSS	GOI's centrally sponsored schemes
GOM	GOM contribution of 10% for CSS
Converge	Convergence of ongoing schemes of GOI
BEN	Participating beneficiaries
GOVT	GOM counter-part funding

#### IFAD Disbursement categories

CON	Consultancy services
CW	Civil work
TRW	Training, workshop, studies etc
EQUIP	Equipment, office equipment, vehicles etc
GSI	Goods, services and inputs
SAL	Salaries and allowances
OP	Office operating costs

#### Cost Table accounts categories

PA	Procurement account
DA	Disbursement account
EA	Expenditure account

## Appendix 9 – Annex 1: SUMMARY TABLES

India FOCUS_Mizoram State Components Project Cost Summary		(INR '000)			(US\$ '000)			% Foreign Exchange	% Total Base Costs
	Local	Foreign	Total	Local	Foreign	Total			
<b>A. Improved Jhum Cultivation</b>									
1. Better Jhum and Conservation	1,037,271.7	113,058.1	1,150,329.8	15,254.0	1,662.6	16,916.6	10	23	
2. Support to settled agriculture	211,811.1	47,379.1	259,190.1	3,114.9	696.8	3,811.6	18	5	
<b>Subtotal</b>	<b>1,249,082.8</b>	<b>160,437.1</b>	<b>1,409,519.9</b>	<b>18,368.9</b>	<b>2,359.4</b>	<b>20,728.2</b>	<b>11</b>	<b>28</b>	
<b>B. Market access and value chain development</b>									
1. Value chain development	777,364.2	139,184.3	916,548.5	11,431.8	2,046.8	13,478.7	15	19	
2. Market Access Infrastructure	1,561,810.7	545,875.8	2,107,686.5	22,967.8	8,027.6	30,995.4	26	43	
<b>Subtotal</b>	<b>2,339,174.9</b>	<b>685,060.0</b>	<b>3,024,235.0</b>	<b>34,399.6</b>	<b>10,074.4</b>	<b>44,474.0</b>	<b>23</b>	<b>61</b>	
<b>C. Project Management</b>									
1. Project Management	469,015.9	51,449.7	520,465.7	6,897.3	756.6	7,653.9	10	11	
<b>Subtotal</b>	<b>469,015.9</b>	<b>51,449.7</b>	<b>520,465.7</b>	<b>6,897.3</b>	<b>756.6</b>	<b>7,653.9</b>	<b>10</b>	<b>11</b>	
<b>Total BASELINE COSTS</b>	<b>4,057,273.7</b>	<b>896,946.9</b>	<b>4,954,220.6</b>	<b>59,665.8</b>	<b>13,190.4</b>	<b>72,856.2</b>	<b>18</b>	<b>100</b>	
Physical Contingencies	41,301.3	17,762.4	59,063.7	607.4	261.2	868.6	30	1	
Price Contingencies	349,670.1	30,073.4	379,743.5	5,142.2	442.3	5,584.5	8	8	
<b>Total PROJECT COSTS</b>	<b>4,448,245.1</b>	<b>944,782.7</b>	<b>5,393,027.8</b>	<b>65,415.4</b>	<b>13,893.9</b>	<b>79,309.2</b>	<b>18</b>	<b>109</b>	

India FOCUS_Mizoram State Procurement Accounts by Years (US\$ '000)		Totals Including Contingencies					
	18/19	19/20	20/21	21/22	22/23	23/24	Total
1. Consultancies	146.0	507.0	488.4	559.5	570.9	142.4	2,414.2
2. Works	959.4	7,890.4	8,314.5	7,753.1	7,698.5	1,781.0	34,397.0
3. Equipment & Materials	475.3	77.8	62.4	67.3	9.5	-	692.2
4. Grant&Subsidies	450.0	-	-	352.9	617.6	661.8	2,082.4
5. Goods, Services & Inputs	4,628.5	6,513.6	5,300.0	2,954.8	2,081.2	359.7	21,837.7
6. Training & Wshops	1,218.7	819.9	923.8	241.0	151.3	148.7	3,503.5
7. Salaries & Allowances	1,795.8	1,912.2	1,967.2	2,004.9	2,096.1	2,158.7	11,935.1
8. Operating Cost	276.8	312.5	373.0	434.1	494.8	556.0	2,447.2
<b>Total</b>	<b>9,950.6</b>	<b>18,033.5</b>	<b>17,429.3</b>	<b>14,367.7</b>	<b>13,720.0</b>	<b>5,808.3</b>	<b>79,309.2</b>

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Mizoram

India FOCUS_Mizoram State Procurement Arrangements (US\$ '000)	Procurement Method				Community Participation in Procurement	N.B.F.	Total
	Local Competitive Bidding	Consulting Services: QCBS	Local Shopping	Direct Contracting			
A. Consultancies	-	2,365.9 (352.5)	48.3 (7.2)	-	-	-	2,414.2 (359.8)
B. Works	18,779.9 (2,204.4)	-	2,482.3 (266.4)	-	13,134.8	-	34,397.0 (2,470.8)
C. Equipment & Materials	-	-	692.2 (137.7)	-	-	-	692.2 (137.7)
D. Grant&Subsidies	-	-	1,632.4 (-0.0)	450.0	-	-	2,082.4 (-0.0)
E. Goods, Services & Inputs	-	-	9,640.5 (621.9)	-	11,860.5 (489.8)	336.7 (0.0)	21,837.7 (1,111.7)
F. Training & Wshops	15.2	-	3,233.6 (10.2)	254.7 (4.7)	-	-	3,503.5 (14.9)
G. Salaries & Allowances	-	-	6,450.6 (2,394.2)	-	-	5,484.4 (4,184.1)	11,935.1 (6,578.3)
H. Operating Cost	-	-	2,252.2 (283.4)	-	11.1	183.8 (183.8)	2,447.2 (467.2)
<b>Total</b>	18,795.1 (2,204.4)	2,365.9 (352.5)	26,432.1 (3,721.1)	704.7 (4.7)	25,006.4 (489.8)	6,005.0 (4,367.9)	79,309.2 (11,140.3)

Note: Figures in parenthesis are the respective amounts financed by The Government

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Mizoram

India  
 FOCUS\_Mizoram State  
**Disbursement Accounts by Financiers**  
 (US\$ '000)

	he Government		IFAD Loan		IFAD Grant		Parallel finance (CSS)		Parallel Finance,GOM		Beneficiaries		Convergence		Total		Duties & Taxes	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
1. Consultancies	359.8	14.9	1,802.8	74.7	-	-	226.5	9.4	25.2	1.0	-	-	-	-	2,414.2	3.0	357.4	
2. Works	2,470.8	7.2	12,059.3	35.1	-	-	5,880.0	17.1	653.3	1.9	198.7	0.6	13,134.8	38.2	34,397.0	43.4	2,470.8	
3. Equipment & Materials	137.7	19.9	554.5	80.1	-	-	-	-	-	-	-	-	-	-	692.2	0.9	118.8	
4. Grant&Subsidies	-0.0	-0.0	1,142.6	54.9	450.0	21.6	-	-	-	-	489.7	23.5	-	-	2,082.4	2.6	-	
5. Goods, Services & Inputs	1,111.7	5.1	9,190.9	42.1	-	-	8,876.9	40.6	987.1	4.5	1,671.2	7.7	-	-	21,837.7	27.5	378.6	
6. Trainings & Wshops	14.9	0.4	3,488.6	99.6	-	-	-	-	-	-	-	-	-	-	3,503.5	4.4	14.9	
7. Salaries & Allowances	6,578.3	55.1	5,356.8	44.9	-	-	-	-	-	-	-	-	-	-	11,935.1	15.0	277.6	
8. Operating costs	467.2	19.1	1,657.2	67.7	-	-	-	-	311.7	12.7	11.1	0.5	-	-	2,447.2	3.1	279.3	
<b>Total PROJECT COSTS</b>	<b>11,140.3</b>	<b>14.0</b>	<b>35,252.7</b>	<b>44.4</b>	<b>450.0</b>	<b>0.6</b>	<b>14,983.4</b>	<b>18.9</b>	<b>1,977.3</b>	<b>2.5</b>	<b>2,370.7</b>	<b>3.0</b>	<b>13,134.8</b>	<b>16.6</b>	<b>79,309.2</b>	<b>100.0</b>	<b>3,897.4</b>	

India  
 FOCUS\_Mizoram State  
**Components by Financiers**  
 (US\$ '000)

	he Government		IFAD Loan		IFAD Grant		Parallel finance (CSS)		Parallel Finance,GOM		Beneficiaries		Convergence		Total		Duties & Taxes	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
<b>A. Improved Jhum Cultivation</b>																		
1. Better Jhum and Conservation	2,932.5	15.8	8,795.0	47.3	-	-	6,165.4	33.2	685.0	3.7	-	-	-	-	18,577.9	23.4	214.5	
2. Support to settled agriculture	238.5	5.8	3,220.8	78.4	450.0	11.0	-	-	-	-	198.7	4.8	-	-	4,108.0	5.2	103.4	
<b>Subtotal</b>	<b>3,171.0</b>	<b>14.0</b>	<b>12,015.8</b>	<b>53.0</b>	<b>450.0</b>	<b>2.0</b>	<b>6,165.4</b>	<b>27.2</b>	<b>685.0</b>	<b>3.0</b>	<b>198.7</b>	<b>0.9</b>	<b>-</b>	<b>-</b>	<b>22,685.9</b>	<b>28.6</b>	<b>317.9</b>	
<b>B. Market access and value chain development</b>																		
1. Value chain development	1,819.6	12.2	7,680.7	51.4	-	-	2,938.0	19.7	327.2	2.2	2,172.0	14.5	-	-	14,937.5	18.8	614.4	
2. Market Access Infrastructure	2,496.1	7.6	10,564.1	32.0	-	-	5,880.0	17.8	965.0	2.9	-	-	13,134.8	39.8	33,040.0	41.7	2,311.9	
<b>Subtotal</b>	<b>4,315.7</b>	<b>9.0</b>	<b>18,244.8</b>	<b>38.0</b>	<b>-</b>	<b>-</b>	<b>8,818.0</b>	<b>18.4</b>	<b>1,292.2</b>	<b>2.7</b>	<b>2,172.0</b>	<b>4.5</b>	<b>13,134.8</b>	<b>27.4</b>	<b>47,977.6</b>	<b>60.5</b>	<b>2,926.4</b>	
<b>C. Project Management</b>																		
1. Project Management	3,653.6	42.3	4,992.1	57.7	-	-	-	-	-	-	-	-	-	-	8,645.7	10.9	653.1	
<b>Total PROJECT COSTS</b>	<b>11,140.3</b>	<b>14.0</b>	<b>35,252.7</b>	<b>44.4</b>	<b>450.0</b>	<b>0.6</b>	<b>14,983.4</b>	<b>18.9</b>	<b>1,977.3</b>	<b>2.5</b>	<b>2,370.7</b>	<b>3.0</b>	<b>13,134.8</b>	<b>16.6</b>	<b>79,309.2</b>	<b>100.0</b>	<b>3,897.4</b>	

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Mizoram

India FOCUS_Mizoram State Expenditure Accounts by Financiers (US\$ '000)																	
	he Government		IFAD Loan		IFAD Grant		Parallel finance (CSS)		Parallel Finance,GOM		Beneficiaries		Convergence		Total		Duties & Taxes
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	
<b>I. Investment Costs</b>																	
A. Consultancies	359.8	14.9	1,802.8	74.7	-	-	226.5	9.4	25.2	1.0	-	-	-	-	2,414.2	3.0	357.4
B. Works	2,470.8	7.2	12,059.3	35.1	-	-	5,880.0	17.1	653.3	1.9	198.7	0.6	13,134.8	38.2	34,397.0	43.4	2,470.8
C. Equipment & Materials	137.7	19.9	554.5	80.1	-	-	-	-	-	-	-	-	-	-	692.2	0.9	118.8
D. Grant&Subsidies	-0.0	-0.0	1,142.6	54.9	450.0	21.6	-	-	-	-	489.7	23.5	-	-	2,082.4	2.6	-
E. Goods, Services & Inputs	1,111.7	5.1	9,190.9	42.1	-	-	8,876.9	40.6	987.1	4.5	1,671.2	7.7	-	-	21,837.7	27.5	378.6
F. Trainings & Wshops	14.9	0.4	3,488.6	99.6	-	-	-	-	-	-	-	-	-	-	3,503.5	4.4	14.9
<b>Total Investment Costs</b>	<b>4,094.9</b>	<b>6.3</b>	<b>28,238.7</b>	<b>43.5</b>	<b>450.0</b>	<b>0.7</b>	<b>14,983.4</b>	<b>23.1</b>	<b>1,665.6</b>	<b>2.6</b>	<b>2,359.6</b>	<b>3.6</b>	<b>13,134.8</b>	<b>20.2</b>	<b>64,927.0</b>	<b>81.9</b>	<b>3,340.4</b>
<b>II. Recurrent Costs</b>																	
A. Salaries & Allowances	6,578.3	55.1	5,356.8	44.9	-	-	-	-	-	-	-	-	-	-	11,935.1	15.0	277.6
B. Operating costs	467.2	19.1	1,657.2	67.7	-	-	-	-	311.7	12.7	11.1	0.5	-	-	2,447.2	3.1	279.3
<b>Total Recurrent Costs</b>	<b>7,045.4</b>	<b>49.0</b>	<b>7,014.0</b>	<b>48.8</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>311.7</b>	<b>2.2</b>	<b>11.1</b>	<b>0.1</b>	<b>-</b>	<b>-</b>	<b>14,382.3</b>	<b>18.1</b>	<b>556.9</b>
<b>Total PROJECT COSTS</b>	<b>11,140.3</b>	<b>14.0</b>	<b>35,252.7</b>	<b>44.4</b>	<b>450.0</b>	<b>0.6</b>	<b>14,983.4</b>	<b>18.9</b>	<b>1,977.3</b>	<b>2.5</b>	<b>2,370.7</b>	<b>3.0</b>	<b>13,134.8</b>	<b>16.6</b>	<b>79,309.2</b>	<b>100.0</b>	<b>3,897.4</b>

India FOCUS_Mizoram State Procurement Accounts by Financiers (US\$ '000)																	
	he Government		IFAD Loan		IFAD Grant		Parallel finance (CSS)		Parallel Finance,GOM		Beneficiaries		Convergence		Total		Duties & Taxes
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	
1. Consultancies	359.8	14.9	1,802.8	74.7	-	-	226.5	9.4	25.2	1.0	-	-	-	-	2,414.2	3.0	357.4
2. Works	2,470.8	7.2	12,059.3	35.1	-	-	5,880.0	17.1	653.3	1.9	198.7	0.6	13,134.8	38.2	34,397.0	43.4	2,470.8
3. Equipment & Materials	137.7	19.9	554.5	80.1	-	-	-	-	-	-	-	-	-	-	692.2	0.9	118.8
4. Grant&Subsidies	-0.0	-0.0	1,142.6	54.9	450.0	21.6	-	-	-	-	489.7	23.5	-	-	2,082.4	2.6	-
5. Goods, Services & Inputs	1,111.7	5.1	9,190.9	42.1	-	-	8,876.9	40.6	987.1	4.5	1,671.2	7.7	-	-	21,837.7	27.5	378.6
6. Training & Wshops	14.9	0.4	3,488.6	99.6	-	-	-	-	-	-	-	-	-	-	3,503.5	4.4	14.9
7. Salaries & Allowances	6,578.3	55.1	5,356.8	44.9	-	-	-	-	-	-	-	-	-	-	11,935.1	15.0	277.6
8. Operating Cost	467.2	19.1	1,657.2	67.7	-	-	-	-	311.7	12.7	11.1	0.5	-	-	2,447.2	3.1	279.3
<b>Total PROJECT COSTS</b>	<b>11,140.3</b>	<b>14.0</b>	<b>35,252.7</b>	<b>44.4</b>	<b>450.0</b>	<b>0.6</b>	<b>14,983.4</b>	<b>18.9</b>	<b>1,977.3</b>	<b>2.5</b>	<b>2,370.7</b>	<b>3.0</b>	<b>13,134.8</b>	<b>16.6</b>	<b>79,309.2</b>	<b>100.0</b>	<b>3,897.4</b>

India								
FOCUS_Mizoram State								
Expenditure Accounts Project Cost Summ	(INR '000)			(US\$ '000)			%	% Total
	Local	Foreign	Total	Local	Foreign	Total	Foreign Exchange	Base Costs
<b>I. Investment Costs</b>								
A. Consultancies	115,942.3	30,261.0	146,203.3	1,705.0	445.0	2,150.0	21	3
B. Works	1,607,376.5	573,170.9	2,180,547.4	23,637.9	8,429.0	32,066.9	26	44
C. Equipment & Materials	31,504.6	14,066.9	45,571.5	463.3	206.9	670.2	31	1
D. Grant&Subsidies	141,600.0	-	141,600.0	2,082.4	-	2,082.4	-	3
E. Goods, Services & Inputs	1,150,418.8	208,392.6	1,358,811.4	16,917.9	3,064.6	19,982.5	15	27
F. Trainings & Wshops	180,948.1	40,060.0	221,008.1	2,661.0	589.1	3,250.1	18	4
<b>Total Investment Costs</b>	<b>3,227,790.3</b>	<b>865,951.5</b>	<b>4,093,741.7</b>	<b>47,467.5</b>	<b>12,734.6</b>	<b>60,202.1</b>	<b>21</b>	<b>83</b>
<b>II. Recurrent Costs</b>								
A. Salaries & Allowances	709,104.0	-	709,104.0	10,428.0	-	10,428.0	-	14
B. Operating costs	120,379.4	30,995.4	151,374.8	1,770.3	455.8	2,226.1	20	3
<b>Total Recurrent Costs</b>	<b>829,483.4</b>	<b>30,995.4</b>	<b>860,478.8</b>	<b>12,198.3</b>	<b>455.8</b>	<b>12,654.1</b>	<b>4</b>	<b>17</b>
<b>Total BASELINE COSTS</b>	<b>4,057,273.7</b>	<b>896,946.9</b>	<b>4,954,220.6</b>	<b>59,665.8</b>	<b>13,190.4</b>	<b>72,856.2</b>	<b>18</b>	<b>100</b>
Physical Contingencies	41,301.3	17,762.4	59,063.7	607.4	261.2	868.6	30	1
Price Contingencies	349,670.1	30,073.4	379,743.5	5,142.2	442.3	5,584.5	8	8
<b>Total PROJECT COSTS</b>	<b>4,448,245.1</b>	<b>944,782.7</b>	<b>5,393,027.8</b>	<b>65,415.4</b>	<b>13,893.9</b>	<b>79,309.2</b>	<b>18</b>	<b>109</b>

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Mizoram

India														
FOCUS_Mizoram State														
Project Components by Year -- Base Costs														
	Base Cost (INR '000)							Base Cost (US\$ '000)						
	18/19	19/20	20/21	21/22	22/23	23/24	Total	18/19	19/20	20/21	21/22	22/23	23/24	Total
<b>A. Improved Jhum Cultivation</b>														
1. Better Jhum and Conservation	325,865.9	338,921.9	243,301.2	114,032.8	84,504.0	43,704.0	1,150,329.8	4,792.1	4,984.1	3,578.0	1,677.0	1,242.7	642.7	16,916.6
2. Support to settled agriculture	74,843.1	78,385.5	86,534.0	19,427.5	-	-	259,190.1	1,100.6	1,152.7	1,272.6	285.7	-	-	3,811.6
<b>Subtotal</b>	<b>400,709.0</b>	<b>417,307.5</b>	<b>329,835.1</b>	<b>133,460.3</b>	<b>84,504.0</b>	<b>43,704.0</b>	<b>1,409,519.9</b>	<b>5,892.8</b>	<b>6,136.9</b>	<b>4,850.5</b>	<b>1,962.7</b>	<b>1,242.7</b>	<b>642.7</b>	<b>20,728.2</b>
<b>B. Market access and value chain development</b>														
1. Value chain development	109,154.0	181,382.8	197,677.5	184,193.9	153,509.9	90,630.3	916,548.5	1,605.2	2,667.4	2,907.0	2,708.7	2,257.5	1,332.8	13,478.7
2. Market Access Infrastructure	59,793.0	466,564.5	469,782.5	469,361.4	507,902.5	134,282.5	2,107,686.5	879.3	6,861.2	6,908.6	6,902.4	7,469.2	1,974.7	30,995.4
<b>Subtotal</b>	<b>168,947.0</b>	<b>647,947.4</b>	<b>667,460.1</b>	<b>653,555.4</b>	<b>661,412.5</b>	<b>224,912.7</b>	<b>3,024,235.0</b>	<b>2,484.5</b>	<b>9,528.6</b>	<b>9,815.6</b>	<b>9,611.1</b>	<b>9,726.7</b>	<b>3,307.5</b>	<b>44,474.0</b>
<b>C. Project Management</b>														
1. Project Management	94,553.6	89,763.1	86,161.1	87,855.9	81,244.3	80,887.5	520,465.7	1,390.5	1,320.0	1,267.1	1,292.0	1,194.8	1,189.5	7,653.9
<b>Subtotal</b>	<b>94,553.6</b>	<b>89,763.1</b>	<b>86,161.1</b>	<b>87,855.9</b>	<b>81,244.3</b>	<b>80,887.5</b>	<b>520,465.7</b>	<b>1,390.5</b>	<b>1,320.0</b>	<b>1,267.1</b>	<b>1,292.0</b>	<b>1,194.8</b>	<b>1,189.5</b>	<b>7,653.9</b>
<b>Total BASELINE COSTS</b>	<b>664,209.7</b>	<b>1,155,017.9</b>	<b>1,083,456.3</b>	<b>874,871.6</b>	<b>827,160.8</b>	<b>349,504.3</b>	<b>4,954,220.6</b>	<b>9,767.8</b>	<b>16,985.6</b>	<b>15,933.2</b>	<b>12,865.8</b>	<b>12,164.1</b>	<b>5,139.8</b>	<b>72,856.2</b>
Physical Contingencies	147.2	15,290.9	16,318.7	15,047.5	12,213.8	45.5	59,063.7	2.2	224.9	240.0	221.3	179.6	0.7	868.6
<b>Price Contingencies</b>														
<b>Inflation</b>														
Local	11,593.6	51,394.7	77,210.6	79,541.0	85,870.8	44,059.4	349,670.1	170.5	755.8	1,135.4	1,169.7	1,262.8	647.9	5,142.2
Foreign	690.0	4,571.5	8,204.9	7,540.4	7,711.6	1,355.0	30,073.4	10.1	67.2	120.7	110.9	113.4	19.9	442.3
<b>Subtotal Inflation</b>	<b>12,283.6</b>	<b>55,966.1</b>	<b>85,415.5</b>	<b>87,081.4</b>	<b>93,582.4</b>	<b>45,414.5</b>	<b>379,743.5</b>	<b>180.6</b>	<b>823.0</b>	<b>1,256.1</b>	<b>1,280.6</b>	<b>1,376.2</b>	<b>667.9</b>	<b>5,584.5</b>
Devaluation	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Price Contingencies	12,283.6	55,966.1	85,415.5	87,081.4	93,582.4	45,414.5	379,743.5	180.6	823.0	1,256.1	1,280.6	1,376.2	667.9	5,584.5
<b>Total PROJECT COSTS</b>	<b>676,640.5</b>	<b>1,226,275.0</b>	<b>1,185,190.6</b>	<b>977,000.5</b>	<b>932,957.0</b>	<b>394,964.3</b>	<b>5,393,027.8</b>	<b>9,950.6</b>	<b>18,033.5</b>	<b>17,429.3</b>	<b>14,367.7</b>	<b>13,720.0</b>	<b>5,808.3</b>	<b>79,309.2</b>

India														
FOCUS_Mizoram State														
Project Components by Year -- Totals Including Contingencie														
	Totals Including Contingencies (INR '000)							Totals Including Contingencies (US\$ '000)						
	18/19	19/20	20/21	21/22	22/23	23/24	Total	18/19	19/20	20/21	21/22	22/23	23/24	Total
<b>A. Improved Jhum Cultivation</b>														
1. Better Jhum and Conservation	333,056.8	362,845.1	271,874.4	135,310.8	103,932.6	56,278.5	1,263,298.2	4,897.9	5,336.0	3,998.2	1,989.9	1,528.4	827.6	18,577.9
2. Support to settled agriculture	75,775.1	84,107.7	97,077.6	22,384.3	-	-	279,344.7	1,114.3	1,236.9	1,427.6	329.2	-	-	4,108.0
<b>Subtotal</b>	<b>408,831.9</b>	<b>446,952.8</b>	<b>368,952.0</b>	<b>157,695.0</b>	<b>103,932.6</b>	<b>56,278.5</b>	<b>1,542,642.8</b>	<b>6,012.2</b>	<b>6,572.8</b>	<b>5,425.8</b>	<b>2,319.0</b>	<b>1,528.4</b>	<b>827.6</b>	<b>22,685.9</b>
<b>B. Market access and value chain development</b>														
1. Value chain development	111,623.6	194,228.4	220,309.1	210,156.1	176,513.6	102,921.9	1,015,752.6	1,641.5	2,856.3	3,239.8	3,090.5	2,595.8	1,513.6	14,937.5
2. Market Access Infrastructure	59,901.5	489,588.6	500,397.6	507,885.3	554,667.1	134,282.5	2,246,722.6	880.9	7,199.8	7,358.8	7,468.9	8,156.9	1,974.7	33,040.0
<b>Subtotal</b>	<b>171,525.1</b>	<b>683,817.0</b>	<b>720,706.7</b>	<b>718,041.3</b>	<b>731,180.6</b>	<b>237,204.4</b>	<b>3,262,475.1</b>	<b>2,522.4</b>	<b>10,056.1</b>	<b>10,598.6</b>	<b>10,559.4</b>	<b>10,752.7</b>	<b>3,488.3</b>	<b>47,977.6</b>
<b>C. Project Management</b>														
1. Project Management	96,283.4	95,505.2	95,531.9	101,264.1	97,843.7	101,481.4	587,909.8	1,415.9	1,404.5	1,404.9	1,489.2	1,438.9	1,492.4	8,645.7
<b>Subtotal</b>	<b>96,283.4</b>	<b>95,505.2</b>	<b>95,531.9</b>	<b>101,264.1</b>	<b>97,843.7</b>	<b>101,481.4</b>	<b>587,909.8</b>	<b>1,415.9</b>	<b>1,404.5</b>	<b>1,404.9</b>	<b>1,489.2</b>	<b>1,438.9</b>	<b>1,492.4</b>	<b>8,645.7</b>
<b>Total PROJECT COSTS</b>	<b>676,640.5</b>	<b>1,226,275.0</b>	<b>1,185,190.6</b>	<b>977,000.5</b>	<b>932,957.0</b>	<b>394,964.3</b>	<b>5,393,027.8</b>	<b>9,950.6</b>	<b>18,033.5</b>	<b>17,429.3</b>	<b>14,367.7</b>	<b>13,720.0</b>	<b>5,808.3</b>	<b>79,309.2</b>

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Mizoram

India FOCUS_Mizoram State Expenditure Accounts by Years -- Totals I (US\$ '000)							
	Totals Including Contingencies						Total
	18/19	19/20	20/21	21/22	22/23	23/24	
<b>I. Investment Costs</b>							
A. Consultancies	146.0	507.0	488.4	559.5	570.9	142.4	2,414.2
B. Works	959.4	7,890.4	8,314.5	7,753.1	7,698.5	1,781.0	34,397.0
C. Equipment & Materials	475.3	77.8	62.4	67.3	9.5	-	692.2
D. Grant&Subsidies	450.0	-	-	352.9	617.6	661.8	2,082.4
E. Goods, Services & Inputs	4,628.5	6,513.6	5,300.0	2,954.8	2,081.2	359.7	21,837.7
F. Trainings & Wshops	1,218.7	819.9	923.8	241.0	151.3	148.7	3,503.5
<b>Total Investment Costs</b>	<b>7,878.0</b>	<b>15,808.7</b>	<b>15,089.0</b>	<b>11,928.7</b>	<b>11,129.0</b>	<b>3,093.5</b>	<b>64,927.0</b>
<b>II. Recurrent Costs</b>							
A. Salaries & Allowances	1,795.8	1,912.2	1,967.2	2,004.9	2,096.1	2,158.7	11,935.1
B. Operating costs	276.8	312.5	373.0	434.1	494.8	556.0	2,447.2
<b>Total Recurrent Costs</b>	<b>2,072.6</b>	<b>2,224.7</b>	<b>2,340.3</b>	<b>2,439.0</b>	<b>2,590.9</b>	<b>2,714.8</b>	<b>14,382.3</b>
<b>Total PROJECT COSTS</b>	<b>9,950.6</b>	<b>18,033.5</b>	<b>17,429.3</b>	<b>14,367.7</b>	<b>13,720.0</b>	<b>5,808.3</b>	<b>79,309.2</b>

India FOCUS_Mizoram State Financing of Investment/Recurrent (US\$ '000)							
	Financing						Total
	18/19	19/20	20/21	21/22	22/23	23/24	
<b>I. Investment Costs</b>							
The Government	329.2	1,019.4	998.8	938.4	765.5	43.4	4,094.9
IFAD Loan	3,670.5	7,068.8	6,590.6	5,485.9	4,600.8	822.1	28,238.7
IFAD Grant	450.0	-	-	-	-	-	450.0
Parallel finance (CSS)	2,173.2	4,267.3	4,053.6	2,292.2	1,973.5	223.5	14,983.4
Parallel Finance,GOM	241.6	474.3	450.5	254.8	219.4	25.0	1,665.6
Beneficiaries	271.4	455.8	472.4	434.2	527.3	198.5	2,359.6
Convergence	742.1	2,523.1	2,523.1	2,523.1	3,042.5	1,781.0	13,134.8
<b>Total Investment Costs</b>	<b>7,878.0</b>	<b>15,808.7</b>	<b>15,089.0</b>	<b>11,928.7</b>	<b>11,129.0</b>	<b>3,093.5</b>	<b>64,927.0</b>
<b>II. Recurrent Costs</b>							
The Government	1,019.2	1,071.6	1,136.2	1,200.8	1,273.2	1,344.6	7,045.4
IFAD Loan	1,053.4	1,147.8	1,168.8	1,173.1	1,223.7	1,247.2	7,014.0
IFAD Grant	-	-	-	-	-	-	-
Parallel finance (CSS)	-	-	-	-	-	-	-
Parallel Finance,GOM	-	4.5	33.4	62.3	91.3	120.2	311.7
Beneficiaries	-	0.9	1.9	2.8	2.8	2.8	11.1
Convergence	-	-	-	-	-	-	-
<b>Total Recurrent Costs</b>	<b>2,072.6</b>	<b>2,224.7</b>	<b>2,340.3</b>	<b>2,439.0</b>	<b>2,590.9</b>	<b>2,714.8</b>	<b>14,382.3</b>
<b>Total Financing of Costs</b>	<b>9,950.6</b>	<b>18,033.5</b>	<b>17,429.3</b>	<b>14,367.7</b>	<b>13,720.0</b>	<b>5,808.3</b>	<b>79,309.2</b>

## Appendix 9 – Annex 2: Detailed Cost Tables

Table 1.1: Better Jhum and Conservation

India																	
FOCUS_Mizoram State																	
Table 1.1. Better Jhum and Conservation																	
Detailed Costs																	
Unit	Quantities						Total	Unit Cost (INR)	Totals Including Contingencies (INR '000)							Other Accounts	
	18/19	19/20	20/21	21/22	22/23	23/24			18/19	19/20	20/21	21/22	22/23	23/24	Total	Disb. Acct.	Fin. Rule
<b>I. Investment Costs</b>																	
<b>A. Better Jhum and Conservation</b>																	
<b>1. Stakeholders' consultation</b>																	
District level consultation /a	district	4	-	-	-	-	4	100,000	412	-	-	-	-	-	412	TRW_DA	LOAN ( 100% )
Village level consultation with VCs /b	VC	272	-	-	-	-	272	10,000	2,802	-	-	-	-	-	2,802	TRW_DA	LOAN ( 100% )
FIG formation /c	village	180	92	-	-	-	272	30,000	5,563	2,961	-	-	-	-	8,524	TRW_DA	LOAN ( 100% )
<b>Subtotal</b>									8,777	2,961	-	-	-	-	11,738		
<b>2. Land Use Planning</b>																	
Capacity building of MIRSAC	lumpsum	1	1	-	-	-	2	500,000	515	536	-	-	-	-	1,051	TRW_DA	LOAN ( 100% )
Land use maps /d	lumpsum	4	-	-	-	-	4	700,000	2,884	-	-	-	-	-	2,884	TRW_DA	LOAN ( 100% )
Land suitability classification maps /e	village	272	-	-	-	-	272	20,000	5,608	-	-	-	-	-	5,608	TRW_DA	LOAN ( 100% )
GPS to VLWs /f	each	272	-	-	-	-	272	30,000	8,451	-	-	-	-	-	8,451	EQUIP_DA	LOAN ( 80% )
Capacity building of SAAB /g	person	2,720	-	-	-	-	2,720	4,000	11,208	-	-	-	-	-	11,208	TRW_DA	LOAN ( 100% )
Training of VC members	VC	190	82	-	-	-	272	10,000	1,957	880	-	-	-	-	2,837	TRW_DA	LOAN ( 100% )
Training and support to lead farmers	lead farmer	272	-	272	-	-	544	50,000	14,010	-	15,197	-	-	-	29,207	TRW_DA	LOAN ( 100% )
Honourarium to lead farmers /h	lead farmer	3,264	3,264	3,264	-	-	9,792	1,000	3,362	3,502	3,647	-	-	-	10,511	TRW_DA	LOAN ( 100% )
<b>Subtotal</b>									47,995	4,918	18,844	-	-	-	71,757		
<b>3. Orientation training to PMU &amp; DPMU sta</b>																	
PMU staff orientation in Delhi /i	pers_days	50	-	-	-	-	50	7,500	386	-	-	-	-	-	386	TRW_DA	LOAN ( 100% )
DPMU staff orientation in Aizwal /j	pers_days	100	-	-	-	-	100	2,000	206	-	-	-	-	-	206	TRW_DA	LOAN ( 100% )
<b>Subtotal</b>									592	-	-	-	-	-	592		
<b>4. Better Jhum</b>																	
<b>a. Fallow management /k</b>																	
Legume cover crop - annual	ha	-	6,800	6,800	-	-	13,600	1,500	-	10,943	11,398	-	-	-	22,341	GSI_DA	LOAN ( 90% )
Legume cover crop - perennial	per ha	-	6,800	6,800	-	-	13,600	1,500	-	10,943	11,398	-	-	-	22,341	GSI_DA	LOAN ( 90% )
Low cost bunds	per ha	-	6,800	6,800	-	-	13,600	2,000	-	14,591	15,197	-	-	-	29,788	GSI_DA	CSS ( 90% ), GOM ( 10% )
<b>Subtotal</b>									-	36,476	37,993	-	-	-	74,469		
<b>b. Current Jhum improvement</b>																	
Bunds, SWC	household	18,133	18,133	18,134	-	-	54,400	5,000	93,396	97,268	101,312	-	-	-	291,977	GSI_DA	CSS ( 90% ), GOM ( 10% )
Farmer training /l	sessions	816	816	816	-	-	2,448	2,000	1,681	1,751	1,824	-	-	-	5,256	TRW_DA	LOAN ( 100% )
Supply of quality seeds /m	household	27,200	27,200	-	27,200	27,200	108,800	1,500	41,759	43,721	-	47,928	50,180	-	183,589	GSI_DA	LOAN ( 90% )
Supply of Planting materials, orchards /n	household	27,200	27,200	-	-	-	54,400	1,500	41,759	43,721	-	-	-	-	85,480	GSI_DA	LOAN ( 90% )
Supply of Planting materials (Tree crops)	household	27,200	27,200	-	-	-	54,400	1,500	41,759	43,721	-	-	-	-	85,480	GSI_DA	CSS ( 90% ), GOM ( 10% )
<b>Subtotal</b>									220,354	230,184	103,136	47,928	50,180	-	651,782		

Contd...

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Mizoram

India																		
FOCUS, Mizoram State																		
Table 1.1. Better Jhum and Conservation																		
Detailed Costs																		
	Unit	Quantities						Total	Unit Cost (INR)	Totals Including Contingencies (INR '000)						Other Accounts		
		18/19	19/20	20/21	21/22	22/23	23/24			18/19	19/20	20/21	21/22	22/23	23/24	Total	Disb. Acct.	Fin. Rule
<b>I. Investment Costs</b>																		
<b>5. Village Forest Conservation /o</b>																		
Contour trenches in CCAs /p	ha	1,000	2,000	2,400	-	-	-	5,400	10,000	10,301	21,457	26,818	-	-	-	58,576	GSI_DA	CSS ( 90% ), GOM ( 10% )
Nursery establishment /q	ha	6	60	70	-	-	-	136	50,000	307	3,215	3,927	-	-	-	7,449	GSI_DA	LOAN ( 90% )
Planting & maintenance /r	ha	-	100	1,200	1,400	-	-	2,700	5,000	-	536	6,732	8,223	-	-	15,491	GSI_DA	LOAN ( 90% )
Protection of water sources /s	sites	-	200	300	316	-	-	816	70,500	-	16,266	25,384	27,821	-	-	69,470	CW_DA	LOAN ( 85% )
<b>Subtotal</b>										<b>10,608</b>	<b>41,473</b>	<b>62,861</b>	<b>36,044</b>	<b>-</b>	<b>150,986</b>			
<b>Total Investment Costs</b>										<b>288,326</b>	<b>316,012</b>	<b>222,834</b>	<b>83,972</b>	<b>50,180</b>	<b>-</b>	<b>961,324</b>		
<b>II. Recurrent Costs</b>																		
<b>A. Salaries for Circle &amp; Village levels</b>																		
<b>1. Circle and village level staff</b>																		
Contractual staff for Circle offices /t	pers_month	576	576	576	576	576	576	3,456	20,000	11,791	12,345	12,925	13,533	14,169	14,835	79,596	SAL_DA	LOAN ( 50% )
Village level workers /u	pers_month	1,692	1,692	1,692	1,692	1,692	1,692	10,152	15,000	25,976	27,197	28,476	29,814	31,215	32,682	175,361	SAL_DA	LOAN ( 50% )
Motor cycle allowances /v	per month	2,268	2,268	2,268	2,268	2,268	2,268	13,608	3,000	6,964	7,291	7,634	7,993	8,368	8,762	47,012	SAL_DA	LOAN ( 50% )
<b>Total Recurrent Costs</b>										<b>44,731</b>	<b>46,833</b>	<b>49,035</b>	<b>51,339</b>	<b>53,752</b>	<b>56,278</b>	<b>301,969</b>		
<b>Total</b>										<b>333,057</b>	<b>362,845</b>	<b>271,869</b>	<b>135,311</b>	<b>103,933</b>	<b>56,278</b>	<b>1,263,293</b>		
/a Village representatives are invited to this consultation /b All community members are invited to this consultation /c 20 members in a FIG in a village /d Preparation of land use maps by MIRSAC /e For each village; prepared by MIRSAC /f provided to each village level worker /g 10 person per village; 5 days training /h one lead farmer per village, salary at INR 1000/month for 3 year period /i For 3 days training and 2 days of travel /j 5 days including two days of travel /k 10 ha per village /l Training of FIG farmers conducted by the Lead Farmer in 3 sessions for 3 years /m covering 25% of each operational Jhum plot and seed such as rice, maize, beans,sesame,turmeric, etc /n Supply of at least 50 seedlings per household /o At least 20 ha per village /p 20 ha per village /q 0.5 ha per village - 1000 seedlings per ha /r 50% of area covered and cost inclusive of maintenance for a 4 year period /s 3 sites per village /t As per approved vacant positions; /u As per approved vacant positions /v for Circle and village level workers																		

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Mizoram

**Table 1.2: Settled Agriculture**

India FOCUS_Mizoram State Table 1.2. Support to settled agriculture Detailed Costs																		
Unit	Quantities							Unit Cost (INR)	Totals Including Contingencies (INR '000)							Other Accounts		
	18/19	19/20	20/21	21/22	22/23	23/24	Total		18/19	19/20	20/21	21/22	22/23	23/24	Total	Disb. Acct.	Fin. Rule	
<b>I. Investment Costs</b>																		
<b>A. Support to Settled Agriculture</b>																		
<b>1. Support to existing settled agriculture</b>																		
<b>a. Training and FIG promotion for TRC</b>																		
FIG promotion for TRC/WRT	FIG	200	72	-	-	-	-	272	30,000	6,181	2,317	-	-	-	-	8,498	TRW_DA	LOAN (100%)
Farmer training /a	sessions	-	816	816	-	-	-	1,632	2,000	-	1,751	1,824	-	-	-	3,575	TRW_DA	LOAN (100%)
<b>Subtotal</b>										6,181	4,068	1,824	-	-	-	12,073		
<b>b. Support for wetland agriculture</b>																		
Improved soil fertility measures - WRC/TRC	ha	-	1,000	2,000	2,440	-	-	5,440	2,000	-	2,146	4,466	5,669	-	-	12,281	GSI_DA	LOAN (90%)
Support for wetland agriculture	ha	-	1,000	2,000	2,440	-	-	5,440	5,000	-	5,364	11,174	14,201	-	-	30,740	GSI_DA	LOAN (90%)
<b>Subtotal</b>										-	7,510	15,640	19,870	-	-	43,021		
<b>c. Support for existing orchards</b>																		
FIG promotion for Orchards	FIG	200	72	-	-	-	-	272	30,000	6,181	2,317	-	-	-	-	8,498	TRW_DA	LOAN (100%)
Training on orchard management	sessions	-	816	816	-	-	-	1,632	2,000	-	1,751	1,824	-	-	-	3,575	TRW_DA	LOAN (100%)
Support for private nurseries and trainings	per nursery	30	30	-	-	-	-	60	100,000	3,090	3,218	-	-	-	-	6,309	GSI_DA	LOAN (90%)
Supply of quality planting materials	household	-	2,000	2,000	1,440	-	-	5,440	1,500	-	3,218	3,352	2,514	-	-	9,085	GSI_DA	LOAN (90%)
<b>Subtotal</b>										9,271	10,505	5,176	2,514	-	-	27,467		
<b>d. Irrigation support</b>																		
Irrigation support - water storage and delivery system /b	per system	-	100	172	-	-	-	272	100,000	-	11,543	20,597	-	-	-	32,140	CW_DA	LOAN (85%), BEN (15%)
<b>e. Support to Fish farming</b>																		
Supply of Fish fingerlings /c	1000 #	408	816	408	-	-	-	1,632	3,000	1,261	2,626	1,368	-	-	-	5,255	GSI_DA	LOAN (90%)
Supply of Fish feed	ha	68	136	68	-	-	-	272	12,000	841	1,751	912	-	-	-	3,503	GSI_DA	LOAN (90%)
Rice and fish culture demonstrations	ha	10	20	30	-	-	-	60	35,000	361	751	1,173	-	-	-	2,285	TRW_DA	LOAN (100%)
<b>Subtotal</b>										2,462	5,128	3,453	-	-	-	11,043		
<b>Subtotal</b>										17,914	38,755	46,690	22,384	-	-	125,743		
<b>2. Support to the Landless households</b>																		
FIG promotion for the Landless	each FIG	200	72	-	-	-	-	272	30,000	6,141	2,315	-	-	-	-	8,456	TRW_DA	LOAN (100%)
Farmers' training /d	session	816	816	816	-	-	-	2,448	2,000	1,681	1,751	1,824	-	-	-	5,256	TRW_DA	LOAN (100%)
Land allocation processes	each FIG	50	100	122	-	-	-	272	32,380	1,657	3,470	4,432	-	-	-	9,559	TRW_DA	LOAN (100%)
Nursery management	per FIG	-	150	122	-	-	-	272	25,000	-	4,019	3,422	-	-	-	7,441	GSI_DA	LOAN (90%)
Bunding	per ha	500	1,000	1,220	-	-	-	2,720	5,000	2,575	5,364	6,816	-	-	-	14,756	CW_DA	LOAN (85%), BEN (15%)
Bench terracing	per ha	200	300	300	-	-	-	800	30,000	6,181	9,655	10,057	-	-	-	25,893	CW_DA	LOAN (85%), BEN (15%)
Water harvesting structures and other irrigation structures	each	50	100	122	-	-	-	272	75,000	3,875	8,051	10,204	-	-	-	22,130	CW_DA	LOAN (85%), BEN (15%)
Seedlings for Tree and fodder crops	household	1,000	2,000	2,440	-	-	-	5,440	2,500	2,575	5,364	6,816	-	-	-	14,756	GSI_DA	LOAN (90%)
Seeds for other crops	household	1,000	2,000	2,440	-	-	-	5,440	2,500	2,575	5,364	6,816	-	-	-	14,756	GSI_DA	LOAN (90%)
<b>Subtotal</b>										27,261	45,353	50,388	-	-	-	123,002		
<b>3. Technical Assistance by FAO</b>																		
Technical Assistance by FAO	lumpsum	1	-	-	-	-	-	1	30,600,000	30,600	-	-	-	-	-	30,600	GRANT_DA	GRANT (100%)
<b>Total</b>										75,775	84,108	97,078	22,384	-	-	279,345		

<sup>a</sup> Training by lead farmer and conducted in 3 sessions  
<sup>b</sup> such common schemes like lift irrigation, water harvesting ponds, check dams  
<sup>c</sup> 6000 fingerlings per ha of pond; average size of pond is 0.25 ha  
<sup>d</sup> Training of farmers conducted by the lead farmer in 3 sessions

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Mizoram

**Table 2.1: Value Chain Development**

India FOCUS_Mizoram State Table 2.1. Value chain development																		
Detailed Costs																		
Unit	Quantities							Unit Cost (INR)	Totals Including Contingencies (INR '000)							Other Accounts		
	18/19	19/20	20/21	21/22	22/23	23/24	Total		18/19	19/20	20/21	21/22	22/23	23/24	Total	Disb. Acct.	Fin. Rule	
<b>I. Investment Costs</b>																		
<b>A. Crop-based</b>																		
<b>1. Production Support</b>																		
a. FIGs promotion /a	per FIG	50	130	180	-	-	-	360	30,000	1,535	4,179	6,059	-	-	-	11,773	TRW_DA	LOAN ( 100% )
b. CRP training /b	per CRP	10	50	60	-	-	-	120	5,000	52	268	335	-	-	-	655	TRW_DA	LOAN ( 100% )
c. Training of FIG members /c	per FIG	150	390	540	-	-	-	1,080	2,000	309	837	1,207	-	-	-	2,353	TRW_DA	LOAN ( 100% )
d. CRP Engagement	per CRP	120	720	1,440	1,320	720	-	4,320	1,000	124	772	1,609	1,537	873	-	4,915	TRW_DA	LOAN ( 100% )
e. Production of improved planting material by CRPs	per CRP	10	50	-	-	-	-	60	70,000	721	3,755	-	-	-	-	4,476	GSI_DA	LOAN ( 90% )
f. Supply of Planting material - Turmeric	household	200	1,000	1,200	-	-	-	2,400	1,500	309	1,609	2,011	-	-	-	3,930	GSI_DA	LOAN ( 90% )
g. Supply of Planting material - Mizo Chilli	household	200	1,000	1,200	-	-	-	2,400	1,500	309	1,609	2,011	-	-	-	3,930	GSI_DA	LOAN ( 90% )
h. Supply of Ginger planting materials	household	200	1,000	1,200	-	-	-	2,400	7,000	1,442	7,510	9,386	-	-	-	18,338	GSI_DA	LOAN ( 90% )
<b>Subtotal</b>										<b>4,801</b>	<b>20,540</b>	<b>22,619</b>	<b>1,537</b>	<b>873</b>	<b>-</b>	<b>50,369</b>		
<b>2. Marketing Support</b>																		
<b>a. Marketing infrastructure</b>																		
Aggregation centres common facility centres /d	centre	-	10	10	10	-	-	30	1,500,000	-	17,316	17,958	18,627	-	-	53,901	CW_DA	LOAN ( 85% )
Equipment for aggregation common facility center	set	-	10	10	10	-	-	30	100,000	-	1,074	1,114	1,155	-	-	3,343	EQUIP_DA	LOAN ( 80% )
<b>Subtotal</b>											<b>18,390</b>	<b>19,072</b>	<b>19,782</b>	<b>-</b>	<b>-</b>	<b>57,244</b>		
<b>b. Marketing support</b>																		
Design projects for Bamboo /e	each	-	1	1	-	-	-	2	1,500,000	-	1,609	1,675	-	-	-	3,285	CON_DA	LOAN ( 85% )
Participation in Trade fairs and Exhibitions	lumpsum	-	1	1	1	1	1	5	500,000	-	536	558	581	605	630	2,912	GSI_DA	LOAN ( 90% )
Exposure visits	persons	-	5	5	5	5	-	20	50,000	-	268	279	291	303	-	1,142	TRW_DA	LOAN ( 100% )
Buyer-seller meet	lumpsum	-	1	1	1	1	1	5	1,000,000	-	1,073	1,117	1,164	1,213	1,263	5,830	TRW_DA	LOAN ( 100% )
Support for setting up of Agroprocessing units /f	lumpsum	-	-	5	5	5	-	15	2,000,000	-	-	11,164	11,617	12,089	-	34,870	GSI_DA	LOAN ( 75% ), BEN ( 25% )
Digital delivery of extension Tablets	cluster	10	50	60	-	-	-	120	12,000	124	644	802	-	-	-	1,570	EQUIP_DA	LOAN ( 80% )
Services for Digital Delivery of extension Organic Certification	lumpsum	-	1	1	-	-	-	2	450,000	-	483	501	-	-	-	984	EQUIP_DA	LOAN ( 80% )
Spices	lumpsum	-	-	-	600	600	-	1,200	12,000	-	-	-	8,381	8,731	-	17,112	CON_DA	CSS ( 90% ), GOM ( 10% )
<b>Subtotal</b>										<b>124</b>	<b>4,615</b>	<b>16,098</b>	<b>22,034</b>	<b>22,941</b>	<b>1,894</b>	<b>67,706</b>		
<b>c. Establishment of marketing section in DoH</b>																		
Computer set	set	5	-	-	-	-	-	5	50,000	259	-	-	-	-	-	259	EQUIP_DA	LOAN ( 80% )
Furniture	set	5	-	-	-	-	-	5	40,000	207	-	-	-	-	-	207	EQUIP_DA	LOAN ( 80% )
Vehicles	set	1	-	-	-	-	-	1	850,000	880	-	-	-	-	-	880	EQUIP_DA	LOAN ( 80% )
Training Staff	persons	5	-	5	-	5	-	15	20,000	103	-	112	-	121	-	336	TRW_DA	LOAN ( 100% )
Studies	study	-	2	2	2	2	2	10	20,000	-	43	45	46	48	50	233	CON_DA	LOAN ( 85% )
Meeting workshops	workshop	1	2	2	1	1	-	7	50,000	52	107	112	58	60	-	389	TRW_DA	LOAN ( 100% )
<b>Subtotal</b>										<b>1,501</b>	<b>150</b>	<b>268</b>	<b>105</b>	<b>230</b>	<b>50</b>	<b>2,304</b>		
<b>Subtotal</b>										<b>1,625</b>	<b>23,154</b>	<b>35,438</b>	<b>41,921</b>	<b>23,171</b>	<b>1,944</b>	<b>127,254</b>		
<b>3. TA for spices cultivation</b>																		
a. TOT for spices /g	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	GRANT_DA	GRANT ( 100% )
b. Consultants - Marketing & Horticulture /h	pers_days	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	GRANT_DA	GRANT ( 100% )
<b>Subtotal</b>																		
<b>4. Innovations</b>																		
Innovation Fund (Project)	lumpsum	-	-	-	8	14	15	37	3,000,000	-	-	-	24,000	42,000	45,000	111,000	GRANT_DA	LOAN ( 70% ), BEN ( 30% )

Contd...

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Mizoram

India																	
FOCUS_Mizoram State																	
Table 2.1. Value chain development																	
Detailed Costs																	
Unit	Quantities						Unit Cost (INR)	Totals Including Contingencies (INR '000)						Other Accounts			
	18/19	19/20	20/21	21/22	22/23	23/24		Total	18/19	19/20	20/21	21/22	22/23	23/24	Total	Disb. Acct.	Fin. Rule
<b>I. Investment Costs</b>																	
<b>Subtotal</b>								6,426	43,694	58,057	67,457	66,044	46,944	288,623			
<b>B. Livestock-based</b>																	
<b>1. Pig Breeding</b>																	
<b>a. Capacity building</b>																	
Capacity Building: Training of farmers on breeding/ mgmt/ AH /i	farmer	16	32	16	-	-	64	7,100	117	244	127	-	-	-	488	TRW_DA	LOAN ( 100% )
Capacity Building: Exposure visits- in state	farmer	16	32	16	-	-	64	5,500	91	189	98	-	-	-	378	TRW_DA	LOAN ( 100% )
Capacity Building: Exposure visits- other states	farmer	16	32	16	-	-	64	15,000	247	515	268	-	-	-	1,030	TRW_DA	LOAN ( 100% )
<b>Subtotal</b>								455	948	493	-	-	-	1,896			
<b>b. Pig breeding units</b>																	
Pig Breeding Stock (6 pigs & 1 boar)	lumpsum	16	32	16	-	-	64	35,000	577	1,202	626	-	-	-	2,404	GSI_DA	LOAN ( 50% ), BEN ( 50% )
Construction of pig housing structure	structure	16	32	16	-	-	64	100,000	1,649	3,434	1,787	-	-	-	6,870	GSI_DA	LOAN ( 50% ), BEN ( 50% )
<b>Subtotal</b>								2,227	4,635	2,413	-	-	-	9,274			
<b>c. Piggyery AI unit</b>																	
Boar semen station construction	building	2	-	2	-	-	4	300,000	668	-	718	-	-	-	1,386	CW_DA	LOAN ( 85% )
Processing lab, store and office for AI station for pigs /i	lumpsum	2	-	2	-	-	4	2,366,670	4,883	-	5,284	-	-	-	10,167	GSI_DA	LOAN ( 90% )
AI for pigs: purchase of boars	each	10	-	10	-	-	20	25,000	258	-	279	-	-	-	537	GSI_DA	CSS ( 90% ), GOM ( 10% )
Boar stations operating costs	lumpsum	2	2	4	4	4	20	1,650,000	3,399	3,540	7,375	7,683	8,004	8,339	38,340	GSI_DA	CSS ( 90% ), GOM ( 10% )
<b>Subtotal</b>								9,208	3,540	13,657	7,683	8,004	8,339	50,431			
<b>d. Piglet distribution</b>																	
Distribution of cross-bred piglets	piglet	5,000	5,000	5,000	5,000	5,000	25,000	5,000	25,753	26,821	27,936	29,100	30,317	-	139,927	GSI_DA	LOAN ( 50% ), BEN ( 50% )
<b>Subtotal</b>								37,642	35,944	44,499	36,783	38,320	8,339	201,528			
<b>2. Poultry Improvement</b>																	
<b>a. Brooding units</b>																	
Brooding house 60 sq.m & brooder equipment /k	each	2	2	-	-	-	4	665,300	1,481	1,536	-	-	-	-	3,017	CW_DA	LOAN ( 85% )
Day-old chicks & feed for pullet	chicks	-	5,000	10,000	10,000	10,000	45,000	73	-	392	816	850	885	922	3,865	GSI_DA	CSS ( 90% ), GOM ( 10% )
<b>Subtotal</b>								1,481	1,928	816	850	885	922	6,882			
<b>b. Backyard poultry</b>																	
Backyard poultry unit, chicks & equipment /i	package	-	2,040	2,040	2,040	2,040	8,160	5,000	-	10,944	11,393	11,862	12,352	-	46,552	GSI_DA	LOAN ( 50% ), BEN ( 50% )
<b>Subtotal</b>								1,481	12,872	12,209	12,712	13,237	922	53,434			
<b>3. Mithun development - existing herds</b>																	
Community mithun shelter/coral - materials, wood & labour	village	5	10	5	-	-	20	400,000	2,062	4,292	2,234	-	-	-	8,587	GSI_DA	LOAN ( 50% ), BEN ( 50% )
Water supply to grazing areas and beneficiary labour /m	trough	20	40	20	-	-	80	120,000	2,474	5,150	2,681	-	-	-	10,305	GSI_DA	LOAN ( 50% ), BEN ( 50% )
Fencing grazing areas - barbed wire, poles & labour	km	25	50	25	-	-	100	52,500	1,353	2,817	1,466	-	-	-	5,635	GSI_DA	LOAN ( 50% ), BEN ( 50% )
Mineral block demonstration	village	5	10	5	-	-	20	50,000	258	536	279	-	-	-	1,073	TRW_DA	LOAN ( 100% )
<b>Subtotal</b>								6,146	12,795	6,660	-	-	-	25,601			
<b>4. Strengthening Vet Section</b>																	
<b>a. Strengthening Vet Infrastructure</b>																	
Diagnostic kits for PPR	kits	6	6	6	6	6	36	375,000	2,321	2,414	2,512	2,614	2,720	2,831	15,412	GSI_DA	LOAN ( 90% )
Diagnostic kits for CSF	kits	5	5	5	5	5	30	230,000	1,185	1,234	1,285	1,339	1,395	1,453	7,890	GSI_DA	CSS ( 90% ), GOM ( 10% )
<b>Subtotal</b>								3,506	3,648	3,797	3,952	4,115	4,284	23,302			
<b>5. Animal Health services</b>																	
<b>a. pig vaccination</b>																	
Pig vaccination /n	animal	20,000	80,000	80,000	80,000	80,000	420,000	42	865	3,605	3,755	3,911	4,075	4,245	20,456	GSI_DA	CSS ( 90% ), GOM ( 10% )
Mineral & vitamin supplements	village	136	136	-	-	-	272	5,000	700	730	-	-	-	-	1,430	GSI_DA	CSS ( 90% ), GOM ( 10% )
<b>Subtotal</b>								1,566	4,334	3,755	3,911	4,075	4,245	21,886			
<b>b. Poultry vaccination</b>																	
Poultry vaccination	bird	175,000	350,000	350,000	350,000	350,000	1,925,000	1.1	198	413	430	448	467	486	2,443	GSI_DA	CSS ( 90% ), GOM ( 10% )
<b>c. Cattle, Mithun vaccination</b>																	
Cattle and mithun vaccination	animal	10,000	20,000	20,000	20,000	20,000	110,000	14	144	300	313	326	340	354	1,777	GSI_DA	CSS ( 90% ), GOM ( 10% )
<b>d. Goat and sheep vaccination</b>																	
Sheep and goats vaccination	animal	3,000	6,000	6,000	6,000	6,000	33,000	9	28	58	60	63	65	68	343	GSI_DA	CSS ( 90% ), GOM ( 10% )
<b>Subtotal</b>								1,936	5,106	4,558	4,748	4,946	5,154	26,448			

Contd...

India

Fostering Climate Resilient Upland Farming Systems in the Northeast  
Design completion report – Appendices - Mizoram

Table 2.1. Value chain development

Detailed Costs	Unit	Quantities						Total	Unit Cost (INR)	Totals Including Contingencies (INR '000)						Total	Disb. Acct.	Other Accounts Fin. Rule
		18/19	19/20	20/21	21/22	22/23	23/24			18/19	19/20	20/21	21/22	22/23	23/24			
<b>I. Investment Costs</b>																		
<b>6. Feed and Fodder demonstrations</b>																		
Feed & fodder demonstration /o	lumpsum	136	136	136	136	-	-	544	55,520	7,778	8,101	8,437	8,789	-	-	33,105	GSI_DA	LOAN ( 90%)
<b>7. Training</b>																		
<b>a. Training VFAs</b>																		
Equipment and field materials for VFA	VFA	25	25	-	-	-	-	50	20,000	517	537	-	-	-	-	1,053	EQUIP_DA	LOAN ( 80%)
Training of VFA /p	VFA	25	50	50	25	-	-	150	7,100	183	381	397	207	-	-	1,167	TRW_DA	LOAN ( 100%)
Exposure visit- out of the state	VFA	25	25	-	-	-	-	50	15,000	386	402	-	-	-	-	789	TRW_DA	LOAN ( 100%)
<b>Subtotal</b>										1,086	1,320	397	207	-	-	3,009		
<b>b. CAHWs training /q</b>																		
Training of CAHWs /r	person	136	272	136	-	-	-	544	7,100	995	2,072	1,079	-	-	-	4,146	TRW_DA	LOAN ( 100%)
Exposure visit - out of state	person	136	272	136	-	-	-	544	15,000	2,101	4,377	2,280	-	-	-	8,758	TRW_DA	LOAN ( 100%)
Equipment for CAHW	set	136	136	-	-	-	-	272	4,000	562	584	-	-	-	-	1,146	EQUIP_DA	LOAN ( 80%)
<b>Subtotal</b>										3,658	7,033	3,359	-	-	-	14,050		
<b>c. Farmers training</b>																		
Training of farmers by VFAs & CAHWs	persons	3,400	13,600	13,600	6,800	6,800	6,800	51,000	440	1,541	6,420	6,687	3,483	3,628	3,780	25,539	TRW_DA	LOAN ( 100%)
<b>Subtotal</b>										6,285	14,773	10,442	3,689	3,628	3,780	42,598		
<b>8. Improvement to meat market chain</b>																		
Training on hygienic meat handling	youth	54	108	164	164	54	-	544	7,100	395	823	1,301	1,355	465	-	4,339	TRW_DA	LOAN ( 100%)
Equipment for demonstration shops	youth	54	108	164	164	54	-	544	10,000	559	1,160	1,826	1,894	847	-	6,087	EQUIP_DA	LOAN ( 80%)
Slaughter slab units	each	27	54	82	82	27	-	272	400,000	11,125	23,173	36,652	38,180	13,097	-	122,227	GSI_DA	CSS ( 90%), GOM ( 10%)
<b>Subtotal</b>										12,080	25,156	39,779	41,430	14,209	-	132,853		
9. Technical assistance /s	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	GRANT_DA	GRANT ( 100%)
10. Support for other livestock and fish culture	lumpsum	1	1	1	1	1	1	6	1,000,000	1,032	1,073	1,116	1,162	1,209	1,258	6,850	GSI_DA	CSS ( 90%), GOM ( 10%)
<b>Subtotal</b>										77,886	119,467	131,499	113,265	79,665	23,738	545,519		
<b>Total Investment Costs</b>										84,312	163,161	189,556	180,723	145,709	70,682	834,142		
<b>II. Recurrent Costs</b>																		
<b>A. Salaries(DOH)</b>																		
<b>1. Salaries and allowances (DOH)</b>																		
<b>a. Marketing section in DOH</b>																		
Manager - Market Intelligence	pers_month	6	12	12	12	12	12	66	60,000	368	772	808	846	886	927	4,606	SAL_DA	LOAN ( 90%)
Manager - Market Policy & Research	pers_month	6	12	12	12	12	12	66	60,000	368	772	808	846	886	927	4,606	SAL_DA	LOAN ( 90%)
Manager - Market Linkage	pers_month	6	12	12	12	12	12	66	60,000	368	772	808	846	886	927	4,606	SAL_DA	LOAN ( 90%)
Marketing Assistants	pers_month	12	24	24	24	24	24	132	35,000	430	900	942	987	1,033	1,082	5,374	SAL_DA	LOAN ( 90%)
<b>Subtotal</b>										1,535	3,215	3,366	3,524	3,690	3,863	19,193		
<b>2. Marketing section in DoH</b>																		
Travel	month	30	60	60	60	60	60	330	5,000	155	322	335	349	364	379	1,904	OP_DA	LOAN ( 90%)
Office operating costs	year	1	-	-	-	-	-	1	60,000	62	-	-	-	-	-	62	OP_DA	LOAN ( 90%)
Vehicle operating cost	year	0.5	1	1	1	1	1	5.5	120,000	62	129	134	140	145	151	761	OP_DA	LOAN ( 90%)
<b>Subtotal</b>										278	451	469	489	509	530	2,726		
<b>Subtotal</b>										1,814	3,665	3,835	4,013	4,199	4,394	21,919		
<b>B. Salaries: Livestock</b>																		
<b>1. Salaries and allowances (Livestock services)</b>																		
CAHW allowances	pers_year	136	136	-	-	-	-	272	12,000	1,670	1,749	-	-	-	-	3,419	SAL_DA	LOAN ( 90%)
VFA salary and allowances (GoM)	pers_month	300	300	300	300	300	300	1,800	35,000	10,747	11,252	11,781	12,334	12,914	13,521	72,549	SAL_DA	GOVT
VFA salary and allowances (IFAD)	pers_month	300	300	300	300	300	300	1,800	25,000	7,676	8,037	8,415	8,810	9,224	9,658	51,821	SAL_DA	LOAN ( 90%)
VFA transportation allowances	VFA_year	25	50	50	50	50	50	275	24,000	614	1,286	1,346	1,410	1,476	1,545	7,677	SAL_DA	LOAN ( 90%)
AHW allowances	pers_year	200	200	200	-	-	-	600	12,000	2,456	2,572	2,693	-	-	-	7,721	SAL_DA	LOAN ( 90%)
AHM salary and allowances	AHM month	48	48	48	48	48	48	288	45,000	2,211	2,315	2,423	2,537	2,657	2,781	14,924	SAL_DA	LOAN ( 90%)
AHM transportation allowances	AHM year	4	4	4	4	4	4	24	30,000	124	129	134	140	146	152	823	OP_DA	LOAN ( 90%)
<b>Subtotal</b>										25,498	27,339	26,792	25,231	26,416	27,657	158,934		
<b>C. Maintenance of Collection centres</b>																		
1. Collection centre/Common facility centre	annual	-	10	20	30	30	30	120	6,250	-	63	126	189	189	189	757	OP_DA	BEN ( 100%)
<b>Total Recurrent Costs</b>										27,312	31,067	30,753	29,433	30,805	32,240	181,611		
<b>Total</b>										111,624	194,228	220,309	210,156	176,514	102,922	1,015,753		

la 20 persons per FIG - 30 clusters - 4 villages - 2 FIGs per village  
 lb 2 days training to each CRP and 2 training programme  
 lc 3 sessions per FIG  
 ld One centre per cluster of 4 villages; cost includes the cost design and construction supervision  
 le Including design, training and market linkage  
 lf private sector participation  
 lg Details and costs included under TA to FAO in Component 3.1  
 lh Costs included under TA to FAO under Component 3.1  
 li 5 days training + refresher. Including training material, trainers resource persons etc.  
 lj Includes refrigerator with solar unit, maintenance costs, AI equipment for Boar station etc

lk One in each district  
 ll 20 birds per backyard unit; cost inclusive of materials etc  
 lm 4 troughs in each village  
 ln for foot&mouth diseases, classical, swine fever, deworming etc  
 lo Including demo on preparing improved feed from banana stems, equipment, azolla tanks, etc  
 lp 5 days x 2  
 lq 50% of CAHWs will be women  
 lr 5 days x 2  
 ls Costs included under TA for FAO in Component 3.1

**Table 2.2: Market Access Infrastructure**

India																		
FOCUS_Mizoram State																		
Table 2.2. Market Access Infrastructure																		
Detailed Costs																		
	Unit	Quantities						Unit Cost (INR)	Totals Including Contingencies (INR '000)						Other Accounts			
		18/19	19/20	20/21	21/22	22/23	23/24		Total	18/19	19/20	20/21	21/22	22/23	23/24	Total	Disb. Acct.	Fin. Rule
<b>I. Investment Costs</b>																		
<b>A. Market Access Infrastructure</b>																		
<b>1. Training &amp; capacity building of engineering staff of DOA</b>																		
Purchase of survey equipment /a	each	4	-	-	-	-	4	600,000	2,485	-	-	-	-	-	2,485	EQUIP_DA	LOAN ( 90% )	
Design software	set	1	-	-	-	-	1	700,000	722	-	-	-	-	-	722	GSI_DA	LOAN ( 90% )	
Motor cycles /b	each	4	-	-	-	-	4	75,000	311	-	-	-	-	-	311	EQUIP_DA	LOAN ( 80% )	
One 4 WD field vehicle	each	1	-	-	-	-	1	850,000	880	-	-	-	-	-	880	EQUIP_DA	LOAN ( 80% )	
Training /c	pers_month	4	-	-	-	-	4	40,000	165	-	-	-	-	-	165	TRW_DA	LOAN ( 100% )	
TA for Road Survey & Design	pers_month	4	-	-	-	-	4	300,000	1,238	-	-	-	-	-	1,238	CON_DA	LOAN ( 85% )	
TA for Road Supervision	pers_month	12	12	12	-	-	36	300,000	3,639	3,639	3,639	-	-	-	10,917	CON_DA	LOAN ( 85% )	
<b>Subtotal</b>									9,440	3,639	3,639	-	-	-	16,718			
<b>2. Climate resilient Farm link roads</b>																		
Rehabilitation of earth roads /d	KM	-	50	50	50	50	-	200	2,191,000	-	111,067	111,067	111,067	111,067	-	444,267	CW_DA	CSS ( 90% ), GOM ( 10% )
Surveys, quality control /e	lumpsum	-	55	55	55	55	-	220	319,000	-	18,828	19,588	20,382	21,210	-	80,007	CON_DA	LOAN ( 85% )
Gravelling of existing earth road with WBM /f	KM	-	50	50	50	50	-	200	3,191,000	-	184,183	191,014	198,129	205,541	-	778,867	CW_DA	LOAN ( 85% )
<b>Subtotal</b>										-	314,078	321,669	329,577	337,818	-	1,303,141		
<b>3. Other rural infrastructure (Under Convergence)</b>																		
Construction of Channels for water harvesting	lumpsum	-	200	200	200	300	200	1,100	350,000	-	70,646	70,646	70,646	105,969	70,646	388,554	CW_DA	CONVERG ( 100% )
Complementary access works	lumpsum	0.1	0.2	0.2	0.2	0.2	0.1	1	500,000,000	50,462	100,923	100,923	100,923	100,923	50,462	504,615	CW_DA	CONVERG ( 100% )
<b>Subtotal</b>										50,462	171,569	171,569	171,569	206,892	121,108	893,169		
<b>Total Investment Costs</b>										59,902	489,286	496,877	501,147	544,710	121,108	2,213,029		
<b>II. Recurrent Costs</b>																		
<b>A. Operating Costs</b>																		
<b>1. Market access infrastructure</b>																		
Maintenance of roads earth roads	per km	-	30	225	420	615	810	2,100	10,000	-	303	2,271	4,239	6,207	8,175	21,194	OP_DA	GOM ( 100% )
Maintenance of Gravel roads	km	-	-	50	100	150	200	500	25,000	-	-	1,250	2,500	3,750	5,000	12,500	OP_DA	GOVT
<b>Total Recurrent Costs</b>										-	303	3,521	6,739	9,957	13,175	33,694		
<b>Total</b>										59,902	489,589	500,398	507,885	554,667	134,282	2,246,723		

la one Total station to each district

lb one each per district

lc on adopting climate resilient features and handling of total stations and design software

ld formation width of 5.5 m; cost inclusive of construction of drainage crossings

le Approximately 10% of the total cost of construction of gravel road

lf 3.5 m pavement width, 1 m shoulder width on either side, 20 cm base and 20 cm of wearing coarse cost including construction of cross drainage and side drains

**Table 3.1: Project Management and M&E and KM**

India																	
FOCUS_Mizoram State																	
Table 3.1. Project Management																	
Detailed Costs																	
Unit	Quantities							Unit Cost (INR)	Totals Including Contingencies (INR '000)							Other Accounts	
	18/19	19/20	20/21	21/22	22/23	23/24	Total		18/19	19/20	20/21	21/22	22/23	23/24	Total	Disb. Acct.	Fin. Rule
<b>I. Investment Costs</b>																	
<b>A. Project Management Structure</b>																	
<b>1. Vehicles PMU</b>																	
Vehicles 4WD - Premium	each	1	-	-	-	-	1	1,700,000	1,729	-	-	-	-	-	1,729	EQUIP_DA	LOAN ( 80% )
Vehicle 4WD - Budget	each	5	-	-	-	-	5	850,000	4,322	-	-	-	-	-	4,322	EQUIP_DA	LOAN ( 80% )
<b>Subtotal</b>									<b>6,050</b>						<b>6,050</b>		
<b>2. Vehicles DMU</b>																	
Vehicle 4WD - Budget	each	4	-	-	-	-	4	850,000	3,457	-	-	-	-	-	3,457	EQUIP_DA	LOAN ( 80% )
Motorcycle /a	each	20	-	-	20	-	40	75,000	1,525	-	-	1,525	-	-	3,051	EQUIP_DA	LOAN ( 80% )
<b>Subtotal</b>									<b>4,983</b>			<b>1,525</b>			<b>6,508</b>		
<b>3. Other equipments</b>																	
Video-conferencing facility - PMU and DMUs	set	1	-	-	-	-	1	500,000	518	-	-	-	-	-	518	EQUIP_DA	LOAN ( 80% )
<b>4. Office Equipment PMU</b>																	
Laptop computers	each	8	-	-	-	-	8	45,000	373	-	-	-	-	-	373	EQUIP_DA	LOAN ( 80% )
Desktop computers	each	4	-	-	-	-	4	35,000	145	-	-	-	-	-	145	EQUIP_DA	LOAN ( 80% )
Printers and scanners	each	6	-	-	-	-	6	10,000	62	-	-	-	-	-	62	EQUIP_DA	LOAN ( 80% )
Photocopy machines	each	1	-	-	-	-	1	150,000	155	-	-	-	-	-	155	EQUIP_DA	LOAN ( 80% )
Other equipments	lumpsum	1	-	-	-	-	1	500,000	518	-	-	-	-	-	518	EQUIP_DA	LOAN ( 80% )
Office furniture	lumpsum	1	1	-	-	-	2	500,000	518	537	-	-	-	-	1,055	EQUIP_DA	LOAN ( 80% )
Computer Peripherals /b	lumpsum	1	-	-	-	-	1	200,000	207	-	-	-	-	-	207	EQUIP_DA	LOAN ( 80% )
Tablets	lumpsum	60	-	-	-	-	60	12,000	746	-	-	-	-	-	746	EQUIP_DA	LOAN ( 80% )
<b>Subtotal</b>									<b>2,724</b>	<b>537</b>					<b>3,261</b>		
<b>5. Office Equipment DMU</b>																	
Laptop computers	unit	12	-	-	-	-	12	45,000	559	-	-	-	-	-	559	EQUIP_DA	LOAN ( 80% )
Desktop computers	set	4	-	-	-	-	4	35,000	145	-	-	-	-	-	145	EQUIP_DA	LOAN ( 80% )
Printers and scanners	set	4	-	-	-	-	4	10,000	41	-	-	-	-	-	41	EQUIP_DA	LOAN ( 80% )
Other equipments	lumpsum	4	-	-	-	-	4	142,000	588	-	-	-	-	-	588	EQUIP_DA	LOAN ( 80% )
Office furniture	set	4	-	-	-	-	4	200,000	828	-	-	-	-	-	828	EQUIP_DA	LOAN ( 80% )
Computer Peripherals /c	lumpsum	4	-	-	-	-	4	100,000	414	-	-	-	-	-	414	EQUIP_DA	LOAN ( 80% )
<b>Subtotal</b>									<b>2,577</b>						<b>2,577</b>		
<b>6. Registration and other expenses for the society</b>																	
	lumpsum	1	-	-	-	-	1	250,000	259	-	-	-	-	-	259	GSI_DA	LOAN ( 90% )
<b>7. Account &amp; Annual Audit</b>																	
Accounting software	lumpsum	5	5	5	5	5	30	20,000	103	107	112	116	121	126	685	GSI_DA	LOAN ( 85% )
Customisation of accounting software	lumpsum	1	-	-	-	-	1	600,000	619	-	-	-	-	-	619	GSI_DA	LOAN ( 90% )
Audit expenses	lumpsum	1	1	1	1	1	6	400,000	412	429	447	466	485	505	2,744	GSI_DA	LOAN ( 90% )
Internal Audit- External /d	lumpsum	5	5	5	5	5	30	200,000	1,031	1,073	1,117	1,162	1,210	1,259	6,852	GSI_DA	LOAN ( 80% )
<b>Subtotal</b>									<b>2,165</b>	<b>1,609</b>	<b>1,675</b>	<b>1,744</b>	<b>1,816</b>	<b>1,890</b>	<b>10,900</b>		
<b>Subtotal</b>									<b>19,276</b>	<b>2,146</b>	<b>1,675</b>	<b>3,269</b>	<b>1,816</b>	<b>1,890</b>	<b>30,073</b>		

Contd..

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Mizoram

India																		
FOCUS_Mizoram State																		
Table 3.1. Project Management																		
Detailed Costs																		
	Unit	Quantities						Total	Unit Cost (INR)	Totals Including Contingencies (INR '000)						Other Accounts		
		18/19	19/20	20/21	21/22	22/23	23/24			18/19	19/20	20/21	21/22	22/23	23/24	Total	Disb. Acct.	Fin. Rule
<b>I. Investment Costs</b>																		
<b>B. M&amp;E and Knowledge Management</b>																		
<b>1. Monitoring and Evaluation (M&amp;E)</b>																		
<b>a. Equipments</b>																		
Laptop computers	each	2	-	-	-	-	-	2	45,000	93	-	-	-	-	-	93	EQUIP_DA	LOAN ( 80% )
Printer and scanner	each	1	-	-	-	-	-	1	35,000	36	-	-	-	-	-	36	EQUIP_DA	LOAN ( 80% )
Other equipment- GPS etc.	lumpsum	0.5	0.5	-	-	-	-	1	200,000	104	107	-	-	-	-	211	EQUIP_DA	LOAN ( 80% )
<b>Subtotal</b>										<b>233</b>	<b>107</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>340</b>			
<b>b. M&amp;E studies, wshops, surveys</b>																		
Baseline, mid-term and impact survey /e	study	1	-	-	1	-	1	3	-	-	-	-	-	-	-	-	CON_DA	LOAN ( 85% )
Sub-sector outcome surveys	survey	2	2	-	-	-	-	4	1,000,000	2,063	2,146	-	-	-	-	4,209	CON_DA	LOAN ( 85% )
Annual Outcome Survey	survey	1	1	1	1	1	1	6	500,000	516	537	558	581	605	630	3,426	CON_DA	LOAN ( 85% )
Case studies, Climate impact assessment study, other studies	lumpsum	-	2	2	2	2	2	10	1,500,000	-	3,219	3,350	3,486	3,629	3,778	17,462	CON_DA	LOAN ( 85% )
Climate Risk Assessment	lumpsum	-	1	1	1	1	1	5	500,000	-	537	558	581	605	630	2,910	CON_DA	LOAN ( 85% )
Enumerators for M&E unit surveys	lumpsum	1	1	1	1	1	1	6	1,500,000	1,547	1,610	1,675	1,743	1,814	1,889	10,278	CON_DA	LOAN ( 85% )
Project Completion review and workshop	lumpsum	-	-	-	-	-	1	1	1,500,000	-	-	-	-	-	1,895	1,895	TRW_DA	LOAN ( 100% )
<b>Subtotal</b>										<b>4,125</b>	<b>8,048</b>	<b>6,142</b>	<b>6,392</b>	<b>6,653</b>	<b>8,821</b>	<b>40,180</b>		
c. M&E Consultants, agency /f	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	GSI_DA	GRANT ( 100% )
d. MIS Development /g	lumpsum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	GRANT_DA	GRANT ( 100% )
<b>Subtotal</b>										<b>4,358</b>	<b>8,155</b>	<b>6,142</b>	<b>6,392</b>	<b>6,653</b>	<b>8,821</b>	<b>40,521</b>		
<b>2. Knowledge Management (KM)</b>																		
<b>a. Capacity Building and Knowledge sharing ICAR</b>																		
Workshop for dissemination of results	lumpsum	-	-	-	1	1	1	3	300,000	-	-	-	349	364	379	1,092	TRW_DA	LOAN ( 100% )
Micro watershed management demonstrations /h	per district	-	4	4	4	-	-	12	400,000	-	1,717	1,788	1,862	-	-	5,367	TRW_DA	LOAN ( 100% )
Technical backstopping	district	-	4	4	4	4	-	16	50,000	-	215	223	233	243	-	913	TRW_DA	LOAN ( 100% )
Impact assessment of settled agriculture /i	lumpsum	1	-	-	1	-	1	3	600,000	618	-	-	698	-	758	2,075	TRW_DA	LOAN ( 100% )
<b>Subtotal</b>										<b>618</b>	<b>1,931</b>	<b>2,011</b>	<b>3,143</b>	<b>606</b>	<b>1,137</b>	<b>9,447</b>		
<b>b. Capacity building &amp; knowledge sharing: ATARI</b>																		
Supply of improved planting material	village	-	72	100	100	-	-	272	10,000	-	772	1,117	1,164	-	-	3,054	TRW_DA	LOAN ( 100% )
Action research with local institutions /j	per district	-	4	4	4	-	-	12	200,000	-	858	894	931	-	-	2,683	TRW_DA	LOAN ( 100% )
Technical backstopping	district	-	4	4	4	4	-	16	20,000	-	86	89	93	97	-	365	TRW_DA	LOAN ( 100% )
Training for Lead Farmers /k	person	-	50	150	72	-	-	272	1,500	-	80	251	125	-	-	457	TRW_DA	LOAN ( 100% )
Demonstrations /l	demo	-	12	12	-	-	-	24	50,000	-	644	670	-	-	-	1,314	TRW_DA	LOAN ( 100% )
<b>Subtotal</b>										<b>-</b>	<b>2,441</b>	<b>3,022</b>	<b>2,314</b>	<b>97</b>	<b>-</b>	<b>7,874</b>		
<b>c. Staff level</b>																		
Monthly meetings at district level	meeting	24	48	48	48	48	48	264	8,000	198	412	429	447	466	485	2,437	TRW_DA	LOAN ( 100% )
Quarterly meeting at state level	meeting	2	4	4	4	4	4	22	20,000	41	86	89	93	97	101	508	TRW_DA	LOAN ( 100% )
Training in KM methods for sharing	batch	1	1	-	1	-	-	3	30,000	31	32	-	35	-	-	98	TRW_DA	LOAN ( 100% )
<b>Subtotal</b>										<b>270</b>	<b>530</b>	<b>518</b>	<b>575</b>	<b>563</b>	<b>586</b>	<b>3,042</b>		

Contd..

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Mizoram

India																		
FOCUS_Mizoram State																		
Table 3.1. Project Management																		
Detailed Costs																		
Unit	Quantities							Unit Cost (INR)	Totals Including Contingencies (INR '000)							Other Accounts		
	18/19	19/20	20/21	21/22	22/23	23/24	Total		18/19	19/20	20/21	21/22	22/23	23/24	Total	Disb. Acct.	Fin. Rule	
<b>I. Investment Costs</b>																		
<b>d. Participant level</b>																		
Focus groups and participatory M&E	meetings	4	8	8	8	8	8	44	5,000	21	43	45	47	49	51	254	TRW_DA	LOAN ( 100% )
Cluster level meetings - half-yearly	meetings	-	8	8	8	8	8	40	7,000	-	60	63	65	68	71	327	TRW_DA	LOAN ( 100% )
Documenting lessons learnt	lumpsum	-	1	1	1	1	1	5	100,000	-	107	112	116	121	126	582	CON_DA	LOAN ( 85% )
Learning route - domestic	lumpsum	-	1	-	1	-	1	3	550,000	-	590	-	639	-	693	1,922	CON_DA	LOAN ( 85% )
Videos for farmer-to-farmer sharing; Equipment	set	-	1	-	-	-	-	1	150,000	-	161	-	-	-	-	161	EQUIP_DA	LOAN ( 80% )
Videos for farmer-to-farmer sharing; Initial training	training	-	1	-	-	-	-	1	500,000	-	536	-	-	-	-	536	TRW_DA	LOAN ( 100% )
Videos for farmer-to-farmer sharing; Follow-up training	lumpsum	-	-	0.3	0.3	0.3	0.1	1	4,000,000	-	-	1,341	1,397	1,455	505	4,698	TRW_DA	LOAN ( 100% )
Videos for farmer-to-farmer sharing; Backstopping and support	lumpsum	-	-	0.3	0.3	0.3	0.1	1	1,000,000	-	-	335	349	363	126	1,172	CON_DA	LOAN ( 85% )
<b>Subtotal</b>										21	1,498	1,895	2,613	2,055	1,571	9,653		
<b>e. Dissemination and communication</b>																		
Project start-up workshop	workshop	1	-	-	-	-	-	1	500,000	515	-	-	-	-	-	515	TRW_DA	LOAN ( 100% )
Village information kit	village	136	136	-	-	-	-	272	10,000	1,403	1,459	-	-	-	-	2,862	GSI_DA	LOAN ( 90% )
Posters and leaflets	lumpsum	-	1	1	1	1	1	5	80,000	-	86	89	93	97	101	465	GSI_DA	LOAN ( 90% )
Translation of technical materials	lumpsum	0.5	1	1	1	0.5	0.5	4.5	200,000	103	215	223	232	121	126	1,020	CON_DA	LOAN ( 85% )
Printing of technical materials	lumpsum	-	1	1	1	1	1	5	600,000	-	644	670	697	725	755	3,491	GSI_DA	LOAN ( 90% )
Annual knowledge sharing event	event	-	1	1	1	1	1	5	500,000	-	536	559	582	606	632	2,915	TRW_DA	LOAN ( 100% )
Attending national events	person	-	5	5	5	5	5	25	30,000	-	161	168	175	182	190	875	TRW_DA	LOAN ( 100% )
Editing and design of publications	lumpsum	-	1	1	1	1	1	5	500,000	-	537	558	581	605	630	2,910	CON_DA	LOAN ( 85% )
Website design and operation	lumpsum	1	1	1	1	1	1	6	800,000	825	858	893	930	968	1,007	5,482	CON_DA	LOAN ( 85% )
Printing of communication materials	lumpsum	-	1	1	1	1	1	5	600,000	-	692	720	749	779	811	3,752	GSI_DA	LOAN ( 90% )
Communication Videos	lumpsum	-	1	1	1	0.5	0.5	4	500,000	-	537	558	581	302	315	2,292	GSI_DA	LOAN ( 90% )
<b>Subtotal</b>										2,846	5,725	4,439	4,620	4,385	4,565	26,580		
<b>Subtotal</b>										3,755	12,125	11,885	13,264	7,707	7,860	56,595		
<b>Subtotal</b>										8,113	20,280	18,027	19,656	14,360	16,681	97,116		
<b>Total Investment Costs</b>										57,989	22,426	19,702	22,925	16,175	18,571	157,789		
<b>II. Recurrent Costs</b>																		
<b>A. Salaries and allowances (PMU)</b>																		
1. Staff recruitment expenses	lumpsum	1	-	-	-	-	-	1	300,000	307	-	-	-	-	-	307	SAL_DA	LOAN ( 100% )
2. Audit Officer	pers_month	12	12	12	12	12	12	72	50,000	614	643	673	705	738	773	4,146	SAL_DA	LOAN ( 100% )
<b>3. Project Management Staff</b>																		
State Project Director - Joint Director (agriculture)	pers_month	12	12	12	12	12	12	72	120,000	1,474	1,543	1,616	1,692	1,771	1,854	9,950	SAL_DA	GOVT
Dy Director - Agriculture	pers_month	12	12	12	12	12	12	72	70,000	860	900	942	987	1,033	1,082	5,804	SAL_DA	GOVT
Dy Director - Horticulture	pers_month	12	12	12	12	12	12	72	70,000	860	900	942	987	1,033	1,082	5,804	SAL_DA	GOVT
Dy Director - Animal Husbandry	pers_month	12	12	12	12	12	12	72	70,000	860	900	942	987	1,033	1,082	5,804	SAL_DA	GOVT
Dy Director - SWC	pers_month	12	12	12	12	12	12	72	70,000	860	900	942	987	1,033	1,082	5,804	SAL_DA	GOVT
Procurement consultant	pers_month	10	8	6	2	2	-	28	150,000	1,535	1,286	1,010	352	369	-	4,552	SAL_DA	LOAN ( 85% )
Agriculture /Horticulture Officers	pers_month	24	24	24	24	24	24	144	35,000	860	900	942	987	1,033	1,082	5,804	SAL_DA	LOAN ( 90% )
Project Assistants	pers_month	24	24	24	24	24	24	144	25,000	614	643	673	705	738	773	4,146	SAL_DA	LOAN ( 100% )
Finance and Accounts Manager	pers_month	12	12	12	12	12	12	72	100,000	1,228	1,286	1,346	1,410	1,476	1,545	8,291	SAL_DA	LOAN ( 90% )
Accounts Officer	pers_month	12	12	12	12	12	12	72	50,000	614	643	673	705	738	773	4,146	SAL_DA	LOAN ( 90% )
Accounts Assistant	pers_month	12	12	12	12	12	12	72	30,000	368	386	404	423	443	464	2,487	SAL_DA	LOAN ( 90% )
Drivers	pers_month	24	24	24	24	24	24	144	18,000	442	463	485	507	531	556	2,985	SAL_DA	GOVT
Grade IV staff	pers_month	24	24	24	24	24	24	144	15,000	368	386	404	423	443	464	2,487	SAL_DA	GOVT
<b>Subtotal</b>										10,943	11,136	11,323	11,150	11,674	11,837	68,064		
4. Support to CSS operations /m	pers_month	24	48	48	48	48	-	216	30,000	737	1,543	1,616	1,692	1,771	-	7,358	SAL_DA	LOAN ( 90% )

Contd...

India

Fostering Climate Resilient Upland Farming Systems in the Northeast

Design completion report – Appendices - Mizoram

Table 3.1. Project Management

Detailed Costs	Unit	Quantities							Unit Cost (INR)	Totals Including Contingencies (INR '000)							Other Accounts	
		18/19	19/20	20/21	21/22	22/23	23/24	Total		18/19	19/20	20/21	21/22	22/23	23/24	Total	Disb. Acct.	Fin. Rule
<b>II. Recurrent Costs</b>																		
<b>5. District Management Staff- DMU</b>																		
District Project Manager - Deputy Director Agriculture	pers_month	96	96	96	96	96	96	576	85,000	8,352	8,744	9,155	9,586	10,036	10,508	56,381	SAL_DA	GOVT
Horticulture Officer	pers_month	96	96	96	96	96	96	576	70,000	6,878	7,201	7,540	7,894	8,265	8,653	46,431	SAL_DA	GOVT
Veterinary Officer	pers_month	96	96	96	96	96	96	576	70,000	6,878	7,201	7,540	7,894	8,265	8,653	46,431	SAL_DA	GOVT
District Finance Manager	pers_month	48	48	48	48	48	48	288	50,000	2,456	2,572	2,693	2,819	2,952	3,091	16,583	SAL_DA	LOAN ( 90% )
Agriculture/Horti Officers /n Junior Agri/horticulture/ veterinary officers	pers_month	48	48	48	48	48	48	288	45,000	2,211	2,315	2,423	2,537	2,657	2,781	14,924	SAL_DA	LOAN ( 90% )
Planning and Monitoring Officer	pers_month	144	144	144	144	144	144	864	30,000	4,320	4,320	4,320	4,320	4,320	4,320	25,920	SAL_DA	LOAN ( 90% )
District accounts assistants	pers_month	48	48	48	48	48	48	288	45,000	2,211	2,315	2,423	2,537	2,657	2,781	14,924	SAL_DA	LOAN ( 90% )
Project assistants	pers_month	48	48	48	48	48	48	288	25,000	1,228	1,286	1,346	1,410	1,476	1,545	8,291	SAL_DA	GOVT
Drivers	pers_month	96	96	96	96	96	96	576	25,000	2,456	2,572	2,693	2,819	2,952	3,091	16,583	SAL_DA	LOAN ( 100% )
Subtotal		48	48	48	48	48	48	288	18,000	884	926	969	1,015	1,063	1,113	5,970	SAL_DA	GOVT
Subtotal										37,874	39,451	41,103	42,831	44,641	46,537	252,438		
<b>B. Operating costs</b>																		
<b>1. Operating costs - PMU</b>																		
Utilities	month	12	12	12	12	12	12	72	50,000	621	644	668	693	719	746	4,092	OP_DA	LOAN ( 90% )
Office operating expenses	month	12	12	12	12	12	12	72	50,000	621	644	668	693	719	746	4,092	OP_DA	LOAN ( 90% )
Fuel and vehicle maintenance	lumpsum	12	12	12	12	12	12	72	50,000	621	644	668	693	719	746	4,092	OP_DA	LOAN ( 90% )
Travel allowances	lumpsum	12	12	12	12	12	12	72	200,000	2,485	2,577	2,673	2,772	2,876	2,984	16,368	OP_DA	LOAN ( 90% )
Subtotal										4,350	4,510	4,677	4,852	5,033	5,222	28,644		
<b>2. Operating costs - DMU</b>																		
Utilities	month	48	48	48	48	48	48	288	20,000	994	1,031	1,069	1,109	1,150	1,194	6,547	OP_DA	LOAN ( 90% )
Office operating expenses	month	48	48	48	48	48	48	288	20,000	994	1,031	1,069	1,109	1,150	1,194	6,547	OP_DA	LOAN ( 90% )
Fuel and vehicle maintenance	lumpsum	48	48	48	48	48	48	288	50,000	2,485	2,577	2,673	2,772	2,876	2,984	16,368	OP_DA	LOAN ( 90% )
Travel allowances	lumpsum	48	48	48	48	48	48	288	50,000	2,485	2,577	2,673	2,772	2,876	2,984	16,368	OP_DA	LOAN ( 90% )
Subtotal										6,959	7,216	7,484	7,763	8,053	8,356	45,831		
<b>3. M&amp;E Staff</b>																		
<b>a. PMU Staff</b>																		
Manager Planning and M&E - PMU	pers_month	12	12	12	12	12	12	72	90,000	1,105	1,157	1,212	1,269	1,328	1,391	7,462	OP_DA	LOAN ( 90% )
Deputy Manager MIS - PMU	pers_month	12	12	12	12	12	12	72	80,000	983	1,029	1,077	1,128	1,181	1,236	6,633	OP_DA	LOAN ( 90% )
Comptroller Assistants - PMU	pers_month	24	24	24	24	24	24	144	30,000	737	772	808	846	886	927	4,975	OP_DA	LOAN ( 90% )
Subtotal										2,825	2,958	3,097	3,242	3,395	3,554	19,070		
b. Asst Manager (Planning, M&E and MIS) - DMUs	pers_month	48	48	48	48	48	48	288	60,000	2,969	3,090	3,217	3,349	3,487	3,631	19,743	OP_DA	LOAN ( 90% )
Subtotal										5,794	6,048	6,313	6,591	6,882	7,185	38,813		
<b>4. Knowledge Management Staff</b>																		
Manager - KM	pers_month	6	12	12	12	12	12	66	90,000	553	1,157	1,212	1,269	1,328	1,391	6,909	OP_DA	LOAN ( 90% )
Manager, Gender & CI	pers_month	6	12	12	12	12	12	66	90,000	557	1,159	1,206	1,256	1,308	1,362	6,847	OP_DA	LOAN ( 90% )
Subtotal										1,109	2,316	2,418	2,525	2,636	2,752	13,756		
5. M&E Operating expenses	lumpsum	1	1	1	1	1	1	6	200,000	207	215	223	231	240	249	1,364	OP_DA	LOAN ( 90% )
Subtotal										18,419	20,305	21,116	21,961	22,843	23,764	128,409		
<b>Total Recurrent Costs</b>										68,895	73,079	75,830	78,339	81,668	82,910	460,721		
<b>Total</b>										96,283	95,505	95,532	101,264	97,844	101,481	587,910		

\a 5 motor cycles per district

\b LCD, screen etc.

\c LCD, screen etc)

\d Quarterly visits to handhold Audit Officer and Finance Manager

\e cost included under TA for FAO

\f Costs provided under TA for FAO

\g Costs included under TA for FAO

\h 50 ha per district

\i Including the baseline survey in the first year

\j One per district

\k 3 days of training

\l 3 demo per district and a two year support for each demo

\m 2 staff each to DoH and DOA

\n 2 per district

## Appendix 10: Economic and financial analysis<sup>41</sup>

1. **FOCUS interventions:** The FOCUS has the following project interventions: (i) better jhum and conservation including building the capacity of participating households and support to village forestry; (ii) support to settled agriculture including support for existing orchards and enabling the landless to have access to land and land allotment and support to fish-farming etc; (iii) value chain development and providing market infrastructure and community mobilisation through FIGs and support to livestock facilities in particular setting up of pig-breeding units, distribution of piglets for fattening and poultry development along with staff and beneficiary training; (iv) upgrading and gravelling of existing farm to market roads; (v) project management and M&E and knowledge management. Production, household and subproject models were prepared based on these interventions and as contained in FOCUS detailed COSTAB.

2. **Approach and methodology:** Cost-benefit analysis method was used for carrying out the economic and financial analysis of FOCUS at final design. All investment costs are adjusted to current prices using the prevailing exchange rates and incremental benefits are estimated based on actual physical outputs and likely chances of building up of incremental benefits during the project life period as contained in PTA IFAD Guidelines for EFA. Prices were collected for all inputs and outputs as prevailing at nearby markets and adjusted to farm-gate prices using standard conversion factor. Data compiled by the Detailed Design Mission have been used as basic sources of reference and using these and updated data, both primary and secondary, type production models were developed: from these production models to higher level household models and then aggregated to subproject models for estimating the overall performance of the project. FARMOD software was used for the purpose. Outcome of FOCUS EFA at Final Design is briefly described below.

### A. Financial Analysis: Key Assumptions

3. There are facilities created under FOCUS for improving the productivity of crops, orchards and spices, livestock, fishery, forestry etc through better management practices and improving the access to inputs, markets and financial services. The most promising opportunities were with improved access to markets and social infrastructure facilities such as drinking water supply, sanitation, common facility centres etc. Other key aspects used under EFA are that

- The participating households respond to the introduction of new packages of practices and techniques; field observations showed that the households and communities would be able to adopt practices that are demonstrated to them.
- The participating households and the communities are willing to organise themselves in to viable FIGs through training and capacity building and would participate effectively in the project implementation.
- The target group farmers would ensure significant value-addition and employment along value-chain, and increase the incomes and employment of large number of poor people. For example, organised cultivation and adopting improved practices and marketing, primary processing, organised sale of products etc would bring significant benefits.
- By improving the market information systems, organising the target groups through FIGs and providing marketing support and other attendant facilities the participating households would be able to realise increased prices for their produce.
- The FOCUS project covers in all some 64,500 households and out of them 84% of households are Jhumias and the remaining consist of wetland rice farmers, livestock holders, fish farmers etc. About 30% households are landless.
- Average size of landholding was 1.0 ha for jhum plots, 0.5 ha under wetland rice cultivation.

---

<sup>41</sup> Farmod file reference: "mizo.mod"

- Under without project situation proxy value of labour has been assumed as follows: onion and pepper cultivation, piggery 20 person-days, backyard poultry 50 person-days and pond fishery 50 person-days
- Hiring of labour is not common and it is therefore assumed that all labour requirements is met by the family as at present and “with project incremental labour” is very insignificant, say 7% over the existing labour inputs. Average financial wage rate of INR 270/day has been assumed both for male and female labour.

### a) Production Models

4. Following crop and activity models have been developed and used for the analysis. Table below shows a list of these models. These models are indicative and based on general data and information that were available from the secondary sources. These models may not reflect variations between regions or districts. These models are used for estimating project performance indicators in general. Likewise the yield levels have been assumed at very conservative thresholds. As prices between regions, districts and seasons varied significantly, average levels have been maintained including those of the farm wages.

Table 1: List of Production Models developed and used in EFA			
<u>Food crops a/</u> <ul style="list-style-type: none"> <li>• Jhum plot mixed crops</li> <li>• Rice paddy</li> <li>• Paddy-cum-fish</li> <li>• Maize, beans</li> <li>• Sesame</li> <li>• Ginger, turmeric</li> <li>• Vegetables</li> <li>• Onion, garlic</li> </ul>	<u>Orchards a/</u> <ul style="list-style-type: none"> <li>• Banana</li> <li>• Pineapple</li> <li>• Orange</li> <li>• Black pepper</li> </ul> <u>Value chain spices</u> <ul style="list-style-type: none"> <li>• Chilli</li> <li>• Turmeric</li> <li>• Ginger</li> </ul>	<u>Livestock b/</u> <ul style="list-style-type: none"> <li>• Pig-fattening b/</li> <li>• Pig-breeding unit b/</li> <li>• Poultry breeding b/</li> <li>• Backyard poultry b/</li> </ul> <u>Pond Fishery</u> <ul style="list-style-type: none"> <li>• Fishery c/</li> </ul>	<u>Village Forestry</u> <ul style="list-style-type: none"> <li>• Village forestry a/</li> </ul> <u>Agro-processing</u> <ul style="list-style-type: none"> <li>• Turmeric processing unit b/</li> </ul>
<i>a/ One ha crop production models</i>		<i>b/ Single activity model</i>	
		<i>c/ One 1 ha model</i>	

**(i) Jhum plot mixed crops model:** Jhum plot crops under without project situation (WOP) included paddy 70%, beans and maize 10% each, chilli and turmeric 5% each and sesame 2.5%. These are cultivated as mixed crops under rainfed conditions. Average productivity<sup>42</sup> under WOP situation was: paddy 854 kg/ha, beans 128 kg/ha, maize 208 kg/ha, chillis 51 kg/ha, sesame 19 kg/ha and turmeric 197kg/ha. Participating households were provided training and capacity building in improving the quality of production through supply inputs and other agronomic practices. As a result of these facilities overall productivity increased by over 20%.

**(ii) Jhum spices cultivation model:** Spices crops included are chilli (30% area), turmeric (40% area) and ginger (20% area). Some sesame crop is also cultivated. FOCUS provided training, inputs including planting materials, technical support services and facilitated access to markets. Average productivity of these crops are 4t/ha for ginger or turmeric, and 4.25 t/ha for chilli. Productivity increases are in the range of 20 to 25%.

**(iii) Wetland rice cultivation model:** Under wetland condition, paddy is cultivated as sole crop and normally in valley bottom lands. With the provision of improved agronomic practices, training and supply of quality seeds, the productivity is envisaged to increase from 2.5 t/ha to 3.25 t/ha. Following paddy beans or onion (350 kg/ha), garlic (200 kg/ha) or vegetables (12 to 15 t/ha) are planted covering no more than 40% using available soil moisture and some

<sup>42</sup> Average sole crop productivity of these crops are paddy 1,220 kg/ha; beans 1,280 kg/ha, maize 2,080 kg/ha, chilli 1,120 kg/ha, sesame 750 kg/ha, turmeric 3,959 kg/ha, ginger 3,500 kg/ha, etc

irrigation facilities. Proxy labour of 20 person-days has been assumed under WOP situation for onion, beans, garlic or vegetables etc which are cultivated following paddy harvest.

**(iv) Rice cum fish cultivation model:** Where facilities are favourable rice cum pisciculture model is adopted and where no more than 15% of area is devoted to fish and remaining 85% area paddy is planted. Average paddy productivity increased from 1.72 t/ha to 2.2 t/ha due to better management practices. Some 1,000 fish fingerlings are introduced and fish is harvested after paddy and average yield is 200 kg/ha. No harmful chemicals used but instead azolla is introduced as bio-fertilisers.

**(v) Orchard crop models:** Major orchard crops are banana, pine apple, black pepper, oranges and large cardamom. These crops are cultivated in jhum upland either as sole crop or inter-crops. With 1,600 suckers planted per ha, average yield of banana ranges between 8.5 t and 10.2 t/ha but the yield declines in later period. It is planted every 6 year. With 15,000 seedlings per ha, pine apple's yield ranges between 9 and 10 t/ha. It is replanted every 3 year. Black pepper is planted as inter-crops and pepper vines, some 560 per ha are planted in pits and the crop starts yielding in year 3. Average productivity is 250 kg/ha (dry) at full development. Proxy labour of 20 person-days has been assumed under WOP situation. Support is provided to existing orange orchards by improving orchard management practices. Limited quantities of organic manure, 3 t/ha is applied and some amount of PPC are also sprayed. Average yield at full development stage is 5.4 t/ha.

**(vi) Pond fishery model:** This is a one ha water surface model. Fish, mostly common carps are harvested twice in a year. Some 6,000 fingerlings are introduced, 15 kg of fish feed is supplied each day for about 90 days and in addition 1.5 to 2 t of manure is also applied. The pond is treated with 30 kg of lime. Average productivity is 2,500 kg/year. Proxy labour of 50 person-days has been assumed under WOP situation.

**(vii) Village forestry model:** The village forestry is managed by the respective village councils. For each village support is given for new planting of tree species, management of existing forests and also facilities for water development support. Each one ha model is supplied with 350 seedlings, training and facilities for operations and maintenance. Yields from village forestry are many: small timber about 6 to 15 t/ha, high value timber 19t/ha, fuel-wood about 5t/ha/year, fruits about 15 t/ha and fodder 0.5 t/ha but in different phases of development.

**(viii) Value chain spices models:** enhanced prices up to 15% are realised by the participating farmers due to project supported aggregation facilities, drying yard facilities, supply of quality planting materials, facilitating market access through cluster approach and CRP support, demonstration etc. Following crops are targeted for spices value chain: turmeric, ginger and chilli in Mizoram.

**(ix) Pig-breeding unit model:** Each unit consisted of 6 piglets and one boar and the stock replaced at every 5 year. With an average litter of 1.5 piglets/year/pig, the farmer is able to sell at least 66 cross-bred piglets every year. Feed is provided 1.5 kg/day for 60 days, of which 50% is locally made and 50% is concentrate. Mortality rate is reduced by xxx due to available services.

**(x) Pig-fattening unit model:** Each farmer is provided with one cross-bred piglet and this is reared for fattening for 10 months. At the end of 10<sup>th</sup> month the pig is sold when it is 80kg or more. The piglet is fed at 3 kg of feed/day and also adequate medicine etc.

**(xi) Backyard poultry model:** This is a 20 pullets and 4 cockerel model, and the stock is replaced every 3 year. Average mortality is 4/year. Feed included both local and purchased concentrates at 50: 50 ratios. At full development some 2,880 eggs sold and 25 to 33 culled birds are sold.

**(xii) Processing unit model:** The turmeric processing model with a capacity of producing 133,000 pockets of processed turmeric powder and each pocket weighing 100 gm. The unit consists of a building, packaging machine, grinding machine, slicing machine etc and the costs included operating expenses, purchase of raw turmeric, marketing, salaries and other costs.

5. **Farm to market link road notional model:** This is a notional model to illustrate the benefits of farm to market link road. It has been assumed that on an average there are 136 households per km of road, each household transport about a ton of goods (both agricultural and non-agricultural goods) covering on an average distance of 5 km. Thus the average savings per km of improved road is INR 3,400 per km/year.

## b) Activity, Farm / Household Models

6. Using indicative production models, several Farm, Household and Activity Models were prepared using FARMOD software. The models broadly illustrated the project's impact on the incomes, and labour use of households adopting and/or adapting both on-farm and non-farm technology options. *These are indicative and assumed for assessing the overall Project Performance Indicators.* These are listed in Table 2 below.

Table 2: Summary Results of farm, household and activity model (Financial)						
Household, Farm or Activity Model (average area or unit)	Gross Income (INR)	Input cost (INR)	Labour (INR)	BCR (ratio)	FIRR (%)	NPV at 12% (INR)
Jhum cultivation (0.25 ha/hh) a/	8,705	1,299	(7,696)	-	-	63,210
Wetland rice (0.25 ha/hh)	25,563	2,177	13,527	3.34	-	34,557
Rice + fish culture (0.25 ha/hh)	29,375	6,675	11,880	2.06	91	64,503
Spices cultivation (0.5 ha/hh)	35,400	9,829	26,776	4.86	-	32,037
Orchards ((0.5 ha/hh)	91,660	7,250	25,731	10.34	199	96,439
Landless (1 ha/hh) b/	44,496	11,486	18,495	1.96	-	196,418
Pond fishery (0.5 ha/hh)	312,500	26,025	22,275	5.03	314	1,606,078
Pig-breeding unit (1/hh)	330,000	145,184	41,000	1.28	41	503,543
Pig-fattening unit (1/hh)	34,000	13,620	5,130	1.04	-	73,611
Backyard poultry unit (1/hh)	33,640	13,823	20,250	0.69	-	(87,951)
Processing unit (1 unit)	4,389,000	3000,610		1.37	96	7,846,514
Village forestry (1 ha)	66,500	3,500	20,250	1.03	13	7,662
Road benefits per 1 km, notional	3,400	0	0	-	-	25,396

a/ labour costs included in inputs costs; b/ 50% area under improved jhum and 50% area under spices crops

7. **Viability analysis:** Most of the household level interventions are barely financially viable but given the fact that labour, which is mostly contributed by the households, is excluded these interventions are seemed viable. Jhum cultivation including the spices (such as ginger, turmeric, chilli etc) cultivation are still at subsistence level and no significant growth trends are foreseen. Value-chain thus does not seem to be triggering income increases in the short-run. Wet land rice cultivation and rice cum fish farming are clearly viable but its area and household coverage is much restricted. Among the livestock interventions, piggery is dominantly viable. It seems appeared to have been the key contributors to household incomes. Given the existing constraints of access to markets and communication, which are likely to continue in the long-term, emphasis on piggery-based, livestock could be better options in enhancing incomes of the rural households. At the same time the poultry appears to be less viable given the high cost of feed and concentrates. If household labour is ignored even poultry-keeping tends to be viable. Thus the rural households have to cope with a combination

of several of livelihood options: jhum food crops for household food security, jhum spices and orchards, wetland rice cultivation, pig-keeping etc for income earning.

8. **Incremental Household incomes:** Household incomes on account of various interventions under the project increases to INR 10,270 in year 3 and INR 20,380 in year 6. Family labour accounts the largest share of cost of production and to illustrate its impact on the gross margins for spices production and livestock production are compared below in Table-3.

Table 3: Household incomes and Gross margins of Spices & Livestock				
Item	Year 1	Year 3	Year 6	Comments
Overall household incomes	0	10,270	20,380	Incremental
<b>Gross margins:</b>				
Spices cultivation	20,660	30,140	30,140	Labour income included
Spices cultivation	(5490)	2,860	2,860	Labour income excluded
Livestock rearing	0	23,670	30,275	Labour income included
Livestock rearing	0	7,650	10,720	Labour income excluded

### c) Subproject Models

9. Emerging from farm, activity and household models, six subproject models were developed: these are (i) food crops subproject; (ii) spices and orchard crops subproject; (iii) village forestry subproject; (iv) livestock & fishery subproject; (v) Processing unit subproject and (vi) Farm road subproject. These are briefly described below.

10. **Food crops subproject<sup>43</sup>:** This subproject included 54,400 jhum production households covering some 13,600 ha, 21,600 wetland rice cultivating households covering 5,400 ha and 5,440 landless households covering 2,720 ha of jhum plots participating in a phased manner from year 1 to year 4. Productivity increases are achieved due to adoption of better jhum management practices etc. The financial analysis showed that it has a NPV of INR 4,726.74 million discounted at 12%. Aggregate economic and financial results are presented in *Annex-2.1 & 2.2*.

11. **Spices and orchards subproject:** This subproject included 7,200 spices cultivating households covering 3,600 ha area and similar number of households in spices value chain and 5,440 orchards households covering 2,720 ha participating in a phased manner from year 1 to year 4. Productivity increases are achieved due to better management practices and marketing support. The financial analysis showed that it has a NPV of INR 528.12 million discounted at 12%. Aggregate economic and financial results are presented in *Annex-2.3 and 2.4*

12. **Village forestry subproject:** in all 2,720 ha area is planted with tree crops starting from year 2 through year 4. These forests are managed by the respective village communities. The financial analysis showed that it has a NPV of INR (-21.23) million discounted at 12%. Aggregate financial and economic results are presented in *Annex-2.5 and 2.6*.

13. **Piggery and fishery subproject:** In all some 64 pigs breeding units participating in a phased manner over a 3 year period starting from year 1. Piglets are provided to 25,000 households in a phased manner starting from year 1. In all 544 households supported with 0.5 ha fishery activity covering 272 ha, ie two pond fishery in each village. Some 8,160 households are participating in backyard poultry units starting from year 2 and till year 5. The financial analysis shows that this sub-project generates a NPV of INR 1,470.05 million discounted at 12%. Aggregate economic and financial results for this subproject are presented in *Annex-2.7 & 2.8*.

14. **Processing units subproject:** in all 15 turmeric processing units starting from year 3 are participating. This subproject generates a NPV of INR 68.61 million discounted at 12%. Aggregate economic and financial results for this subproject are presented in *Annex-2.9 & 2.10*.

<sup>43</sup> For correct values of NPV for subproject, please refer to Annex-A

15. **Farm road subproject<sup>44</sup>**: This is a notional model. In all 200 km of gravel roads are constructed starting from year 2 through year 5. This subproject generates a NPV of INR 3.25 million discounted at 12%. Aggregate economic and financial results are presented in *Annex-2.11 & 2.12*..

16. Results of analysis of these subprojects where *direct* benefits in terms of incomes, production costs, labour and input etc are quantified are summarised in Table-4 below.

<b>Table 4: Summary Results of Subprojects (Financial) in 000 INR at full development</b>				
Subproject group	Gross income 1/	Inputs	Labour 2/	Net income 3/
1 Food crops	284,907	27,794	(448,972)	706,247
2 Spices & orchards	143,258	(9,738)	20,358	132,637
3 Village forestry	179,500	0	54,765	124,875
4 Livestock & fishery	1,282,296	492,949	420,786	368,566
5 Processing units	65,835	45,009	0	20,826
6 Farm to market road	680	0	0	680
<b>Total</b>	<b>1,956,476</b>	<b>556,014</b>	<b>46,937</b>	<b>1,353,831</b>
Average/household 4/	30.330	8.620	0.727	20.990
1/ incremental income at full development; 2/ Labour includes all family labour; 3/ Excluding labour costs				

17. **Other infrastructure benefits**: Other notional benefits that have not been quantified are (i) fencing the mithun villages to avoid damages to crop areas and it is estimated at 10% of crop area in those villages where fencing is provided are reported to have been protected; (ii) slaughter slabs are provided in each village and this would provide hygienic supply of meat to the respective community and resulting health benefits have not been assessed; and (iii) extensive vaccination of pigs, poultry birds, sheep and goats and cattle ensure better animal health and reduce mortality significantly. These benefits have not been accounted for want of specific details. These interventions are supported under CSS parallel financing. Similarly for want of specific information, benefits of rural roads constructed with the support of convergence funds, common facility centres in the spices clusters, various facilities such as protection water resources under village forest conservation, water harvesting structures to the landless households, facilities for construction of water channels under convergence funding etc have not been quantified and taken into account.

## B. Economic analysis

### Objectives and Methodology

18. The objective of the economic analysis is to evaluate the expected contribution of the project to the economic development of the project area districts. The purpose of such analysis is to determine whether the economic benefits sufficiently justify the use of the scarce resources that the project has invested. The analysis included all incremental costs and incremental benefits that are quantifiable and associated with the project's investments in development. Target group households adopting and participating in the project interventions have been contributing to increased production, besides ensuring their increases in incomes.

19. The following assumptions underlie this economic analysis of the project.

- A twenty-year analysis period has been assumed, which included a 6 year project investment period.
- Farm goods moved freely within the project area in response to market signals.
- All farm inputs and outputs that are traded are valued at farm-gate prices as of July 2017.
- Economic investment costs are net of taxes and price contingencies, credit, etc. All costs directly associated with the incremental production are included in full, including incremental farm inputs and family and hired labour.

<sup>44</sup> Roads constructed with the support of convergence funds have been excluded as no specific details with regard to quantities; locations and population covered are not available.

- Standard conversion factors (SCF) varying between 80% and 85% is applied to both traded and non-traded items for adjusting financial prices.
- The financial price of labour (INR 270) reflects seasonal variation in employment opportunities in the project area. The financial wage rate is thus taken to reflect the value of the marginal product of farm labour under “without the project”;
- The analysis includes only direct benefits and all other notional benefits from the infrastructure facilities, where details available have also been included;
- All costs and benefits are relating to investments made on targeted project area households and the resultants benefits;
- The analysis employs an Opportunity Cost of Capital (OCC) at 10<sup>45</sup>%.

### Costs - Benefits Streams and Analysis

20. The **project economic costs** were calculated from the financial project costs excluding price contingencies, subsidies, credit funds, taxes and duties. Recurrent costs for continued training support, operations and maintenance and periodic replacement of farm items and equipment have been included in full. Economic prices for inputs and output models were estimated by applying the conversion factors on the financial prices.

21. **Project Performance Indicators:** Cost-benefit analysis yields an overall IRR of 25%. The estimated NPV for a 10% discount rate is INR 3,141 million and the BCR of 1.51. A positive NPV under the current Opportunity Cost of Capital (OCC) of 10% indicates that the project investments are positive. A sensitivity analysis of the FOCUS is presented in Table-5 below and details in Annex-A to G and also *in Annex-1*.

Table 5: Sensitivity of NPV, IRR and BCR to varying scenarios					
Indicators	Base case	Cost Increases by		Benefits down by	
		10%	20%	10%	20%
NPV-Benefit & cost streams discounted at 10% INR million <sup>46</sup>	3141	2527	1913	2213	1284
IRR-Net incremental benefits stream for a 20 year period <sup>47</sup>	25%	21%	18%	21%	16%
BCR-Cash flows discounted at 10% <sup>48</sup>	1.51	1.37	1.31	1.36	1.21

22. If benefits delayed by two years (in effect, if the project’s production activities take longer to become established) then the IRR declines to 18% with a NPV of INR 2,074 million. Under extreme scenario of costs increased by 20% and benefits declined by 20% over the base-case, 10% IRR is obtained with a NPV of INR 56 million. Likewise, the sensitivity analysis of BCR indicates that the project is more sensitive to decline in project benefits than increases in costs. Switching values<sup>49</sup> indicate that the investments are worthy even if costs increased by 51% or the benefits declined by 34%. (Refer Annex-1.1 and 1.2)

23. Overall, the Sensitivity analysis indicated that the Project has been sensitive both to decreases in benefits and increases in costs. None the less, the project seems to be more sensitive to decline in benefits than increases in costs. Decrease in benefits may be brought about by a decline in output prices, or a failure in achieving projected yields or outputs.

<sup>45</sup> At present this is the long term bond rate in India

<sup>46</sup> The NPV is a very concise performance indicator of an investment project: it represents the present amount of the net benefits (i.e. incremental benefits less incremental costs) flow generated by the investment expressed in AFA (a single value with the same unit of measurement used in the accounting tables). The Net Present Value is the sum of a 20 year discounted net cash flows.

<sup>47</sup> IRR is defined as the discount rate that zeroes out the net present value of flows of costs and net present value of flows of benefits of an investment. The IRR was computed using incremental net benefits streams for 20 year period. As IRR rankings can be misleading, and given that the informational requirements for computing a proper NPV and IRR are the same except for the discount rate, it is always worth calculating the NPV of a project. There are many reasons in favour of the NPV decision rule (see Lev, 2007).

<sup>48</sup> BCR is independent of the size of the investment and it does not generate ambiguous cases and for this reason it can complement the NPV in ranking projects where budget constraints apply. Being a ratio, the indicator does not consider the total amount of net benefits and therefore the ranking can reward more projects that contribute less to the overall increase in public welfare

<sup>49</sup> **Switching values** are yet another measure of sensitivity analysis They demonstrate by how much a variable would have to fall (if it is a benefit) or rise (if it is a cost) to make it not worth undertaking an option.

## C. Benefits and Beneficiaries

24. **Beneficiaries:** The project covered over 64,500 households and these were benefited directly as detailed below. Number of beneficiary households by subproject and year are shown in Table 6 below.

Table-6: Number of Benefited Households a/							
Subproject households	Project year						Cumulative
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
Food crops & rice+fish agriculture hh	28,240	61,520	64,500	64,500	64,500	64,500	64,500
Spices & orchards households a/	600	5,600	10,600	12,040	12,040	12,040	12,040
Forestry village households b/	2,370	30,810	64,500	64,500	64,500	64,500	64,500
Livestock & fishery households	5,136	12,448	19,488	26,528	26,528	26,528	26,528
Processing units households c/	0	0	0	9,450	18,900	28,350	28,350
Farm to market link road households d/	0	6,800	13,600	20,400	27,200	27,200	27,200
<b>Total outreach (# of households)</b>	<b>27,200</b>	<b>54,200</b>	<b>64,500</b>	<b>64,500</b>	<b>64,500</b>	<b>64,500</b>	<b>64,500</b>

a/ These households concentrated in 120 spices clusters; b/ All 272 villages covered by village forestry programme  
c/ concentrated in spices villages; d/ assumed at 136 households/km of gravelled road

25. **Benefits:** The immediate benefits from the project are increased productivity-through the introduction of improved management practices and improved access to markets. This response is expressed as increased household incomes, and improved food security. Almost all rural households, estimated over 64,500 seemed to have directly benefited by FOCUS.

26. **Environmental benefits:** Overall, the project is environmentally favourable with the planting and maintenance of 2,720 ha village forests along with water development facilities, 3,600 ha of jhum plots planted with annual and perennial spices, 27,200 ha of jhum fallow land planted with annual and perennial legumes to enhance soil fertility, some 67,000 ha of jhum and low land treated with various soil and water conservation measures such as contour bunds, trenches, 5,440 ha wetland treated with soil fertility enhancement measures etc. These measures would enhance organic carbon contents of soil. Under the project, farm to market roads are improved using the existing road alignments and no cutting or excavation of new road alignments proposed. In addition the proposed road improvement work would include adoption of climate resilient features such as protection of side slopes, construction of cross-drainage structures and side drains etc.

27. An attempt was made to use FAO's EX-ACT software in assessing the greenhouse gas emissions. The results are shown in Annex-H and accordingly tCO<sub>2</sub> eq is -2.5 for biomass and -1.0 for soils per year per ha.

28. **Other benefits:** There are additional benefits emerge from the Project's capacity building interventions. First, all participating households, beneficiaries' groups and FIGs and VCs benefited through institution building as these were capacitated and provided fund support for various social and economic developments. Secondly, women from the poor and very poor groups are participating in and managing their social and economic development and have better access to markets and inputs and marketing their products. Thirdly, the improvement of access to markets, upgrading of vet extension services at grassroots benefited a vast number of households, in particular the rural youth.

## D. Risk and sustainability

29. There were a number of risks associated with the project. These relate to farm technology, reluctance on the part of the farmers in continuing the demonstrated package of practices, inadequate extension support, inadequate market linkages and poor price margins, lack of input services and poor response from the private sector, poor coordination and institutional support. These issues and risks are listed below:

**Table-8: Project Risks and Sustainability**

<b>Risks</b>	<b>Risk description</b>	<b>Probability of occurrence</b>	<b>Mitigation measures</b>	<b>Comparative sensitivity analysis result (Proxy)</b>
<b>Institutional</b>	Delay in technology transfer slowing down the uptake rates and production  Weak inputs services	High	Training and demonstrations of package of practices,	Benefits declined by 20%: IRR= 16% NPV= 1284 million BCR= 1.21
	Lack of financial capacity of farmers to invest in enterprises and other occupations	High	Project supported facilities for supply of critical inputs and organisation of farmers into FIGs would address this issues	Decline in benefits by 10%: IRR=21% NPV=2,213 million BCR=1.30
<b>Market</b>	Inadequate profit margins due to poor access, lack of transport and of market information  Lack of capacities of producer groups to negotiate fair deals with traders and suppliers	High to medium	Market information, improved technology advice.  Improving access to markets; training and capacity building and provision of market access infrastructure;	Decline in benefits and increases in cost by 10%: IRR= 17% NPV=1,598 million BCR=1.24
	Lower market prices for commodities	Medium	Cluster approach to production and production of ready to market commodities	
<b>Policy</b>	Lack of commitment to investing in the welfare development and slowing down funds flow	Medium	The project investments were fully supported by GoM and adequate funds were committed;	Operating costs increase by 25%: IRR=16% NPV= 1,605 million BCR=1.21
<b>Others</b>	Remoteness and difficulty of access due to bad connectivity conditions	High to Medium	Promotion of products that combine high farmer margin for small volumes and are easy to transport; market access improvement	Decline in benefits by 25%: IRR= 14% NPV=820 million BCR=1.13
	Climate change risks of droughts, frosts, frequent storms, etc	High to Medium	Training farmers on climate change risks	

## ANNEX: EFA DATA FRAMEWORK

INDIA FOCUS Mizoram						
A)	Food crops	Spices	Forestry	LS + fishery	Agro-process	Farm roads
Net incremental benefits of Farm and Activity subproject models in 000 INR						
PP1	255,964	4	4	4	4	4
PP2	557,185	-107,751		835	4	4
PP3	668,797	369,794	-9,580	28,123	0.0	170
PP4	705,225	168,563	-118,380	111,621	-7,150	340
PP5	706,247	135,843	-177,281	217,231	-250	510
PP6	706,112	11,637	-70,517	228,627	6,692	680
PP7	705,977	450,484	-5,275	360,241	20,826	680
PP8	705,842	91,883	47,525	359,101	20,826	680
PP9	706,247	-52,761	48,285	322,262	20,826	680
PP10	706,246	228,010	52,605	364,473	20,826	680
PP11	706,247	165,735	17,641	367,566	20,826	680
PP12	706,246	21,092	58,125	322,362	20,826	680
PP13	706,247	453,163	64,245	356,008	20,826	680
PP14	706,246	91,883	75,280	363,333	20,826	680
PP15	706,247	-52,761	80,325	326,594	20,826	680
PP16	706,246	228,010	80,325	364,473	20,826	680
PP17	706,247	165,735	83,175	363,333	20,826	680
PP18	706,246	21,092	116,175	318,130	20,826	680
PP19	706,247	48,032	141,675	360,241	20,826	680
PP20	706,246	112,837	124,675	368,566	20,826	680
NPV INR (000)	5,450,898	610,435	15,200	1,779,901	85,311	3,888
NPV (USD 000)	80,160.3	9,565.2	223.5	26,176.3	1,254.4	57.2
FIRR	#DIV/0!	46%	11%	high	97%	#DIV/0!

D)	BENEFICIARIES, PHASING BY INTERVENTION AND ADOPTION RATES						
Project year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Cumulative
<b>Interventions</b>							
hh participating in better jhum (Jhum and land allotted households)	28,200	57,400	57,400	59,840	59,840	59,840	59,840
hh participating in wetland paddy cultivation (paddy followed by spices, beans, veg etc)	0	4,000	12,000	21,600	21,600	21,600	21,600
hh participating in orchards (support to existing orchards)	0	2,000	4,000	5,440	5,440	5,440	5,440
hh participating in spices cultivation (ginger, turmeric, chili etc)	600	3,600	7,200	7,200	7,200	7,200	7,200
hh participating village forestry (tree planting & maintenance)	2,370	30,810	64,500	64,500	64,500	64,500	64,500
hh participating in piggy (breeding & fattening)	5,000	10,000	15,000	20,000	25,000	25,000	25,000
hh participating in pond fishery (pond fishery)	136	408	544	544	544	544	544
hh participating in agro-processing (turmeric processing units)	0	0	0	9,450	18,900	28,200	28,200
hh participating in farm to market roads (200 km upgraded farm to market link roads)	0	510	10,200	15,300	20,400	20,400	20,400
<b>Total # of participating households</b>	<b>28,200</b>	<b>57,400</b>	<b>64,500</b>	<b>64,500</b>	<b>64,500</b>	<b>64,500</b>	<b>64,500</b>
Due to overlapping adoption rate for each intervention is difficult to estimate although target outreach is 64,500 households							

E)												
Project year	NET INCREMENTAL BENEFITS					NET INCREMENTAL COSTS			Cash Flow (million INR)			
	Food crops	Spices	Village forestry	Livestock & fishery	Agro-processing units	Farm roads	NIB including proxy values	Total incremental benefits		Economic Investment Costs	Economic recurrent Costs	Total Incremental Costs
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	483.7	0.0	483.7	-483.7
2	33.1	-38.7	0.0	151.2	0.0	0.0	145.6	145.6	913.6	9.9	923.5	-776.9
3	102.9	-57.2	0.0	362.5	0.0	0.0	408.1	408.1	953.0	79.8	1,032.8	-624.7
4	182.9	100.3	0.0	638.8	0.0	0.1	922.2	922.2	716.3	276.2	992.5	-70.3
5	235.6	121.1	0.0	882.1	18.7	0.3	1,257.7	1,257.7	692.6	544.6	1,237.2	20.5
6	235.6	61.7	3.2	1,056.2	37.3	0.4	1,394.4	1,394.4	339.4	626.2	965.6	428.8
7	235.6	262.8	42.0	1,088.6	56.0	0.6	1,685.5	1,685.5	463.7	463.7	1,221.8	463.7
8	235.6	105.0	87.2	1,091.3	56.0	0.6	1,575.6	1,575.6	557.8	557.8	1,017.8	557.8
9	235.6	29.7	87.5	1,056.2	56.0	0.6	1,465.6	1,465.6	549.4	549.4	916.2	549.4
10	235.6	141.8	91.2	1,088.6	56.0	0.6	1,612.7	1,612.7	491.3	491.3	1,121.4	491.3
11	235.6	148.4	96.5	1,091.3	56.0	0.6	1,626.3	1,626.3	543.9	543.9	1,082.4	543.9
12	235.6	71.2	96.9	1,056.2	56.0	0.6	1,516.4	1,516.4	540.2	540.2	976.2	540.2
13	235.6	265.6	101.1	1,088.6	56.0	0.6	1,747.4	1,747.4	467.8	467.8	1,279.6	467.8
14	235.6	105.0	110.5	1,091.3	56.0	0.6	1,598.8	1,598.8	554.3	554.3	1,044.5	554.3
15	235.6	29.7	134.8	1,056.2	56.0	0.6	1,492.8	1,492.8	545.4	545.4	947.4	545.4
16	235.6	141.8	134.8	1,088.6	56.0	0.6	1,637.9	1,637.9	491.3	491.3	1,146.6	491.3
17	235.6	148.4	148.4	1,117.2	1,091.3	56.0	1,649.0	1,649.0	545.1	545.1	1,103.9	545.1
18	235.6	71.2	145.2	1,056.2	56.0	0.6	1,564.7	1,564.7	543.9	543.9	1,020.8	543.9
19	235.6	81.9	166.9	1,088.6	56.0	0.6	1,629.7	1,629.7	535.8	535.8	1,093.9	535.8
20	235.6	117.3	152.6	1,091.3	56.0	0.6	1,653.3	1,653.3	519.0	519.0	1,134.3	519.0
NPV at 10% (million)				3,141								
IRR				25%								
EIRR				25%								
				Current Bond rate is applied as Discount rate				9.282				
								6.141				

F)				
SENSITIVITY ANALYSIS (SA)				
Basecase scenario	Δ%	Link with the risk matrix	IRR	NPV 1/
Project benefits	-10%		21%	2,213
Project costs	10%		17%	1,598
Project benefits	-10%			
2 years lag in benefits				
Project benefits	-20%	climate risks, storms, low rainfall, droughts	18%	2,074
Input prices	10%	lack of policy commitment	21%	2,527
1/ NPV is in million INR discounted at 10%				

G)												
ECONOMIC ANALYSIS												
Project year	NET INCREMENTAL BENEFITS					NET INCREMENTAL COSTS			Cash Flow (million INR)			
	Food crops	Spices	Village forestry	Livestock & fishery	Agro-processing units	Farm roads	NIB including proxy values	Total incremental benefits		Economic Investment Costs	Economic recurrent Costs	Total Incremental Costs
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	483.7	0.0	483.7	-483.7
2	33.1	-38.7	0.0	151.2	0.0	0.0	145.6	145.6	913.6	9.9	923.5	-776.9
3	102.9	-57.2	0.0	362.5	0.0	0.0	408.1	408.1	953.0	79.8	1,032.8	-624.7
4	182.9	100.3	0.0	638.8	0.0	0.1	922.2	922.2	716.3	276.2	992.5	-70.3
5	235.6	121.1	0.0	882.1	18.7	0.3	1,257.7	1,257.7	692.6	544.6	1,237.2	20.5
6	235.6	61.7	3.2	1,056.2	37.3	0.4	1,394.4	1,394.4	339.4	626.2	965.6	428.8
7	235.6	262.8	42.0	1,088.6	56.0	0.6	1,685.5	1,685.5	463.7	463.7	1,221.8	463.7
8	235.6	105.0	87.2	1,091.3	56.0	0.6	1,575.6	1,575.6	557.8	557.8	1,017.8	557.8
9	235.6	29.7	87.5	1,056.2	56.0	0.6	1,465.6	1,465.6	549.4	549.4	916.2	549.4
10	235.6	141.8	91.2	1,088.6	56.0	0.6	1,612.7	1,612.7	491.3	491.3	1,121.4	491.3
11	235.6	148.4	96.5	1,091.3	56.0	0.6	1,626.3	1,626.3	543.9	543.9	1,082.4	543.9
12	235.6	71.2	96.9	1,056.2	56.0	0.6	1,516.4	1,516.4	540.2	540.2	976.2	540.2
13	235.6	265.6	101.1	1,088.6	56.0	0.6	1,747.4	1,747.4	467.8	467.8	1,279.6	467.8
14	235.6	105.0	110.5	1,091.3	56.0	0.6	1,598.8	1,598.8	554.3	554.3	1,044.5	554.3
15	235.6	29.7	134.8	1,056.2	56.0	0.6	1,492.8	1,492.8	545.4	545.4	947.4	545.4
16	235.6	141.8	134.8	1,088.6	56.0	0.6	1,637.9	1,637.9	491.3	491.3	1,146.6	491.3
17	235.6	148.4	148.4	1,117.2	1,091.3	56.0	1,649.0	1,649.0	545.1	545.1	1,103.9	545.1
18	235.6	71.2	145.2	1,056.2	56.0	0.6	1,564.7	1,564.7	543.9	543.9	1,020.8	543.9
19	235.6	81.9	166.9	1,088.6	56.0	0.6	1,629.7	1,629.7	535.8	535.8	1,093.9	535.8
20	235.6	117.3	152.6	1,091.3	56.0	0.6	1,653.3	1,653.3	519.0	519.0	1,134.3	519.0

## ANNEX-A: NET INCREMENTAL BENEFITS OF SUBPROJECTS, FINANCIAL

A)	Food crops	Spices	Forestry	LS + fishery	Agro-process	Farm roads		
<b>FINANCIAL ANALYSIS</b>	<b>Net incremental benefits of Farm and Activity subproject models in 000 INR</b>							
	PY1	255,963	0	0	0	0	0	
	PY2	557,185	-107,751	-	835	0	0	
	PY3	668,797	-169,794	-9,580	-28,123	0.0	170	
	PY4	705,225	168,563	-118,388	111,621	-7,192	340	
	PY5	706,247	135,843	-177,281	217,231	-250	510	
	PY6	706,112	11,637	-70,517	228,627	6,692	680	
	PY7	705,977	450,484	-5,275	360,241	20,826	680	
	PY8	705,842	91,883	47,525	359,101	20,826	680	
	PY9	706,247	-52,761	48,285	322,362	20,826	680	
	PY10	706,246	228,080	52,605	364,473	20,826	680	
	PY11	706,247	165,735	57,645	367,566	20,826	680	
	PY12	706,246	21,092	58,125	322,362	20,826	680	
	PY13	706,247	453,163	64,245	356,008	20,826	680	
	PY14	706,246	91,883	75,286	363,333	20,826	680	
	PY15	706,247	-52,761	80,325	326,594	20,826	680	
	PY16	706,246	228,010	80,325	364,473	20,826	680	
	PY17	706,247	165,735	83,175	363,333	20,826	680	
	PY18	706,246	21,092	116,175	318,130	20,826	680	
	PY19	706,247	48,032	141,675	360,241	20,826	680	
	PY20	706,246	132,637	124,675	368,566	20,826	680	
NPV INR 000)	4,726,741	528,118	-21,226	1,470,049	68,612	3,254		
NPV (USD 000)	69,510.9	7,766.4	-312.2	21,618.4	1,009.0	47.9		
FIRR	#DIV/0!	46%	11%	high	97%	#DIV/0!		

## ANNEX-B: PROJECT COSTS AND INDICATORS FOR LOGFRAME

<b>B)</b>						
<b>PROJECT COSTS AND INDICATORS FOR LOGFRAME</b>						
<b>TOTAL PROJECT COSTS</b> (in million USD)		<b>79.3</b>	Base costs	72.56	PMU	8.1
<b>Number of Beneficiaries</b>	<b>64,500</b> Households	Tribal %	Villages #	VCs #	FIGs #	
		98.0	272	272	1,203	
<b>Cost per beneficiary (IFAD resources)</b>	<b>553</b> USD/ household				<b>Adoption rates</b>	<b>variable</b>
<b>Components</b>	<b>Cost USD M</b>	<b>Outcomes</b>		<b>Indicators</b>		
Improved Jhum management	22.24	Improved jhum management		Productivity increases		
Market access & value chain devt	47.97	Enhanced prices to farm produce		% increases in at farm-gate prices		
Project management	9.09	efficient project management		Implementation achieved at least 85%		
Total project costs a/	79.30					



## ANNEX-D BENEFICIARIES, PHASING BY INTERVENTION AND ADOPTION RATES

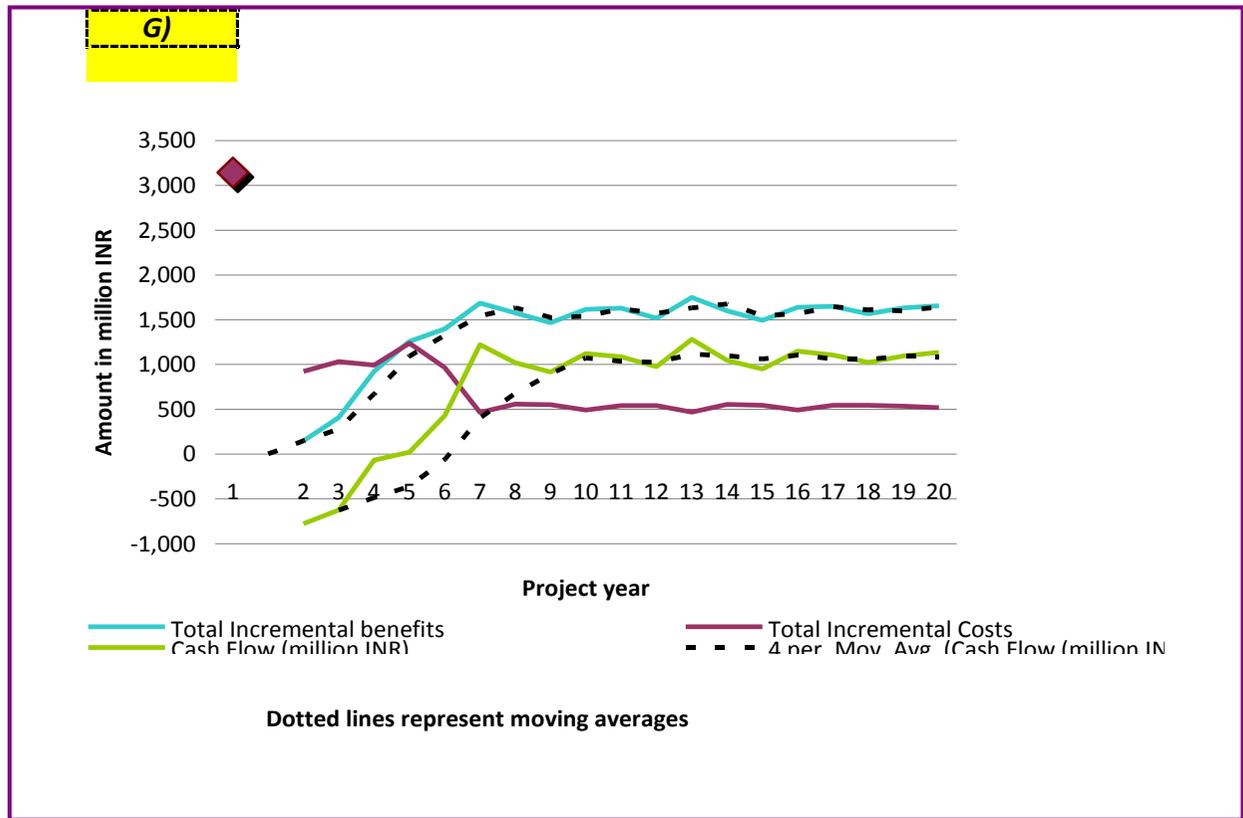
BENEFICIARIES, PHASING BY INTERVENTION AND ADOPTION RATES								Adoption rates
Project year →	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Cumulative	
<b>Interventions</b>								
<b>hh participating in better jhum</b> (Jhum and land allotted households)	28,200	57,400	57,400	59,840	59,840	59,840	59,840	91%
<b>hh participating in wetland paddy cultivation</b> (paddy followed by spices, beans, veg etc)	0	4,000	12,000	21,600	21,600	21,600	21,600	100%
<b>hh participating in orchards</b> (support to existing orchards)	0	2,000	4,000	5,440	5,440	5,440	5,440	100%
<b>hh participating in spices cultivation</b> (ginger, turmeric, chilli etc)	600	3,600	7,200	7,200	7,200	7,200	7,200	100%
<b>hh participating village forestry</b> ( tree planting & maintenance)	2,370	30,810	64,500	64,500	64,500	64,500	64,500	75%
<b>hh participating in piggery</b> (breeding & fattening )	5,000	10,000	15,000	20,000	25,000	25,000	25,000	100%
<b>hh participating in pond fishery</b> (pond fishery )	136	408	544	544	544	544	544	90%
<b>hh participating in agro-processing</b> (turmeric processing units)	0	0	0	9,450	18,900	28,200	28,200	60%
<b>hh participating in farm to market roads</b> (200 km upgraded farm to market link roads)	0	680	13,600	20,400	27,200	27,200	27,200	75%
<b>Total # of participating households</b>								
<b>Total # of hhs adopting interventions</b>	<u>28,200</u>	<u>57,400</u>	<u>64,500</u>	<u>64,500</u>	<u>64,500</u>	<u>64,500</u>	<u>64,500</u>	
Due to overlapping adoption rate for each intervention is difficult to estimate although target outreach is 64,500 households								



## ANNEX-F SENSITIVITY ANALYSIS

<b>F)</b>				
<b>SENSITIVITY ANALYSIS (SA)</b>				
	<b>Δ%</b>	<b>Link with the risk matrix</b>	<b>IRR</b>	<b>NPV 1/</b>
<b>Basecase scenario</b>			25%	3,141
Project benefits	-10%		21%	2,213
Project costs	10%			
Project benefits	-10%		17%	1,598
2 years lag in benefits			18%	2,074
Project benefits	-20%	climate risks, storms, low rainfall, droughts	16%	1,284
Input prices	10%	lack of policy commitment	21%	2,527
1/ NPV is in million INR discounted at 10%				

**ANNEX-G: GRAPH SHOWING INCREMENTAL BENEFITS, COSTS AND NET INCOME**



## ANNEX-H: Summary results of EX\_ACT Applications for the Mizoram FOCUS

Project Name	India Mizoram FOCUS		Climate	Tropical Mountain (Moist)			Duration of the Project (Years)	20			
Continent	Asia (Indian subcontinent)		Regional Soil Type	LAC Soils			Total area (ha)	84372			
Components of the project	Gross fluxes			Share per GHG of the Balance					Result per year		
	Without	With	Balance	All GHG in tCO <sub>2</sub> eq			Without	With	Balance		
	All GHG in tCO <sub>2</sub> eq			CO <sub>2</sub>	N <sub>2</sub> O	CH <sub>4</sub>					
	Positive = source / negative = sink			Biomass	Soil	Other					
<b>Land use changes</b>											
Deforestation	0	0	0	0	0	0	0	0	0		
Afforestation	0	-3,811,231	-3,811,231	-2,951,666	-859,564	0	0	0	-190,562		
Other LUC	0	-557,609	-557,609	159,573	-717,182	0	0	0	-27,880		
<b>Agriculture</b>											
Annual	-702,714	-702,714	0	0	0	0	0	0	-35,136		
Perennial	-190,400	-1,833,280	-1,642,880	-1,481,040	-161,840	0	0	0	-91,664		
Rice	0	0	0	0	0	0	0	0	0		
<b>Grassland &amp; Livestocks</b>											
Grassland	0	0	0	0	0	0	0	0	0		
Livestocks	0	79,232	79,232	0	0	10,170	69,063	0	3,962		
<b>Degradation &amp; Management</b>											
Coastal wetlands	0	0	0	0	0	0	0	0	0		
Inputs & Investments	0	0	0	0	0	0	0	0	0		
Fishery & Aquaculture	0	10,978	10,978	0	0	10,978	0	0	549		
<b>Total</b>	-893,114	-6,814,623	<b>-5,921,509</b>	<b>-4,273,133</b>	<b>-1,738,587</b>	<b>0</b>	<b>21,148</b>	<b>69,063</b>	<b>-44,656</b>		
<b>Per hectare</b>	-11	-81	-70	<b>-50.6</b>	<b>-20.6</b>	<b>0.0</b>	<b>0.3</b>	<b>0.8</b>			
<b>Per hectare per year</b>	-0.5	-4.0	-3.5	<b>-2.5</b>	<b>-1.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-0.5</b>		

*Subject to corrections*

**PROJECT PERFORMANCE INDICATORS: FOCUS\_Mizoram**

**ANNEX-1.1: PROJECT “INTERNAL RATE OF RETURN” & BENEFITS LAGGED BY 2 YEAR**

<b>ECONOMIC ANALYSIS</b>																														
Country:	INDIA										Discount rate:DR	0.1	10%																	
Project:	FOCUS Mizoram																													
(amount in million INR)																														
	Project Year																													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20										
<b>Incremental benefits</b>																														
Incremental benefits	0.0	145.6	408.3	922.3	1257.8	1394.6	1685.5	1575.5	1465.6	1613.7	1625.2	1515.4	1747.4	1598.8	1492.8	1637.3	1646.9	1564.7	1629.5	1653.3										
Total Incremental benefits	0.0	145.6	408.3	922.3	1257.8	1394.6	1685.5	1575.5	1465.6	1613.7	1625.2	1515.4	1747.4	1598.8	1492.8	1637.3	1646.9	1564.7	1629.5	1653.3										
<b>Incremental costs</b>																														
Investment costs	483.7	912.6	953.0	716.3	692.6	339.4																								
Production costs	0.0	9.9	79.8	276.2	544.6	626.2	463.7	557.8	549.4	491.3	541.4	540.2	467.8	554.3	545.4	491.3	545.1	543.9	535.8	519.0										
Incremental costs	483.7	922.4	1032.8	992.5	1237.2	965.6	463.7	557.8	549.4	491.3	541.4	540.2	467.8	554.3	545.4	491.3	545.1	543.9	535.8	519.0										
<b>Incremental net benefits</b>	-483.7	-776.8	-624.5	-70.2	20.7	428.9	1221.9	1017.8	916.2	1122.4	1083.9	975.2	1279.5	1044.5	947.4	1146.0	1101.9	1020.8	1093.7	1134.3										
<b>Basecase results discounted:</b>	10%										<b>Benefits lagged by 2 year DR at</b>										10%									
NPV of benefit streams discounted at	10%	9,282	NPV of benefit streams discounted at	10%	8,214																									
NPV of costs stream discounted at	10%	6,141	NPV of costs stream discounted at	10%	6,141																									
NPV of project discounted at	10%	3,141	NPV of project discounted at	10%	2,074																									
BCR- discounted benefits & costs at	10%	1.51	BCR- discounted benefits & costs at	10%	1.34																									
IRR	25%										IRR										18%									

**ANNEX-1.2: SENSITIVITY TESTS: “SWITCHING VALUES” & BCR**

**Results of Sensitivity Analysis using 10% discount rate:**

Project Performance indicators		Costs increased by				Benefits down by				Both cost increase & benefits down			
		10%	15%	20%	25%	10%	15%	20%	25%	10%	15%	20%	25%
NPV of at discount rate of	10%	2,527	2,220	1,913	1,605	2,213	1,748	1,284	820	1,598	827	56	-715
BCR at discount rate of	10%	1.37	1.31	1.26	1.21	1.36	1.28	1.21	1.13	1.24	1.12	1.01	0.91
IRR		21%	19%	18%	16%	21%	18%	16%	14%	17%	14%	10%	7%

**Switching Value Analysis:**

Switching Value:	Appraisal	Switching value	% change
Total Benefits at 10% DR	9,282	6,141	-34
Total Costs at 10% DR	6,141	9,282	51

### ANNEX-1.3: PROJECT INVESTMENT COSTS (ECONOMIC)

India FOCUS_Mizoram State Project Components by Year -- Base Costs		Base Cost (INR '000)					
	18/19	19/20	20/21	21/22	22/23	23/24	Total
<b>A. Improved Jhum Cultivation</b>							
1. Better Jhum and Conservation	325,865.9	338,921.9	243,296.1	114,032.8	84,504.0	43,704.0	1,150,324.8
2. Support to settled agriculture	44,243.1	78,385.5	86,534.0	19,427.5	-	-	228,590.1
<b>Subtotal</b>	<b>370,109.0</b>	<b>417,307.5</b>	<b>329,830.1</b>	<b>133,460.3</b>	<b>84,504.0</b>	<b>43,704.0</b>	<b>1,378,914.9</b>
<b>B. Market access and value chain development</b>							
1. Value chain development	109,154.0	181,382.8	197,677.5	175,332.4	141,786.9	91,045.7	896,379.3
2. Market Access Infrastructure	59,793.0	466,564.5	469,782.5	469,361.4	507,902.5	134,282.5	2,107,686.5
<b>Subtotal</b>	<b>168,947.0</b>	<b>647,947.4</b>	<b>667,460.1</b>	<b>644,693.8</b>	<b>649,689.4</b>	<b>225,328.1</b>	<b>3,004,065.8</b>
<b>C. Project Management</b>							
1. Project Management	125,153.6	89,763.1	86,161.1	87,855.9	81,244.3	80,887.5	551,065.7
<b>Subtotal</b>	<b>125,153.6</b>	<b>89,763.1</b>	<b>86,161.1</b>	<b>87,855.9</b>	<b>81,244.3</b>	<b>80,887.5</b>	<b>551,065.7</b>
<b>Total BASELINE COSTS</b>	<b>664,209.7</b>	<b>1,155,017.9</b>	<b>1,083,451.3</b>	<b>866,010.1</b>	<b>815,437.7</b>	<b>349,919.7</b>	<b>4,934,046.3</b>
Physical Contingencies	147.2	15,290.9	16,318.7	15,047.5	12,213.8	45.5	59,063.7
Subtotal Price Contingencies	12,283.6	55,966.1	85,415.0	89,403.3	99,685.6	56,856.3	399,609.9
<b>Total PROJECT COSTS (T)</b>	<b>676,640.5</b>	<b>1,226,275.0</b>	<b>1,185,185.0</b>	<b>970,460.8</b>	<b>927,337.2</b>	<b>406,821.5</b>	<b>5,392,719.9</b>
Taxes	16,602.1	58,252.0	65,017.2	61,912.5	53,633.7	9,602.7	265,020.2
<b>Calculation of Economic costs</b>							
Less supply of inputs	164049.7	199500.3	81744.3	102816.3	81382.6	922.4	630415.6
Less taxes	16,602.1	58,252.0	65,017.2	61,912.5	53,633.7	9,602.7	265,020.2
Less price contingencies	12,283.6	55,966.1	85,415.0	89,403.3	99,685.6	56,856.3	399,609.9
Subtotal (D)	192,935.4	313,718.5	232,176.4	254,132.1	234,701.9	67,381.3	1,295,045.7
<b>Economic costs (T-D)</b>	<b>483,705.1</b>	<b>912,556.5</b>	<b>953,008.6</b>	<b>716,328.7</b>	<b>692,635.3</b>	<b>339,440.2</b>	<b>4,097,674.2</b>

**ANNEX-1.4: PROJECT INCREMENTAL BENEFITS STREAMS & COSTS STREAMS, economic in million INR**

India												
IFAD Mizoram Final Design												
Project Summary												
<b>ECONOMIC BUDGET (AGGREGATED)</b>												
(In INR Million)												
	Increments											
	1	2	3	4	5	6	7	8	9	10	15	20
<b>Main Production</b>												
Food crops production	-	35.8	119.8	217.1	270.3	270.3	270.3	270.3	270.3	270.3	270.3	270.3
Orchards production	-	-42.5	-84.2	45.1	65.8	6.4	207.5	49.7	-25.6	86.5	-25.6	62.1
Village forestry produce	-	-	-	-	-	3.2	42.0	87.2	87.5	91.2	114.8	152.6
Pig production	-	172.2	349.0	525.7	698.0	868.0	868.0	868.0	868.0	868.0	868.0	868.0
Poultry production	-	-	32.7	97.7	165.4	198.1	230.5	233.1	198.1	230.5	198.1	233.1
Fish production	-	-	32.3	97.0	130.3	130.3	130.3	130.3	130.3	130.3	130.3	130.3
Processing units	-	-	-	-	18.7	37.3	56.0	56.0	56.0	56.0	56.0	56.0
Value chain incremental prices	-	2.1	12.4	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9
Infrastructure benefits	-	-	0.1	0.3	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Proxy labour	-	-22.0	-53.9	-85.5	-115.9	-144.4	-144.4	-144.4	-144.4	-144.4	-144.4	-144.4
<b>Sub-total Main Production</b>	-	145.6	408.3	922.3	1,257.8	1,394.6	1,685.5	1,575.5	1,465.6	1,613.7	1,492.8	1,653.3
<b>Production Cost</b>												
<b>Investment</b>												
<b>Purchased Inputs</b>												
<b>Sub-Total Purchased Inputs</b>	-	125.1	230.0	313.0	408.8	468.6	414.3	457.3	453.8	426.1	449.9	437.0
<b>Labor</b>												
Labour	-	-	0.2	0.5	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
<b>Sub-total Investment Costs</b>	-	125.1	230.2	313.5	409.7	469.5	415.3	458.2	454.7	427.0	450.8	438.0
<b>Sub-Total Purchased Inputs</b>	-	0.2	76.5	102.5	138.4	174.9	133.6	133.6	133.4	133.6	133.4	133.6
<b>Labor</b>												
Labour	-	-115.5	-226.9	-139.8	-3.6	-18.2	-85.2	-34.0	-38.7	-69.3	-38.7	-52.6
<b>Sub-total Operating Costs</b>	-	-115.3	-150.4	-37.3	134.8	156.7	48.4	99.5	94.6	64.3	94.6	81.0
<b>Sub-Total Production Cost</b>	-	9.9	79.8	276.2	544.6	626.2	463.7	557.8	549.4	491.3	545.4	519.0
<b>Other Costs</b>												
FOCUS investment costs	483.7	912.6	953.0	716.3	692.6	339.4	-	-	-	-	-	-
<b>OUTFLOWS</b>	483.7	922.4	1,032.8	992.5	1,237.2	965.6	463.7	557.8	549.4	491.3	545.4	519.0
<b>Cash Flow</b>	-483.7	-776.8	-624.5	-70.2	20.7	428.9	1,221.9	1,017.8	916.2	1,122.4	947.4	1,134.3

IRR = 24.6%, NPV = 3,140.73

## ANNEX-1.5: PROJECT INCREMENTAL LABOUR REQUIREMENT

Project Summary LABOR BUDGET (In Units)		Future			Percentage
Unit	Present	Without	Future With	Change	
	1	18	20	%	
<b>Labor Requirements</b>					
Site/jungle clearance	pers_day	481,360	386,160	10,800	-97
Land Preparation	pers_day	977,780	962,140	634,440	-34
Planting	pers_day	264,400	169,200	183,400	8
Sow ing	pers_day	116,920	116,920	35,320	-70
Transplanting	pers_day	68,000	68,000	68,000	-
Manuring	pers_day	25,304	25,304	25,304	-
Nursery preparation	pers_day	13,600	13,600	13,600	-
Irrigating	pers_day	27,000	27,000	27,000	-
Pitting	pers_day	27,200	-	-	-
Staking	pers_day	-	-	40,500	-
Mulching	pers_day	-	-	-	-
Fencing	pers_day	42,640	15,440	15,440	-
Weeding	pers_day	403,240	403,240	190,680	-53
spraying	pers_day	50,000	50,000	50,000	-
Interculture	pers_day	216,588	189,388	206,200	9
Pruning	pers_day	6,800	6,800	13,600	100
Removal of basal Leaves	pers_day	-	12,920	11,300	-13
Farm transportation	pers_day	302,188	356,588	214,440	-40
Harvesting	pers_day	999,640	1,060,840	673,480	-37
Fish harvesting	pers_day	-	-	480	-
Fish feeding	pers_day	-	-	600	-
Pond treatment	pers_day	600	600	-	-
Shed construction	pers_day	-	-	50,128	-
Drying pepper	pers_day	-	-	10,200	-
Grading pepper	pers_day	-	-	3,400	-
Hut construction	pers_day	38,080	38,080	5,440	-86
Watch and ward	pers_day	314,960	314,960	1,485,960	372
Maintenance	pers_day	-	-	10,200	-
<b>Sub-Total Labor Requirements</b>		<b>4,376,300</b>	<b>4,217,180</b>	<b>3,979,912</b>	<b>-6</b>

## ANNEX-1.6: PROJECT PRODUCTION - TOTAL & INCREMENTAL

India IFAD Mizoram Final Design Project Summary					
<b>PRODUCTION AND INPUTS (Detailed)</b>					
(In Units)					
Unit	Future			Percentage Change	
	Present 1	Without 18	Future With 20		
<b>Main Production</b>					
Paddy	ton	27,540	27,540	33,023	20
Mizo chilli	ton	5,449	5,449	6,938	27
Maize, shelled	ton	3,264	3,264	3,590	10
Beans	ton	1,044	1,044	1,142	9
Sesame	ton	566	566	830	47
Ginger	ton	4,946	4,946	7,039	42
Onion	ton	-	-	378	-
Garlic	ton	162	162	216	33
Turmeric	ton	8,375	8,375	12,670	51
Vegetables	ton	5,184	5,184	6,480	25
Pine Apple	ton	-	5,984	5,575	-7
Black pepper, dried	kg	-	-	170,000	-
Banana	ton	-	5,780	6,936	20
Citrus	ton	2,040	3,060	3,672	20
Fruits	ton	-	-	40,500	-
Small timber	m3	-	-	-	-
High value timber	m3	-	-	51,300	-
Firewood	m3	-	-	-	-
Pastures & fodder	ton	-	-	1,350	-
Piglets	each	-	-	4,224	-
Fattened pig, 80 kg in Wt	animal	-	-	25,000	-
Eggs	each	-	-	18,727,200	-
Culled bird, hen or cockeral	each	-	-	248,880	-
Fish	kg	-	-	695,000	-
Turmeric powder bag	1000 bags	-	-	1,995	-
Mizo Chilli, incremental price	ton	-	-	4,896	-
Ginger, incremental price	ton	3,456	3,456	4,032	17
High grade Turmeric, incremental price	ton	-	-	5,184	-
transport cost reduction	INR/km	-	-	200	-
Proxy labour under WOP	pers_days	713,280	713,280	-	-

## ANNEX-1.7: PRICES ASSUMED IN EFA<sup>50</sup>

### Estimation of Economic Parity Prices for rice and Maize

Item	notes	Unit	Rice a/	Maize a/
FOB (constant 2015 prices)		USD/ton	423	159
(*) Quality Adjustment factor		%	75%	90%
(=) Quality adjusted FOB		USD/ton	317	143
(+) Transport and insurance		USD/ton	20	25
(+) Unloading costs		USD/ton	5	5
CIF at point of import (India)		USD/ton	342	173
INR/USD official exchange rate		INR/USD	68	68
<b>Import parity price at project boundary</b>		<b>INR/ton</b>	<b>23,263</b>	<b>11,783</b>
<b>(+) Import Tariffs and Duties</b>		<b>INR</b>	<b>16,749</b>	<b>8,484</b>
<b>(+) Transport and Marketing financial costs to Project area, of wh</b>		INR/ton	8,002	4,053
Tradable costs	50%		4,001	2,027
Adjust by SERI	1.0		4,001	2,027
Non tradable c	40%		3,201	1,621
Labor	10%		800	405
Adjust by SWR	0.8		640	324
(+) Transport and Marketing <b>economic</b> costs at project area		INR/ton	<b>7,842</b>	<b>3,972</b>
(+) Handling <b>financial</b> costs to Project area (of which)		INR/ton	233	118
Tradable costs	50%		116	59
Adjust by SERI	1		116	59
Non tradable c	40%		93	47
Labor	10%		23	12
Adjust by SWR	0.8		19	9
(+) Handling <b>economic</b> costs		INR/ton	228	115
<b>(=) Wholesale Market Economic Price at Project Area</b>		<b>INR/ton</b>	<b>31,333</b>	<b>15,871</b>
(+) Marketing administration cost at wholesale		INR/ton	313	159
<b>(=) Ex-Mill Price at wholesale Center</b>		<b>INR/ton</b>	<b>31,646</b>	<b>16,030</b>
(+) Transport and Admin. Cost To/From Farm		INR/ton	3,165	1,603
<b>(=) Economic Export Parity Price at farmgate</b>		<b>INR/ton</b>	<b>34,811</b>	<b>17,632</b>
		INR/kg	35	18

a/ World Bank commodity price data. Average (Jan-Dec 2016)

Rice, Thailand 5%

b/ includes insurance and unloading costs

<sup>50</sup> Data collected by

India IFAD Mizoram Final Design		Prices assumed	
<b>ECONOMIC PRICES</b>		<u>Economic</u>	<u>Financial</u>
(In INR)			
	<u>Unit</u>		
<b>Outputs</b>			
<b>Food crops production</b>			
Paddy /a	ton	21,000	25,000
Paddy improved	ton	25,200	30,000
Byproduct /b	ton	850	1,000
Mizo chilli	ton	17,000	20,000
Maize, shelled	ton	17,000	20,000
Beans	ton	42,500	50,000
Sesame	ton	17,000	20,000
Ginger	ton	21,250	25,000
Onion	ton	68,000	80,000
Garlic	ton	21,250	25,000
Turmeric	ton	8,500	10,000
High grade turmeric	ton	13,600	16,000
Dry turmeric	ton	255	300
Vegetables	ton	6,000	12,000
<b>Orchards production</b>			
Pine Apple	ton	15,000	30,000
Black pepper, dried	kg	255	300
Banana	ton	16,250	25,000
Citrus	ton	9,900	18,000
Large cardamom, dry	kg	595	700
<b>Village forestry produce</b>			
Fruits	ton	2,125	2,500
Small timber /c	m3	680	800
High value timber	m3	1,275	1,500
Firewood /d	m3	340	400
Pastures & fodder	ton	850	1,000
<b>Pig production</b>			
Piglets /e	each	4,250	5,000
Culled sow	sow	17,000	20,000
Culled boar	boar	17,000	20,000
Sow	each	17,000	20,000
Fattened pig, 80 kg in Wt	animal	34,000	40,000
<b>Poultry production</b>			
Eggs	each	7	8
Grower	each	340	400
Culled bird, hen or cockeral	each	425	500
Sale of Pullet	pullet	106	125
Sale of duck	each	510	600
<b>Fish production</b>			
Fish /f	kg	188	250
<b>Processing units</b>			
Turmeric powder bag	1000 bags	28,050	33,000
Sale of turmeric powder bags /g	1000#	28,050	33,000
Sale of Chilli powder bags	each	85	100
<b>Value chain incremental prices /h</b>			
Mizo Chilli, incremental price	ton	2,550	3,000
Ginger, incremental price	ton	3,188	3,750
High grade Turmeric, incremental price	ton	2,040	2,400
Cardamom, incremental price	kg	68	80
<b>Infrastructure benefits</b>			
Transport costs WOP	INR/ton/km	9	10
Transport costs WP	INR/ton/km	4	5
transport cost reduction /i	INR/km	2,890	3,400
Average transport per household /j	ton/hh/year	1	1
<b>Proxy labour</b>			
Proxy labour under WOP	pers_days	203	270

India		Prices assumed	
IFAD Mizoram Final Design		Economic	Financial
<b>ECONOMIC &amp; FINANCIAL PRICES</b>			
(In INR)			
	Unit		
<b>Inputs</b>			
<b>Seeds &amp; Planting materials</b>			
Paddy seed	Kg	30	30
Improved paddy seed	Kg	100	100
maize seed /k	Kg	90	90
Sesame	Kg	300	300
Beans	Kg	200	200
Mizo chilli seed	Kg	2,000	2,000
Ginger Planting materials	Kg	24	24
Turmeric planting materials	Kg	12	12
Garlic bulblets /l	Kg	20	20
Onion planting materials	Kg	450	450
Vegetable Seeds	ha	4,500	4,500
Citrus seedlings, grafted	each	50	50
Banana suckers /m	sucker	6	6
Cardamom sucker	each	10	10
Fingerlings /n	each	4	4
Pineapple suckers	each	3	3
Pepper cutting	#	10	10
Tree seedlings	each	50	50
Pasture seeds	ha	3,500	3,500
Sesbania seeds /o	Kg	50	50
<b>Agri tools &amp; materials</b>			
Azolla tank	set	3,400	4,000
Weeder	set	850	1,000
<b>Fertilisers</b>			
N Fertiliser	Kg	7	8
P Fertiliser	Kg	5	6
K Fertiliser	Kg	6	7
Urea	Kg	18	15
SSP	Kg	32	15
MOP	Kg	35	15
DAP	Kg	15	15
Organic Manure	ton	2,125	2,500
PP chemicals	lit	213	250
PP organic	litre	255	300
NPK	Kg	15	9
FYM	ton	2,125	2,500
<b>Piggery</b>			
Piglets, appx 8 kg in w t	each	4,250	5,000
Boar	boar	17,000	20,000
Adult sow /r	animal	17,000	20,000
Gilt /s	animal	6,800	8,000
Pig Stay /t	unit	2,975	3,500
Pig pen	pen	119,000	140,000
Pig housing	house	408,000	480,000
Equipment /u	unit	850	1,000
Insurance	animal/year	425	500
Medicines	animal	595	700
Medicines for piglets	piglet	170	200
Medicines and vaccines for piglets	piglet/year	170	200
Piglets mortality	piglet	4,250	5,000
Pig feed	kg	19	22
Local feed	kg	9	10

India		Prices assumed	
IFAD Mizoram Final Design			
<b>ECONOMIC &amp; FINANCIAL PRICES</b>		<u>Economic</u>	<u>Financial</u>
(In INR)			
	<u>Unit</u>		
<b>Inputs</b>			
<b>Poultry</b>			
Day old Chicks	chick	38	45
Vet services	bird/year	9	10
Hen	bird	255	300
Pullet supplied	bird	106	125
Pullets inducted	pullet	106	125
Cockeral	bird	255	300
Poultry shed /v	sq ft	70	82
Equipment	unit	6,800	8,000
Insurance	unit/year	493	580
Adult feed 110 gm/day	kg	24	28
Kitchen wastes	kg	4	5
Poultry concentrate	kg	26	30
Chick feed, 10 gm/day	kg	24	28
Grower feed, 50 gm/day	kg	24	28
Grower feed, 90 gm/day	kg	24	28
Mortality without project	adult	89	105
Mortality	bird	213	250
Mortality with project	adult	30	35
<b>Pond fishery</b>			
Making channels /w	pers_day	230	270
Construction of embankment /x	pers_day	230	270
Lime treatment /y	kg	26	30
Fingerlings /z	each	3	4
Fertilisers	kg	25	20
Manure	ton	850	1,000
Fish Feed /aa	kg	21	25
Tools & Equipment /bb	set	4,250	5,000
Maintenance	pers_day	230	270
<b>Turmeric processing unit (1000 bags/day capacity)</b>			
Purchase of fresh turmeric	ton	13,600	16,000
Packaging machine	set	127,500	150,000
Grinding machine	set	255,000	300,000
Slicing machine	set	127,500	150,000
Factory building	building	425,000	500,000
Other Tools	set	21,250	25,000
Packaging Bags (100 gm)	1000#	2,125	2,500
Other operating costs	year	212,500	250,000
Operation & maintenance	year	143,438	168,750
Management costs	year	176,970	208,200
Marketing costs	year	176,970	208,200
Factory operating labour /cc	pers_day	230	270
Utilities /dd	set	4,505	5,300
Labour /ee	pers_day	213	250
Transportation /ff	pers_day	213	250
<b>Chilli processing unit</b>			
Purchase of fresh chilli	ton	59,500	70,000
Packaging machine	set	127,500	150,000
Grinding machine	set	255,000	300,000
Slicing machine	set	127,500	150,000
Factory building	building	425,000	500,000
Other Tools	set	340,000	400,000
Packaging Bags (100 gm)	1000#	2,125	2,500
Other operating costs	year	212,500	250,000
Operation & maintenance	year	143,438	168,750
Management costs	year	176,970	208,200
Marketing costs	year	176,970	208,200
Factory operating labour /gg	pers_day	230	270
<b>Fencing</b>			
Fencing cropped area	lumpsum	1	1
<b>Village forestry</b>			
Land clearing /hh	pers_day	230	270
Seedling	each 100	43	50
Planting /ii	pers_day	230	270
Gap filling /jj	pers_day	230	270
Annual maintenance /kk	pers_day	230	270
Harvesting	pers_day	230	270
<b>Labor</b>	pers_day	216	270

## Annex-1.8: Activities supported by FOCUS

Project Summary CROPPING PATTERNS/ACTIVITY LEVELS (In Units)		April -- March													
		Without Project	With Project						Increments						
Unit		1 to 20	1	2	3	4	5	6 to 20	1	2	3	4	5	6 to 20	
<b>Cropping Pattern</b>															
<b>New Technology</b>															
Jhum cultivation	ha	-	-	7,300	15,100	16,320	16,320	16,320	-	7,300	15,100	16,320	16,320	16,320	
Wetland Rice	ha	-	-	-	1,000	3,000	5,400	5,400	-	-	1,000	3,000	5,400	5,400	
Onion	ha	-	-	-	200	600	1,080	1,080	-	-	200	600	1,080	1,080	
Garlic	ha	-	-	-	200	600	1,080	1,080	-	-	200	600	1,080	1,080	
Vegetables	ha	-	-	-	80	240	432	432	-	-	80	240	432	432	
Jhum Spices cultivation	ha	-	-	500	1,500	2,720	2,720	2,720	-	500	1,500	2,720	2,720	2,720	
Rice cum pisciculture	ha	-	-	10	30	60	60	60	-	10	30	60	60	60	
Ginger	ha	-	-	100	598	1,195	1,195	1,195	-	100	598	1,195	1,195	1,195	
Mizo Chilli	ha	-	-	100	601	1,202	1,202	1,202	-	100	601	1,202	1,202	1,202	
Turmeric	ha	-	-	100	601	1,202	1,202	1,202	-	100	601	1,202	1,202	1,202	
Chilli	ha	-	-	96	576	1,152	1,152	1,152	-	96	576	1,152	1,152	1,152	
Ginger	ha	-	-	96	576	1,152	1,152	1,152	-	96	576	1,152	1,152	1,152	
Turmeric	ha	-	-	108	648	1,296	1,296	1,296	-	108	648	1,296	1,296	1,296	
Banana	ha	-	-	250	500	680	680	680	-	250	500	680	680	680	
Pine Apple	ha	-	-	250	500	680	680	680	-	250	500	680	680	680	
Oranges, existing	ha	-	-	250	500	680	680	680	-	250	500	680	680	680	
Black Pepper	ha	-	-	250	500	680	680	680	-	250	500	680	680	680	
<b>Sub-total New Technology</b>		-	-	9,410	23,710	33,460	37,012	37,012	-	9,410	23,710	33,460	37,012	37,012	
<b>Total Cropped Area</b>		37,012	37,012	37,012	37,012	37,012	37,012	37,012	-	-	-	-	-	-	
<b>Activity Pattern</b>															
<b>New Technology</b>															
Village forestry	ha	-	-	-	100	1,300	2,700	2,700	-	-	100	1,300	2,700	2,700	
Pig breeding, small-scale	#	-	-	16	48	64	64	64	-	16	48	64	64	64	
Pig fattening	#	-	-	5,000	10,000	15,000	20,000	25,000	-	5,000	10,000	15,000	20,000	25,000	
Backyard Poultry	#	-	-	-	2,040	4,080	6,120	8,160	-	-	2,040	4,080	6,120	8,160	
Pond fishery	hh	-	-	68	204	272	272	272	-	68	204	272	272	272	
Turmeric processing plant	#	-	-	-	-	5	10	15	-	-	-	5	10	15	
farm to market road	km	-	-	-	50	100	150	200	-	-	50	100	150	200	

## 2.0 SUBPROJECT MODELS

### ANNEX-2.1: Food crops and fish production, economic budget

India														
IFAD Mizoram Final Design														
Crop-based households Subproject Model														
<b>ECONOMIC BUDGET (AGGREGATED)</b>														
(In INR '000)														
	Without Project	WP	Increments											
	1 to 20	20	1	2	3	4	5	6	7	8	9	10 to 11	15 to 16	20
<b>Main Production</b>														
Food crops production	807,798	1,044,925	-	33,073	103,206	183,937	237,127	237,127	237,127	237,127	237,127	237,127	237,127	237,127
Fish production	-	2,813	-	-	469	1,406	2,813	2,813	2,813	2,813	2,813	2,813	2,813	2,813
Proxy labour	4,374	-	-	-	-810	-2,430	-4,374	-4,374	-4,374	-4,374	-4,374	-4,374	-4,374	-4,374
<b>Sub-total Main Production</b>	<b>812,172</b>	<b>1,047,737</b>	<b>-</b>	<b>33,073</b>	<b>102,865</b>	<b>182,913</b>	<b>235,565</b>							
<b>Production Cost</b>														
<b>Investment</b>														
<b>Purchased Inputs</b>														
Seeds & Planting materials	111,237	135,644	-	4,899	14,034	24,364	24,407	24,407	24,407	24,407	24,407	24,407	24,407	24,407
Agri tools & materials	-	-	-	82	165	247	-	-	-	-	-	-	-	-
Fertilisers	2,754	4,590	-	-	340	1,020	1,836	1,836	1,836	1,836	1,836	1,836	1,836	1,836
Pond fishery	-	-	-	115	230	344	-	-	115	230	344	-	-	-
Fencing	-	51	-	9	26	51	51	51	51	51	51	51	51	51
<b>Sub-Total Purchased Inputs</b>	<b>113,991</b>	<b>140,285</b>	<b>-</b>	<b>5,104</b>	<b>14,794</b>	<b>26,027</b>	<b>26,294</b>	<b>26,294</b>	<b>26,409</b>	<b>26,524</b>	<b>26,638</b>	<b>26,294</b>	<b>26,294</b>	<b>26,294</b>
<b>Labor</b>														
Labour	25,194	26,127	-	-	173	518	933	933	933	933	933	933	933	933
<b>Sub-total Investment Costs</b>	<b>139,185</b>	<b>166,413</b>	<b>-</b>	<b>5,104</b>	<b>14,967</b>	<b>26,545</b>	<b>27,227</b>	<b>27,227</b>	<b>27,342</b>	<b>27,457</b>	<b>27,572</b>	<b>27,227</b>	<b>27,227</b>	<b>27,227</b>
<b>Operating</b>														
<b>Purchased Inputs</b>														
Seeds & Planting materials	8,226	6,870	-	44	-168	-636	-1,356	-1,356	-1,356	-1,356	-1,356	-1,356	-1,356	-1,356
Fertilisers	15	61	-	8	23	46	46	46	46	46	46	46	46	46
Pond fishery	-	969	-	174	516	1,020	988	969	969	969	969	969	969	969
<b>Sub-Total Purchased Inputs</b>	<b>8,241</b>	<b>7,900</b>	<b>-</b>	<b>226</b>	<b>371</b>	<b>430</b>	<b>-322</b>	<b>-341</b>						
<b>Labor</b>														
Labour	675,696	316,518	-	-177,805	-360,031	-373,369	-359,178	-359,178	-359,178	-359,178	-359,178	-359,178	-359,178	-359,178
<b>Sub-total Operating Costs</b>	<b>683,937</b>	<b>324,418</b>	<b>-</b>	<b>-177,579</b>	<b>-359,660</b>	<b>-372,939</b>	<b>-359,500</b>	<b>-359,519</b>						
<b>Sub-Total Production Cost</b>	<b>823,122</b>	<b>490,831</b>	<b>-</b>	<b>-172,474</b>	<b>-344,693</b>	<b>-346,394</b>	<b>-332,272</b>	<b>-332,292</b>	<b>-332,177</b>	<b>-332,062</b>	<b>-331,947</b>	<b>-332,292</b>	<b>-332,292</b>	<b>-332,292</b>
<b>OUTFLOWS</b>	<b>823,122</b>	<b>490,831</b>	<b>-</b>	<b>-172,474</b>	<b>-344,693</b>	<b>-346,394</b>	<b>-332,272</b>	<b>-332,292</b>	<b>-332,177</b>	<b>-332,062</b>	<b>-331,947</b>	<b>-332,292</b>	<b>-332,292</b>	<b>-332,292</b>
<b>Cash Flow</b>	<b>-10,950</b>	<b>556,907</b>	<b>-</b>	<b>205,548</b>	<b>447,558</b>	<b>529,307</b>	<b>567,838</b>	<b>567,857</b>	<b>567,742</b>	<b>567,627</b>	<b>567,512</b>	<b>567,857</b>	<b>567,857</b>	<b>567,857</b>

IRR = None, NPV = 3,901,472.21

## ANNEX-2.2: Food crops and fish production, financial budget

India													
IFAD Mizoram Final Design													
Crop-based households Subproject Model													
<b>FINANCIAL BUDGET (AGGREGATED)</b>													
(In INR '000)													
	WOP										Increments		
	20	1	2	3	4	5	6	7	8	9	10	15	20
<b>Main Production</b>													
Food crops production	984,066	-	39,096	123,212	221,037	286,989	286,989	286,989	286,989	286,989	286,989	286,989	286,989
Fish production	-	-	-	625	1,875	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750
Proxy labour	5,832	-	-	-1,080	-3,240	-5,832	-5,832	-5,832	-5,832	-5,832	-5,832	-5,832	-5,832
<b>Sub-total Main Production</b>	<b>989,898</b>	<b>-</b>	<b>39,096</b>	<b>122,757</b>	<b>219,672</b>	<b>284,907</b>							
<b>Production Cost</b>													
<b>Investment</b>													
<b>Purchased Inputs</b>													
Seeds & Planting materials	111,237	-	4,899	14,034	24,364	24,407	24,407	24,407	24,407	24,407	24,407	24,407	24,407
Agri tools & materials	-	-	97	194	291	-	-	-	-	-	-	-	-
Fertilisers	3,240	-	-	400	1,200	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160
Pond fishery	-	-	135	270	405	-	-	135	270	405	-	-	-
Fencing	-	-	10	30	60	60	60	60	60	60	60	60	60
<b>Sub-Total Purchased Inputs</b>	<b>114,477</b>	<b>-</b>	<b>5,141</b>	<b>14,928</b>	<b>26,320</b>	<b>26,627</b>	<b>26,627</b>	<b>26,762</b>	<b>26,897</b>	<b>27,032</b>	<b>26,627</b>	<b>26,627</b>	<b>26,627</b>
<b>Labor</b>													
Labour	31,493	-	-	216	648	1,166	1,166	1,166	1,166	1,166	1,166	1,166	1,166
<b>Sub-total Investment Costs</b>	<b>145,970</b>	<b>-</b>	<b>5,141</b>	<b>15,144</b>	<b>26,968</b>	<b>27,794</b>	<b>27,794</b>	<b>27,929</b>	<b>28,064</b>	<b>28,199</b>	<b>27,794</b>	<b>27,794</b>	<b>27,794</b>
<b>Operating</b>													
<b>Purchased Inputs</b>													
Seeds & Planting materials	8,226	-	44	-168	-636	-1,356	-1,356	-1,356	-1,356	-1,356	-1,356	-1,356	-1,356
Fertilisers	18	-	9	27	54	54	54	54	54	54	54	54	54
Pond fishery	-	-	205	608	1,200	1,163	1,140	1,140	1,140	1,140	1,140	1,140	1,140
<b>Sub-Total Purchased Inputs</b>	<b>8,244</b>	<b>-</b>	<b>258</b>	<b>467</b>	<b>618</b>	<b>-140</b>	<b>-162</b>						
<b>Labor</b>													
Labour	844,619	-	-222,256	-450,039	-466,711	-448,972	-448,972	-448,972	-448,972	-448,972	-448,972	-448,972	-448,972
<b>Sub-total Operating Costs</b>	<b>852,863</b>	<b>-</b>	<b>-221,998</b>	<b>-449,572</b>	<b>-466,093</b>	<b>-449,112</b>	<b>-449,134</b>						
<b>Sub-Total Production Cost</b>	<b>998,833</b>	<b>-</b>	<b>-216,857</b>	<b>-434,428</b>	<b>-439,125</b>	<b>-421,318</b>	<b>-421,341</b>	<b>-421,206</b>	<b>-421,071</b>	<b>-420,936</b>	<b>-421,341</b>	<b>-421,341</b>	<b>-421,341</b>
<b>OUTFLOWS</b>	<b>998,833</b>	<b>-</b>	<b>-216,857</b>	<b>-434,428</b>	<b>-439,125</b>	<b>-421,318</b>	<b>-421,341</b>	<b>-421,206</b>	<b>-421,071</b>	<b>-420,936</b>	<b>-421,341</b>	<b>-421,341</b>	<b>-421,341</b>
<b>Cash Flow Before Financing</b>	<b>-8,935</b>	<b>-</b>	<b>255,953</b>	<b>557,185</b>	<b>658,797</b>	<b>706,225</b>	<b>706,247</b>	<b>706,112</b>	<b>705,977</b>	<b>705,842</b>	<b>706,247</b>	<b>706,247</b>	<b>706,247</b>

IRR = None, NPV = 5,102,386.94

Cash-flow values of before financing have only been carried forward to Annex-A above

### ANNEX-2.3: Spices and orchard households subproject; economic budget

India  
 IFAD Mizoram Final Design  
 Spices & orchards households Subproject Model  
**ECONOMIC BUDGET (AGGREGATED)**  
 (In INR '000)

	WOP		WP		Increments									
	18 to 20	20	1	2	3	4	5	6	7	8	9	10	15	20
<b>Main Production</b>														
Food crops production	183,508	216,648	-	2,762	16,570	33,140	33,140	33,140	33,140	33,140	33,140	33,140	33,140	33,140
Orchards production	213,979	276,041	-	-42,534	-84,220	45,059	65,833	6,390	207,515	49,694	-25,564	86,509	-25,564	62,062
Value chain incremental prices	11,016	35,912	-	2,075	12,448	24,896	24,896	24,896	24,896	24,896	24,896	24,896	24,896	24,896
Proxy labour	2,754	-	-	-1,013	-2,025	-2,754	-2,754	-2,754	-2,754	-2,754	-2,754	-2,754	-2,754	-2,754
<b>Sub-total Main Production</b>	<b>411,257</b>	<b>528,601</b>	<b>-</b>	<b>-38,710</b>	<b>-57,227</b>	<b>100,341</b>	<b>121,115</b>	<b>61,672</b>	<b>262,797</b>	<b>104,976</b>	<b>29,718</b>	<b>141,791</b>	<b>29,718</b>	<b>117,344</b>
<b>Production Cost</b>														
<b>Investment</b>														
Seeds & Planting materials	67,162	67,162	-	13,400	13,400	-10,752	7,500	7,500	-27,240	12,000	12,000	-11,760	12,000	-
Agri tools & materials	8,277	-	-	-	-3,043	-6,086	-8,277	-8,277	-8,277	-8,277	-8,277	-8,277	-8,277	-8,277
Fertilisers	5,780	5,780	-	-	-	-	-	-	-	-	-	-	-	-
Fencing	3,066	3,066	-	-	-	-	-	-	-	-	-	-	-	-
<b>Sub-total Investment Costs</b>	<b>84,285</b>	<b>76,008</b>	<b>-</b>	<b>13,400</b>	<b>10,357</b>	<b>-16,838</b>	<b>-777</b>	<b>-777</b>	<b>-35,517</b>	<b>3,723</b>	<b>3,723</b>	<b>-20,037</b>	<b>3,723</b>	<b>-8,277</b>
<b>Operating</b>														
Labour	210,021	226,308	-	23,612	28,651	1,279	28,563	23,711	-16,340	34,802	30,104	-473	30,104	16,287
<b>Sub-Total Production Cost</b>	<b>294,306</b>	<b>302,315</b>	<b>-</b>	<b>37,012</b>	<b>39,008</b>	<b>-15,559</b>	<b>27,786</b>	<b>22,934</b>	<b>-51,857</b>	<b>38,525</b>	<b>33,827</b>	<b>-20,510</b>	<b>33,827</b>	<b>8,010</b>
<b>OUTFLOWS</b>	<b>294,306</b>	<b>302,315</b>	<b>-</b>	<b>37,012</b>	<b>39,008</b>	<b>-15,559</b>	<b>27,786</b>	<b>22,934</b>	<b>-51,857</b>	<b>38,525</b>	<b>33,827</b>	<b>-20,510</b>	<b>33,827</b>	<b>8,010</b>
<b>Cash Flow</b>	<b>116,951</b>	<b>226,285</b>	<b>-</b>	<b>-75,722</b>	<b>-96,235</b>	<b>115,900</b>	<b>93,329</b>	<b>38,738</b>	<b>314,654</b>	<b>66,451</b>	<b>-4,109</b>	<b>162,301</b>	<b>-4,109</b>	<b>109,334</b>

IRR = 52.8%, NPV = 534,577.06

## ANNEX-2.4: Spices and orchards households subproject, financial budget

India  
 IFAD Mizoram Final Design  
 Spices & orchards households Subproject Mod  
**FINANCIAL BUDGET (AGGREGATED)**  
 (In INR '000)

	WOP	WP	Increments										
	20	20	2	3	4	5	6	7	8	9	10	15	20
<b>Main Production</b>													
Food crops production	215,892	254,880	3,249	19,494	38,988	38,988	38,988	38,988	38,988	38,988	38,988	38,988	38,988
Orchards production	379,100	457,752	-69,175	-155,600	87,634	104,704	-25,568	328,476	73,042	-77,474	141,316	-77,474	78,652
Value chain incremental prices	12,960	42,250	2,441	14,645	29,290	29,290	29,290	29,290	29,290	29,290	29,290	29,290	29,290
Proxy labour	3,672	-	-1,350	-2,700	-3,672	-3,672	-3,672	-3,672	-3,672	-3,672	-3,672	-3,672	-3,672
<b>Sub-total Main Production</b>	<b>611,624</b>	<b>754,882</b>	<b>-64,835</b>	<b>-124,161</b>	<b>152,240</b>	<b>169,310</b>	<b>39,038</b>	<b>393,082</b>	<b>137,648</b>	<b>-12,868</b>	<b>205,922</b>	<b>-12,868</b>	<b>143,258</b>
<b>Production Cost</b>													
<b>Investment</b>													
Seeds & Planting materials	67,162	67,162	13,400	13,400	-10,752	7,500	7,500	-27,240	12,000	12,000	-11,760	12,000	-
Agri tools & materials	9,738	-	-	-3,580	-7,160	-9,738	-9,738	-9,738	-9,738	-9,738	-9,738	-9,738	-9,738
Fertilisers	6,800	6,800	-	-	-	-	-	-	-	-	-	-	-
Fencing	3,607	3,607	-	-	-	-	-	-	-	-	-	-	-
<b>Sub-total Investment Costs</b>	<b>87,306</b>	<b>77,569</b>	<b>13,400</b>	<b>9,820</b>	<b>-17,912</b>	<b>-2,238</b>	<b>-2,238</b>	<b>-36,978</b>	<b>2,262</b>	<b>2,262</b>	<b>-21,498</b>	<b>2,262</b>	<b>-9,738</b>
<b>Operating</b>													
Labour	262,526	282,885	29,516	35,813	1,598	35,704	29,638	-20,425	43,503	37,630	-591	37,630	20,358
<b>Sub-Total Production Cost</b>	<b>349,833</b>	<b>360,453</b>	<b>42,916</b>	<b>45,633</b>	<b>-16,314</b>	<b>33,467</b>	<b>27,401</b>	<b>-57,403</b>	<b>45,765</b>	<b>39,893</b>	<b>-22,089</b>	<b>39,893</b>	<b>10,621</b>
<b>OUTFLOWS</b>	<b>349,833</b>	<b>360,453</b>	<b>42,916</b>	<b>45,633</b>	<b>-16,314</b>	<b>33,467</b>	<b>27,401</b>	<b>-57,403</b>	<b>45,765</b>	<b>39,893</b>	<b>-22,089</b>	<b>39,893</b>	<b>10,621</b>
<b>Cash Flow Before Financing</b>	<b>261,791</b>	<b>394,428</b>	<b>-107,751</b>	<b>-169,794</b>	<b>168,553</b>	<b>135,843</b>	<b>11,637</b>	<b>450,484</b>	<b>91,883</b>	<b>-52,761</b>	<b>228,010</b>	<b>-52,761</b>	<b>132,637</b>

IRR = 144.5%, NPV = 764,328.94

*Cash-flow values of before financing have only been carried forward to Annex-A above*

## ANNEX-2.5: Village forestry subproject, economic budget

India																	
IFAD Mizoram Final Design																	
Village forestry benefits Subproject Model																	
April -- March																	
<b>ECONOMIC BUDGET (AGGREGATED)</b>																	
(In INR '000)																	
	With Project																
	3	4	5	6	7	8	9	10	11	12	13	14	15 to 16	17	18	19	20
<b>Main Production</b>																	
Village forestry produce	-	-	-	3,230	41,990	87,210	87,516	91,188	95,472	95,880	101,082	110,466	114,750	117,173	145,223	166,898	152,618
<b>Production Cost</b>																	
<b>Investment</b>																	
Village forestry	1,488	18,148	24,395	4,165	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Operating</b>																	
Labour	6,264	77,630	118,865	55,534	43,740	43,740	43,740	43,740	43,740	43,740	43,740	43,740	43,740	43,740	43,740	43,740	43,740
<b>Sub-Total Production Cost</b>	<u>7,752</u>	<u>95,778</u>	<u>143,260</u>	<u>59,699</u>	<u>43,740</u>												
<b>OUTFLOWS</b>	<u>7,752</u>	<u>95,778</u>	<u>143,260</u>	<u>59,699</u>	<u>43,740</u>												
<b>Cash Flow</b>	-7,752	-95,778	-143,260	-56,469	-1,750	43,470	43,776	47,448	51,732	52,140	57,342	66,726	71,010	73,433	101,483	123,158	108,878

IRR = 12.0%, NPV = 34,651.22

## ANNEX-2.6: Village forestry subproject, financial budget

India IFAD Mizoram Final Design Village forestry benefits Subproject N																			
FINANCIAL BUDGET (DETAILED) (In INR '000)	Without Project	Increments																	
	1 to 20	3	4	5	6	7	8	9	10	11	12	13	14	15 to 16	17	18	19	20	
<b>Main Production</b>																			
Fruits	-	-	-	-	3,750	48,750	101,250	101,250	101,250	101,250	101,250	101,250	101,250	101,250	101,250	101,250	101,250	101,250	101,250
Small timber	-	-	-	-	-	-	-	-	-	-	480	6,960	22,320	32,400	32,400	31,200	16,800	-	-
High value timber	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,850	37,050	76,950	76,950	-
Firewood	-	-	-	-	-	-	360	4,680	9,720	9,720	9,360	5,040	-	-	-	-	-	-	-
Pastures & fodder	-	-	-	-	50	650	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350
<b>Sub-total Main Production</b>	-	-	-	-	3,800	49,400	102,600	102,960	107,280	112,320	112,800	118,920	129,960	135,000	137,850	170,850	196,350	179,550	
<b>Production Cost</b>																			
<b>Investment</b>																			
Seedling	-	1,750	21,350	28,700	4,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Operating</b>																			
Site/jungle clearance	-	1,890	22,680	26,460	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Planting	-	1,890	23,058	30,996	5,292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Staking	-	-	270	3,645	9,045	10,935	10,935	10,935	10,935	10,935	10,935	10,935	10,935	10,935	10,935	10,935	10,935	10,935	10,935
Mulching	-	540	6,750	10,800	3,780	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harvesting	-	810	10,530	21,870	21,870	21,870	21,870	21,870	21,870	21,870	21,870	21,870	21,870	21,870	21,870	21,870	21,870	21,870	21,870
Watch and ward	-	2,700	33,750	54,810	29,430	21,870	21,870	21,870	21,870	21,870	21,870	21,870	21,870	21,870	21,870	21,870	21,870	21,870	21,870
<b>Sub-total Operating Costs</b>	-	7,830	97,038	148,581	69,417	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675
<b>Sub-Total Production Cost</b>	-	9,580	118,388	177,281	74,317	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675
<b>OUTFLOWS</b>	-	9,580	118,388	177,281	74,317	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675	54,675
<b>Cash Flow Before Financing</b>	-	-9,580	-118,388	-177,281	-70,517	-5,275	47,925	48,285	52,605	57,645	58,125	64,245	75,285	80,325	83,175	116,175	141,675	124,875	

Cash-flow values of before financing have only been carried forward to Annex-A above

## ANNEX-2.7: Livestock and fishery subproject, economic budget

India IFAD Mizoram Final Design Livestock & fishery households Subproj													
ECONOMIC BUDGET (AGGREGATED) (In INR '000)	Without	Increments											
	Project	1 to 20	2	3	4	5	6	7	8	9	10	15	20
<b>Main Production</b>													
Pig production	-	172,244	348,976	525,708	697,952	867,952	867,952	867,952	867,952	867,952	867,952	867,952	867,952
Poultry production	-	-	32,662	97,728	165,424	198,085	230,490	233,119	198,085	230,490	198,085	233,119	233,119
Fish production	-	-	31,875	95,625	127,500	127,500	127,500	127,500	127,500	127,500	127,500	127,500	127,500
Proxy labour	137,311	-21,003	-51,022	-80,287	-108,799	-137,311	-137,311	-137,311	-137,311	-137,311	-137,311	-137,311	-137,311
<b>Sub-total Main Production</b>	137,311	151,241	362,491	638,774	882,076	1,056,226	1,088,631	1,091,260	1,056,226	1,088,631	1,056,226	1,091,260	
<b>Production Cost</b>													
<b>Investment</b>													
Piggery	-	100,520	188,140	266,414	342,713	422,698	409,727	411,631	409,727	407,823	407,823	406,973	
Pond fishery	-	6,107	15,222	15,132	12,034	12,034	13,728	15,421	13,728	12,034	12,034	12,034	
<b>Sub-total Investment Costs</b>	-	106,627	203,361	281,546	354,747	434,732	423,455	427,052	423,455	419,857	419,857	419,007	
<b>Operating</b>													
<b>Purchased Inputs</b>													
Poultry	-	-	76,092	100,060	124,029	147,789	95,665	95,665	95,457	95,665	95,457	95,665	
<b>Labor</b>													
Labour	-	38,686	98,248	154,668	208,139	261,707	246,587	246,587	246,587	246,587	246,587	246,587	
<b>Sub-total Operating Costs</b>	-	38,686	174,340	254,729	332,168	409,496	342,252	342,252	342,044	342,252	342,044	342,252	
<b>Sub-Total Production Cost</b>	-	145,312	377,702	536,274	686,915	844,228	765,707	769,304	765,499	762,109	761,901	761,259	
<b>OUTFLOWS</b>	-	145,312	377,702	536,274	686,915	844,228	765,707	769,304	765,499	762,109	761,901	761,259	
<b>Cash Flow</b>	137,311	5,928	-15,211	102,500	195,161	211,998	322,924	321,956	290,727	326,522	294,325	330,001	

IRR = None, NPV = 1,615,069.16

## ANNEX-2.8: Livestock and fishery subproject, financial budget

India IFAD Mizoram Final Design Livestock & fishery households Subproject M													
FINANCIAL BUDGET (AGGREGATED) (In INR '000)	Without	Increments											
	Project	1 to 20	2	3	4	5	6	7	8	9	10	15	20
<b>Main Production</b>													
Pig production	-	202,640	410,560	618,480	821,120	1,021,120	1,021,120	1,021,120	1,021,120	1,021,120	1,021,120	1,021,120	1,021,120
Poultry production	-	-	38,425	114,974	194,616	233,041	271,165	274,258	233,041	271,165	233,041	274,258	274,258
Fish production	-	-	42,500	127,500	170,000	170,000	170,000	170,000	170,000	170,000	170,000	170,000	170,000
Proxy labour	183,082	-28,004	-68,029	-107,050	-145,066	-183,082	-183,082	-183,082	-183,082	-183,082	-183,082	-183,082	-183,082
<b>Sub-total Main Production</b>	183,082	174,636	423,456	753,905	1,040,670	1,241,080	1,279,203	1,282,296	1,241,080	1,279,203	1,241,080	1,282,296	
<b>Production Cost</b>													
<b>Investment</b>													
Piggery	-	118,259	221,341	313,428	403,192	497,292	482,032	484,272	482,032	479,792	479,792	478,792	
Pond fishery	-	7,184	17,908	17,802	14,158	14,158	16,150	18,142	16,150	14,158	14,158	14,158	
<b>Sub-total Investment Costs</b>	-	125,443	239,249	331,230	417,349	511,449	498,182	502,414	498,182	493,949	493,949	492,949	
<b>Operating</b>													
<b>Purchased Inputs</b>													
Poultry	-	-	89,520	117,718	145,916	173,869	112,547	112,547	112,302	112,547	112,302	112,547	
<b>Labor</b>													
Labour	-	48,357	122,810	193,335	260,174	327,134	308,234	308,234	308,234	308,234	308,234	308,234	
<b>Sub-total Operating Costs</b>	-	48,357	212,330	311,053	406,090	501,003	420,781	420,781	420,536	420,781	420,536	420,781	
<b>Sub-Total Production Cost</b>	-	173,800	451,579	642,283	823,440	1,012,453	918,963	923,195	918,718	914,730	914,486	913,730	
<b>OUTFLOWS</b>	-	173,800	451,579	642,283	823,440	1,012,453	918,963	923,195	918,718	914,730	914,486	913,730	
<b>Cash Flow Before Financing</b>	183,082	835	-28,123	111,621	217,231	228,627	360,241	359,101	322,362	364,473	326,594	368,566	

IRR = None, NPV = 3,027,125.58

Cash-flow values of before financing have only been carried forward to Annex-A above

## ANNEX-2.9: Processing units subproject; economic budget

India IFAD Mizoram Final Design Processing unit benefits Subproject Model <b>ECONOMIC BUDGET (AGGREGATED)</b> (In INR '000)	April -- March											
	Without Project	With Project						Increments				
	1 to 20	1 to 3	4	5	6	7 to 20	1 to 3	4	5	6	7 to 20	
<b>Main Production</b>												
Processing units	-	-	-	18,653	37,307	55,960	-	-	18,653	37,307	55,960	
<b>Production Cost</b>												
<b>Investment</b>												
Turmeric processing unit (1000 bags/day capacity)	-	-	4,144	4,144	4,144	-	-	4,144	4,144	4,144	-	
<b>Operating</b>												
Turmeric processing unit (1000 bags/day capacity)	-	-	1,970	14,722	27,475	38,258	-	1,970	14,722	27,475	38,258	
<b>Sub-Total Production Cost</b>	-	-	6,114	18,866	31,619	38,258	-	6,114	18,866	31,619	38,258	
<b>OUTFLOWS</b>	-	-	6,114	18,866	31,619	38,258	-	6,114	18,866	31,619	38,258	
<b>Cash Flow</b>	-	-	-6,114	-213	5,688	17,702	-	-6,114	-213	5,688	17,702	

IRR = 96.5%, NPV = 72,512.99

## ANNEX-2.10: Processing units subproject; financial budget

India IFAD Mizoram Final Design Processing unit benefits Subproject Model <b>FINANCIAL BUDGET (AGGREGATED)</b> (In INR '000)	April -- March											
	Without Project			With Project				Increments				
	1 to 20	1 to 3	4	5	6	7 to 20	1 to 3	4	5	6	7 to 20	
<b>Main Production</b>												
Processing units	-	-	-	21,945	43,890	65,835	-	-	21,945	43,890	65,835	
<b>Production Cost</b>												
<b>Investment</b>												
Turmeric processing unit (1000 bags/day capacity)	-	-	4,875	4,875	4,875	-	-	4,875	4,875	4,875	-	
<b>Operating</b>												
Turmeric processing unit (1000 bags/day capacity)	-	-	2,317	17,320	32,323	45,009	-	2,317	17,320	32,323	45,009	
<b>Sub-Total Production Cost</b>	-	-	7,192	22,195	37,198	45,009	-	7,192	22,195	37,198	45,009	
<b>OUTFLOWS</b>	-	-	7,192	22,195	37,198	45,009	-	7,192	22,195	37,198	45,009	
<b>Cash Flow Before Financing</b>	-	-	-7,192	-250	6,692	20,826	-	-7,192	-250	6,692	20,826	

IRR = 88.9%, NPV = 84,154.17

*Cash-flow values of before financing have only been carried forward to Annex-A above*

**ANNEX-2.11: Farm roads benefits subproject, economic budget**

India												
IFAD Mizoram Final Design												
Farm roads benefits Subproject Model												
April -- March												
ECONOMIC BUDGET (AGGREGATED) (In INR '000)	Without Project		With Project				Increments					
	1 to 20	1 to 2	3	4	5	6 to 20	1 to 2	3	4	5	6 to 20	
<b>Main Production</b>												
Infrastructure benefits	-	-	145	289	434	578	-	145	289	434	578	
<b>Cash Flow</b>	-	-	145	289	434	578	-	145	289	434	578	

IRR = None, NPV = 3,304.89

**ANNEX-2.12: Farm roads benefits subproject, financial budget**

India IFAD Mizoram Final Design Farm roads benefits Subproject Model <b>FINANCIAL BUDGET (AGGREGATED)</b> (In INR '000)	April -- March											
	Without Project	With Project					Increments					
	1 to 20	1 to 2	3	4	5	6 to 20	1 to 2	3	4	5	6 to 20	
<b>Main Production</b>												
Infrastructure benefits	-	-	170	340	510	680	-	170	340	510	680	
<b>Cash Flow Before Financing</b>	-	-	170	340	510	680	-	170	340	510	680	
IRR = None, NPV = 3,888.11												

*Cash-flow values of before financing have only been carried forward to Annex-A above*

## ANNEX-3: AREA, ACTIVITY AND HOUSEHOLD PRODUCTION MODELS

### Annex-3.1 Financial budget of 0.25 ha household model

	April -- March								
	Without Project		With Project			Increments			
	1 to 19	20	1	2 to 19	20	1	2 to 19	20	
<b>Main Production</b>									
Paddy	5,338	5,338	5,875	5,875	5,875	538	538	538	
Mizo chilli	255	255	280	280	280	25	25	25	
Maize, shelled	1,000	1,000	1,100	1,100	1,100	100	100	100	
Beans	800	800	875	875	875	75	75	75	
Sesame	90	90	100	100	100	10	10	10	
Turmeric	430	430	475	475	475	45	45	45	
<b>Sub-total Main Production</b>	<b>7,913</b>	<b>7,913</b>	<b>8,705</b>	<b>8,705</b>	<b>8,705</b>	<b>793</b>	<b>793</b>	<b>793</b>	
<b>Production Cost</b>									
<b>Investment</b>									
Paddy seed	525	525	525	525	525	-	-	-	
maize seed	203	203	203	203	203	-	-	-	
Sesame	47	47	47	47	47	-	-	-	
Beans	125	125	125	125	125	-	-	-	
Mizo chilli seed	-	-	25	25	25	25	25	25	
Turmeric planting materials	375	375	375	375	375	-	-	-	
<b>Sub-total Investment Costs</b>	<b>1,274</b>	<b>1,274</b>	<b>1,299</b>	<b>1,299</b>	<b>1,299</b>	<b>25</b>	<b>25</b>	<b>25</b>	
<b>Operating</b>									
Site/jungle clearance	1,553	1,553	-	-	-	-1,553	-1,553	-1,553	
Land Preparation	1,553	1,553	-	-	-	-1,553	-1,553	-1,553	
Sow ing	338	338	-	-	-	-338	-338	-338	
Weeding	1,215	1,215	-	-	-	-1,215	-1,215	-1,215	
Farm transportation	675	675	-	-	-	-675	-675	-675	
Harvesting	2,228	2,228	-	-	-	-2,228	-2,228	-2,228	
Hut construction	135	135	-	-	-	-135	-135	-135	
<b>Sub-total Operating Costs</b>	<b>7,695</b>	<b>7,695</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-7,695</b>	<b>-7,695</b>	<b>-7,695</b>	
<b>Sub-Total Production Cost</b>	<b>8,969</b>	<b>8,969</b>	<b>1,299</b>	<b>1,299</b>	<b>1,299</b>	<b>-7,670</b>	<b>-7,670</b>	<b>-7,670</b>	
<b>OUTFLOWS</b>	<b>8,969</b>	<b>8,969</b>	<b>1,299</b>	<b>1,299</b>	<b>1,299</b>	<b>-7,670</b>	<b>-7,670</b>	<b>-7,670</b>	
<b>Cash Flow Before Financing</b>	<b>-1,057</b>	<b>-1,057</b>	<b>7,406</b>	<b>7,406</b>	<b>7,406</b>	<b>8,463</b>	<b>8,463</b>	<b>8,463</b>	

IRR = None, NPV = 69,263.26

### Annex-3.2 Financial budget of 0.5 ha household model, Jhum spices

India IFAD Mizoram Final Design Jhum spices crop (0.5 ha household model) FINANCIAL BUDGET (AGGREGATED) (In INR)								
	WOP		April -- March			Increments		
	1 to 19	20	1	2 to 19	20	1	2 to 19	20
<b>Main Production</b>								
Food crops production	29,985	29,985	35,400	35,400	35,400	5,415	5,415	5,415
<b>Production Cost</b>								
<b>Investment</b>								
Seeds & Planting materials	9,328	9,328	9,328	9,328	9,328	-	-	-
Fencing	501	501	501	501	501	-	-	-
<b>Sub-total Investment Costs</b>	9,829	9,829	9,829	9,829	9,829	-	-	-
<b>Operating</b>								
Labour	25,650	25,650	26,776	26,776	26,776	1,126	1,126	1,126
<b>Sub-Total Production Cost</b>	35,479	35,479	36,605	36,605	36,605	1,126	1,126	1,126
<b>OUTFLOWS</b>	35,479	35,479	36,605	36,605	36,605	1,126	1,126	1,126
<b>Cash Flow Before Financing</b>	-5,494	-5,494	-1,205	-1,205	-1,205	4,289	4,289	4,289
IRR = None, NPV = 31,148.64								

### Annex-3.3 Paddy cum fish culture Financial budget of 0.25 ha household model

India  
 IFAD Mizoram Final Design  
 Paddy cum fish farming Crop  
**FINANCIAL BUDGET (DETAILED)**  
 (In INR)

	April -- March													
	WOP	With Project												
	20	1	2	3 to 4	5	6	7 to 9	10	11	12 to 14	15	16	17 to 19	20
<b>Main Production</b>														
Paddy	10,750	13,750	13,750	13,750	13,750	13,750	13,750	13,750	13,750	13,750	13,750	13,750	13,750	13,750
Fish	-	-	15,625	15,625	15,625	15,625	15,625	15,625	15,625	15,625	15,625	15,625	15,625	15,625
<b>Sub-total Main Production</b>	<b>10,750</b>	<b>13,750</b>	<b>29,375</b>											
<b>Production Cost</b>														
<b>Investment</b>														
Agri Tools	-	1,175	-	-	-	-	-	-	-	-	-	-	-	-
Azolla tank	-	1,000	-	-	-	-	-	-	-	-	-	-	-	-
Weeder	-	250	-	-	-	-	-	-	-	-	-	-	-	-
Making channels	-	3,375	-	-	-	3,375	-	-	3,375	-	-	3,375	-	-
Fencing cropped area	-	250	250	250	250	250	250	250	250	250	250	250	250	250
<b>Sub-total Investment Costs</b>	<b>-</b>	<b>6,050</b>	<b>250</b>	<b>250</b>	<b>250</b>	<b>3,625</b>	<b>250</b>	<b>250</b>	<b>3,625</b>	<b>250</b>	<b>250</b>	<b>3,625</b>	<b>250</b>	<b>250</b>
<b>Operating</b>														
<b>Purchased Inputs</b>														
Paddy seed	525	750	750	750	750	750	750	750	750	750	750	750	750	750
Fingerlings	-	875	875	875	875	875	875	875	875	875	875	875	875	875
PP organic	75	300	300	300	300	300	300	300	300	300	300	300	300	300
Lime treatment	-	750	563	375	375	375	375	375	375	375	375	375	375	375
Fish Feed	-	4,375	4,375	4,375	4,375	4,375	4,375	4,375	4,375	4,375	4,375	4,375	4,375	4,375
<b>Sub-Total Purchased Inputs</b>	<b>600</b>	<b>7,050</b>	<b>6,863</b>	<b>6,675</b>										
<b>Labor</b>														
<b>Sub-Total Hired Labor</b>	<b>11,678</b>	<b>15,255</b>	<b>11,880</b>											
<b>Sub-total Operating Costs</b>	<b>12,278</b>	<b>22,305</b>	<b>18,743</b>	<b>18,555</b>										
<b>Sub-Total Production Cost</b>	<b>12,278</b>	<b>28,355</b>	<b>18,993</b>	<b>18,805</b>	<b>18,805</b>	<b>22,180</b>	<b>18,805</b>	<b>18,805</b>	<b>22,180</b>	<b>18,805</b>	<b>18,805</b>	<b>22,180</b>	<b>18,805</b>	<b>18,805</b>
<b>OUTFLOWS</b>	<b>12,278</b>	<b>28,355</b>	<b>18,993</b>	<b>18,805</b>	<b>18,805</b>	<b>22,180</b>	<b>18,805</b>	<b>18,805</b>	<b>22,180</b>	<b>18,805</b>	<b>18,805</b>	<b>22,180</b>	<b>18,805</b>	<b>18,805</b>
<b>Cash Flow Before Financing</b>	<b>-1,528</b>	<b>-14,605</b>	<b>10,383</b>	<b>10,570</b>	<b>10,570</b>	<b>7,195</b>	<b>10,570</b>	<b>10,570</b>	<b>7,195</b>	<b>10,570</b>	<b>10,570</b>	<b>7,195</b>	<b>10,570</b>	<b>10,570</b>

IRR = 59.4%, NPV = 58,946.74

### Annex-3.4 Wetland paddy Financial budget of 0.25 ha household model

	April -- March							
	WOP		With Project			Increments		
	20	1	2 to 19	20	1	2 to 19	20	
<b>India</b>								
IFAD Mizoram Final Design								
Wetland rice crop								
<b>FINANCIAL BUDGET (DETAILED)</b>								
(In INR)								
<b>Main Production</b>								
Paddy	15,625	20,313	20,313	20,313	4,688	4,688	4,688	
Onion	-	1,400	1,400	1,400	1,400	1,400	1,400	
Garlic	188	250	250	250	63	63	63	
Vegetables	2,880	3,600	3,600	3,600	720	720	720	
Proxy labour under WOP	270	-	-	-	-270	-270	-270	
<b>Sub-total Main Production</b>	<b>18,963</b>	<b>25,563</b>	<b>25,563</b>	<b>25,563</b>	<b>6,600</b>	<b>6,600</b>	<b>6,600</b>	
<b>Production Cost</b>								
<b>Investment</b>								
<b>Purchased Inputs</b>								
Garlic bulblets	20	20	20	20	-	-	-	
Onion planting materials	-	5	5	5	5	5	5	
Vegetable Seeds	90	90	90	90	-	-	-	
Organic Manure	150	250	250	250	100	100	100	
<b>Sub-Total Purchased Inputs</b>	<b>260</b>	<b>365</b>	<b>365</b>	<b>365</b>	<b>105</b>	<b>105</b>	<b>105</b>	
<b>Sub-total Investment Costs</b>	<b>1,718</b>	<b>1,877</b>	<b>1,877</b>	<b>1,877</b>	<b>159</b>	<b>159</b>	<b>159</b>	
<b>Operating</b>								
<b>Purchased Inputs</b>								
Paddy seed	375	300	300	300	-75	-75	-75	
<b>Labor</b>								
<b>Sub-Total Hired Labor</b>	<b>11,637</b>	<b>13,527</b>	<b>13,527</b>	<b>13,527</b>	<b>1,890</b>	<b>1,890</b>	<b>1,890</b>	
<b>Sub-total Operating Costs</b>	<b>12,012</b>	<b>13,827</b>	<b>13,827</b>	<b>13,827</b>	<b>1,815</b>	<b>1,815</b>	<b>1,815</b>	
<b>Sub-Total Production Cost</b>	<b>13,730</b>	<b>15,704</b>	<b>15,704</b>	<b>15,704</b>	<b>1,974</b>	<b>1,974</b>	<b>1,974</b>	
<b>OUTFLOWS</b>								
<b>Cash Flow Before Financing</b>	<b>5,233</b>	<b>9,859</b>	<b>9,859</b>	<b>9,859</b>	<b>4,627</b>	<b>4,627</b>	<b>4,627</b>	

IRR = None, NPV = 32,999.91

### Annex-3.5 Landless household jhum cultivation Financial budget of 1 ha household model

	April -- March								
	Without Project			With Project			Increments		
	1 to 19	20	1	2 to 19	20	1	2 to 19	20	
<b>India</b>									
IFAD Mizoram Final Design									
Landless household crop									
<b>FINANCIAL BUDGET (DETAILED)</b>									
(In INR) /a									
<b>Main Production</b>									
Paddy	10,675	10,675	11,750	11,750	11,750	1,075	1,075	1,075	
Mizo chilli	2,010	2,010	3,920	3,920	3,920	1,910	1,910	1,910	
Maize, shelled	2,000	2,000	2,200	2,200	2,200	200	200	200	
Beans	1,600	1,600	1,750	1,750	1,750	150	150	150	
Sesame	1,180	1,180	2,050	2,050	2,050	870	870	870	
Ginger	6,250	6,250	13,125	13,125	13,125	6,875	6,875	6,875	
Turmeric	3,360	3,360	9,700	9,700	9,700	6,340	6,340	6,340	
<b>Sub-total Main Production</b>	<b>27,075</b>	<b>27,075</b>	<b>44,495</b>	<b>44,495</b>	<b>44,495</b>	<b>17,420</b>	<b>17,420</b>	<b>17,420</b>	
<b>Production Cost</b>									
<b>Investment</b>									
Paddy seed	1,050	1,050	1,050	1,050	1,050	-	-	-	
maize seed	405	405	405	405	405	-	-	-	
Sesame	188	188	281	281	281	94	94	94	
Beans	250	250	250	250	250	-	-	-	
Mizo chilli seed	125	125	350	350	350	225	225	225	
Ginger Planting materials	1,500	1,500	2,400	2,400	2,400	900	900	900	
Turmeric planting materials	3,750	3,750	6,750	6,750	6,750	3,000	3,000	3,000	
<b>Sub-total Investment Costs</b>	<b>7,268</b>	<b>7,268</b>	<b>11,486</b>	<b>11,486</b>	<b>11,486</b>	<b>4,219</b>	<b>4,219</b>	<b>4,219</b>	
<b>Operating</b>									
<b>Sub-total Operating Costs</b>	<b>31,590</b>	<b>31,590</b>	<b>18,495</b>	<b>18,495</b>	<b>18,495</b>	<b>-13,095</b>	<b>-13,095</b>	<b>-13,095</b>	
<b>Sub-Total Production Cost</b>	<b>38,858</b>	<b>38,858</b>	<b>29,981</b>	<b>29,981</b>	<b>29,981</b>	<b>-8,876</b>	<b>-8,876</b>	<b>-8,876</b>	
<b>OUTFLOWS</b>	<b>38,858</b>	<b>38,858</b>	<b>29,981</b>	<b>29,981</b>	<b>29,981</b>	<b>-8,876</b>	<b>-8,876</b>	<b>-8,876</b>	
<b>Cash Flow Before Financing</b>	<b>-11,783</b>	<b>-11,783</b>	<b>14,514</b>	<b>14,514</b>	<b>14,514</b>	<b>26,296</b>	<b>26,296</b>	<b>26,296</b>	

IRR = None, NPV = 203,423.41

### Annex-3.6 Pond fishery Financial budget of 0.5 ha household model

April -- March													
FINANCIAL BUDGET (DETAILED) (In INR) /a	Without Project	With Project											
	1 to 20	1	2 to 4	5	6	7 to 9	10	11	12 to 14	15	16	17 to 19	20
<b>Main Production</b>													
Fish	-	-	312,500	312,500	312,500	312,500	312,500	312,500	312,500	312,500	312,500	312,500	312,500
Proxy labour under WOP	6,750	-	-	-	-	-	-	-	-	-	-	-	-
<b>Sub-total Main Production</b>	<b>6,750</b>	<b>-</b>	<b>312,500</b>										
<b>Production Cost</b>													
<b>Investment</b>													
Making channels	-	12,150	-	-	12,150	-	-	12,150	-	-	12,150	-	-
Construction of embankment	-	12,150	-	-	-	-	-	-	-	-	-	-	-
Lime treatment	-	900	900	900	900	900	900	900	900	900	900	900	900
Fingerlings	-	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250
Manure	-	500	500	500	500	500	500	500	500	500	500	500	500
Fish Feed	-	19,375	19,375	19,375	19,375	19,375	19,375	19,375	19,375	19,375	19,375	19,375	19,375
Tools & Equipment	-	2,500	-	-	2,500	-	-	2,500	-	-	2,500	-	-
<b>Sub-total Investment Costs</b>	<b>-</b>	<b>52,825</b>	<b>26,025</b>	<b>26,025</b>	<b>40,675</b>	<b>26,025</b>	<b>26,025</b>	<b>40,675</b>	<b>26,025</b>	<b>26,025</b>	<b>40,675</b>	<b>26,025</b>	<b>26,025</b>
<b>Operating</b>													
Farm transportation	-	2,025	2,025	2,025	2,025	2,025	2,025	2,025	2,025	2,025	2,025	2,025	2,025
Harvesting	-	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750
Watch and ward	-	13,500	13,500	13,500	13,500	13,500	13,500	13,500	13,500	13,500	13,500	13,500	13,500
<b>Sub-total Operating Costs</b>	<b>-</b>	<b>22,275</b>											
<b>Sub-Total Production Cost</b>	<b>-</b>	<b>75,100</b>	<b>48,300</b>	<b>48,300</b>	<b>62,950</b>	<b>48,300</b>	<b>48,300</b>	<b>62,950</b>	<b>48,300</b>	<b>48,300</b>	<b>62,950</b>	<b>48,300</b>	<b>48,300</b>
<b>OUTFLOWS</b>	<b>-</b>	<b>75,100</b>	<b>48,300</b>	<b>48,300</b>	<b>62,950</b>	<b>48,300</b>	<b>48,300</b>	<b>62,950</b>	<b>48,300</b>	<b>48,300</b>	<b>62,950</b>	<b>48,300</b>	<b>48,300</b>
<b>Cash Flow Before Financing</b>	<b>6,750</b>	<b>-75,100</b>	<b>264,200</b>	<b>264,200</b>	<b>249,550</b>	<b>264,200</b>	<b>264,200</b>	<b>249,550</b>	<b>264,200</b>	<b>264,200</b>	<b>249,550</b>	<b>264,200</b>	<b>264,200</b>

IRR = 197.5%, NPV = 1,566,237.73  
 a 0.5 ha per household

### Annex-3.7 Orchard plantation Financial budget of 0.5 ha household model

India															
IFAD Mizoram Final Design															
Orchards plantation															
<b>FINANCIAL BUDGET (DETAILED)</b>															
(In INR)															
April -- March															
With Project															
	1	2	3	4	5	6	7	8	9	10	15	16	17	18 to 19	20
<b>Main Production</b>															
Pine Apple	-	9,900	38,250	-	9,900	38,250	-	9,900	38,250	-	38,250	-	9,900	38,250	38,250
Black pepper, dried	-	-	5,625	7,125	9,375	9,375	9,375	9,375	9,375	9,375	9,375	9,375	9,375	9,375	9,375
Banana	-	31,875	31,875	31,875	31,875	31,875	-	31,875	31,875	31,875	31,875	31,875	31,875	31,875	31,875
Citrus	8,100	9,450	10,800	12,150	12,150	12,150	12,150	12,150	12,150	12,150	12,150	12,150	12,150	12,150	12,150
Proxy labour under WOP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Sub-total Main Production</b>	8,100	51,225	86,550	51,150	63,300	91,650	21,525	63,300	91,650	53,400	91,650	53,400	63,300	91,650	91,650
<b>Production Cost</b>															
<b>Investment</b>															
Banana suckers	2,250	-	-	-	-	-	2,250	-	-	-	-	-	-	-	-
Pineapple suckers	3,750	-	-	3,750	-	-	3,750	-	-	3,750	-	3,750	-	-	-
Pepper cutting	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Agri Tools	361	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Agri Tools	450	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Agri Tools	979	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Manure	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938
PP chemicals	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313
<b>Sub-total Investment Costs</b>	9,740	1,250	1,250	5,000	1,250	1,250	7,250	1,250	1,250	5,000	1,250	5,000	1,250	1,250	1,250
<b>Operating</b>															
<b>Sub-total Operating Costs</b>	26,739	16,411	15,704	22,540	15,843	16,821	25,731	15,843	16,821	22,930	16,821	22,930	15,843	16,821	16,821
<b>Sub-Total Production Cost</b>	36,479	17,661	16,954	27,540	17,093	18,071	32,981	17,093	18,071	27,930	18,071	27,930	17,093	18,071	18,071
<b>OUTFLOWS</b>	36,479	17,661	16,954	27,540	17,093	18,071	32,981	17,093	18,071	27,930	18,071	27,930	17,093	18,071	18,071
<b>Cash Flow Before Financing</b>	-28,379	33,564	69,596	23,610	46,208	73,579	-11,456	46,208	73,579	25,470	73,579	25,470	46,208	73,579	73,579

IRR = 157.5%, NPV = 95,760.77

### Annex-3.8 Village forestry Financial budget of 1.0 ha model

India IFAD Mizoram Final Design Village forestry plantation <b>FINANCIAL BUDGET (DETAILED)</b> (In INR)	<hr/>										
	Without Project	Increments									
	1 to 20	1	2	3	4 to 6	7 to 9	10	11 to 14	15	16 to 19	20
<b>Main Production</b>											
Fruits	-	-	-	-	37,500	37,500	37,500	37,500	37,500	37,500	37,500
Small timber	-	-	-	-	-	-	4,800	12,000	12,000	-	-
High value timber	-	-	-	-	-	-	-	-	28,500	28,500	28,500
Firewood	-	-	-	-	-	3,600	3,600	-	-	-	-
Pastures & fodder	-	-	-	-	500	500	500	500	500	500	500
<b>Sub-total Main Production</b>	-	-	-	-	38,000	41,600	46,400	50,000	78,500	66,500	66,500
<b>Production Cost</b>											
<b>Investment</b>											
Seedling	-	17,500	3,500	-	-	-	-	-	-	-	-
<b>Operating</b>											
Site/jungle clearance	-	18,900	-	-	-	-	-	-	-	-	-
Planting	-	18,900	3,780	-	-	-	-	-	-	-	-
Staking	-	-	2,700	4,050	4,050	4,050	4,050	4,050	4,050	4,050	4,050
Mulching	-	5,400	2,700	-	-	-	-	-	-	-	-
Harvesting	-	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100
Watch and ward	-	27,000	13,500	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100
<b>Sub-total Operating Costs</b>	-	78,300	30,780	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250
<b>Sub-Total Production Cost</b>	-	95,800	34,280	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250
<b>OUTFLOWS</b>	-	95,800	34,280	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250
<b>Cash Flow Before Financing</b>	-	-95,800	-34,280	-20,250	17,750	21,350	26,150	29,750	58,250	46,250	46,250
<hr/>											
IRR = 11.2%, NPV = -9,660.96											

### Annex-3.9 Pig-breeding unit (6 piglets + one boar) financial budget

India													
IFAD Mizoram Final Design													
Pig-breeding, small-scale activity													
FINANCIAL BUDGET (DETAILED)													
(In INR)													
	April -- March												
	Without Project	With Project											
	1 to 20	1	2 to 4	5	6	7 to 9	10	11	12 to 14	15	16	17 to 19	20
<b>Main Production</b>													
Piglets	-	165,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000
Proxy labour under WOP	5,400	-	-	-	-	-	-	-	-	-	-	-	-
<b>Sub-total Main Production</b>	5,400	165,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000
<b>Production Cost</b>													
<b>Investment</b>													
Boar	-	20,000	-	-	20,000	-	-	20,000	-	-	20,000	-	-
Adult sow	-	120,000	-	-	120,000	-	-	120,000	-	-	120,000	-	-
Pig pen	-	140,000	-	-	-	-	-	-	-	-	-	-	-
Equipment	-	6,000	-	-	-	-	-	-	-	-	-	-	-
Insurance	-	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500
Medicines	-	4,900	4,900	4,900	4,900	4,900	4,900	4,900	4,900	4,900	4,900	4,900	4,900
Medicines and vaccines for piglets	-	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400
Piglets mortality	-	15,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
Pig feed	-	63,514	63,514	63,514	63,514	63,514	63,514	63,514	63,514	63,514	63,514	63,514	63,514
Local feed	-	28,870	28,870	28,870	28,870	28,870	28,870	28,870	28,870	28,870	28,870	28,870	28,870
<b>Sub-total Investment Costs</b>	-	416,184	145,184	145,184	285,184	145,184	145,184	285,184	145,184	145,184	285,184	145,184	145,184
<b>Operating</b>													
Shed construction	-	8,100	540	540	540	540	540	540	540	540	540	540	540
Watch and ward	-	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500
<b>Sub-total Operating Costs</b>	-	48,600	41,040	41,040	41,040	41,040	41,040	41,040	41,040	41,040	41,040	41,040	41,040
<b>Sub-Total Production Cost</b>	-	464,784	186,224	186,224	326,224	186,224	186,224	326,224	186,224	186,224	326,224	186,224	186,224
<b>OUTFLOWS</b>	-	464,784	186,224	186,224	326,224	186,224	186,224	326,224	186,224	186,224	326,224	186,224	186,224
<b>Cash Flow Before Financing</b>	5,400	-299,784	143,776	143,776	3,776	143,776	143,776	3,776	143,776	143,776	3,776	143,776	143,776

IRR = 23.6%, NPV = 340,496.34

### Annex-3.10 Pig-fattening unit (one piglet) financial budget household model

India IFAD Mizoram Final Design Pig fattening activity <b>FINANCIAL BUDGET (DETAILED)</b> (In INR)		April -- March										
		Without Project	With Project					Increments				
		1 to 20	1	2 to 17	18	19	20	1	2 to 17	18	19	20
<b>Main Production</b>												
Fattened pig, 80 kg in Wt	-	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	
Proxy labour under WOP	5,400	-	-	-	-	-	-5,400	-5,400	-5,400	-5,400	-5,400	
<b>Sub-total Main Production</b>	5,400	40,000	40,000	40,000	40,000	40,000	34,600	34,600	34,600	34,600	34,600	
<b>Production Cost</b>												
<b>Investment</b>												
Piglets, appx 8 kg in w t	-	5,000	5,000	5,000	5,000	-	5,000	5,000	5,000	5,000	-	
Pig Stay	-	3,500	-	-	-	-	3,500	-	-	-	-	
Insurance	-	500	500	500	500	500	500	500	500	500	500	
Medicines for piglets	-	200	200	200	-	-	200	200	200	-	-	
Pig feed	-	9,020	9,020	9,020	9,020	9,020	9,020	9,020	9,020	9,020	9,020	
Local feed	-	4,100	4,100	4,100	4,100	4,100	4,100	4,100	4,100	4,100	4,100	
<b>Sub-total Investment Costs</b>	-	22,320	18,820	18,820	18,620	13,620	22,320	18,820	18,820	18,620	13,620	
<b>Operating</b>												
Shed construction	-	4,320	540	540	540	540	4,320	540	540	540	540	
Watch and ward	-	4,590	4,590	4,590	4,590	4,590	4,590	4,590	4,590	4,590	4,590	
<b>Sub-total Operating Costs</b>	-	8,910	5,130	5,130	5,130	5,130	8,910	5,130	5,130	5,130	5,130	
<b>Sub-Total Production Cost</b>	-	31,230	23,950	23,950	23,750	18,750	31,230	23,950	23,950	23,750	18,750	
<b>OUTFLOWS</b>	-	31,230	23,950	23,950	23,750	18,750	31,230	23,950	23,950	23,750	18,750	
<b>Cash Flow Before Financing</b>	5,400	8,770	16,050	16,050	16,250	21,250	3,370	10,650	10,650	10,850	15,850	

IRR = 51.8%, NPV = 54,778.23

### Annex-3.11 Backyard poultry household model (20 pullet+ 4 cockerels) financial budget household model

India IFAD Mizoram Final Design Backyard poultry activity <b>FINANCIAL BUDGET (DETAILED)</b> (In INR)																				
	Without Project	Increments																		
	1 to 20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18 to 19	20
<b>Main Production</b>																				
Eggs	-	6,336	21,024	23,040	6,336	21,024	23,040	6,336	21,024	23,040	6,336	21,024	23,040	6,336	21,024	23,040	6,336	21,024	23,040	23,040
Culled bird, hen or cockeral	-	12,500	16,500	16,000	12,500	16,500	16,000	12,500	16,500	16,000	12,500	16,500	16,000	12,500	16,500	16,000	12,500	16,500	16,000	16,000
Proxy labour under WOP	5,400	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400
<b>Sub-total Main Production</b>	5,400	13,436	32,124	33,640	13,436	32,124	33,640	13,436	32,124	33,640	13,436	32,124	33,640	13,436	32,124	33,640	13,436	32,124	33,640	33,640
<b>Production Cost</b>																				
<b>Purchased Inputs</b>																				
Vet services	-	260	330	330	260	330	330	260	330	330	260	330	330	260	330	330	260	330	330	330
Pullet supplied	-	2,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pullets inducted	-	3,750	5,000	5,000	3,750	5,000	5,000	3,750	5,000	5,000	3,750	5,000	5,000	3,750	5,000	5,000	3,750	5,000	5,000	5,000
Cockerel	-	1,200	-	-	1,200	-	-	1,200	-	-	1,200	-	-	1,200	-	-	1,200	-	-	-
Poultry shed	-	19,680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment	-	8,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Insurance	-	580	580	580	580	580	580	580	580	580	580	580	580	580	580	580	580	580	580	580
Kitchen wastes	-	988	988	988	988	988	988	988	988	988	988	988	988	988	988	988	988	988	988	988
Poultry concentrate	-	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925
Mortality	-	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
<b>Sub-Total Purchased Inputs</b>	-	43,883	13,823	13,823	13,703	13,823	13,823	13,703	13,823	13,823	13,703	13,823	13,823	13,703	13,823	13,823	13,703	13,823	13,823	13,823
<b>Labor</b>																				
Watch and ward	-	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250
<b>Sub-Total Production Cost</b>	-	64,133	34,073	34,073	33,953	34,073	34,073	33,953	34,073	34,073	33,953	34,073	34,073	33,953	34,073	34,073	33,953	34,073	34,073	34,073
<b>OUTFLOWS</b>	-	64,133	34,073	34,073	33,953	34,073	34,073	33,953	34,073	34,073	33,953	34,073	34,073	33,953	34,073	34,073	33,953	34,073	34,073	34,073
<b>Cash Flow Before Financing</b>	5,400	-50,697	-1,949	-433	-20,517	-1,949	-433	-20,517	-1,949	-433	-20,517	-1,949	-433	-20,517	-1,949	-433	-20,517	-1,949	-433	-433

IRR = -14.9%, NPV = -114,814.82

### Annex-3.12 Value chain spices financial budget (0.5 ha) household model

India IFAD Mizoram Final Design Value chain spices crop <b>FINANCIAL BUDGET (DETAILED)</b> (In INR)	<u>April -- March</u>		
	<u>Without</u>	<u>With</u>	
	<u>Project</u>	<u>Project</u>	<u>Increments</u>
	<u>1 to 20</u>	<u>1 to 20</u>	<u>1 to 20</u>
<b>Main Production</b>			
Mizo Chilli, incremental price	-	2,040	2,040
Ginger, incremental price	1,800	2,100	300
High grade Turmeric, incremental price	-	1,728	1,728
<b>Sub-total Main Production</b>	<u>1,800</u>	<u>5,868</u>	<u>4,068</u>
<b>Cash Flow Before Financing</b>	<u>1,800</u>	<u>5,868</u>	<u>4,068</u>
IRR = None, NPV = 30,385.70			

### Annex-3.13 Agro-processing unit financial budget (1 unit)

India IFAD Mizoram Final Design Agro-processing unit activity <b>FINANCIAL BUDGET (DETAILED)</b> (In INR)	April -- March						
	Without Project	With Project			Increments		
	1 to 20	1	2 to 19	20	1	2 to 19	20
<b>Main Production</b>							
Turmeric powder bag	-	-	4,389,000	4,389,000	-	4,389,000	4,389,000
<b>Production Cost</b>							
<b>Investment</b>							
Grinding machine	-	300,000	-	-	300,000	-	-
Slicing machine	-	150,000	-	-	150,000	-	-
Factory building	-	500,000	-	-	500,000	-	-
Other Tools	-	25,000	-	-	25,000	-	-
<b>Sub-total Investment Costs</b>	-	975,000	-	-	975,000	-	-
<b>Operating</b>							
Purchase of fresh turmeric	-	-	1,280,000	1,280,000	-	1,280,000	1,280,000
Packaging Bags (100 gm)	-	150,000	332,500	332,500	150,000	332,500	332,500
Other operating costs	-	125,000	250,000	250,000	125,000	250,000	250,000
Operation & maintenance	-	84,375	168,750	168,750	84,375	168,750	168,750
Management costs	-	104,100	208,200	208,200	104,100	208,200	208,200
Marketing costs	-	-	208,200	208,200	-	208,200	208,200
Factory operating labour	-	-	552,960	552,960	-	552,960	552,960
<b>Sub-total Operating Costs</b>	-	463,475	3,000,610	3,000,610	463,475	3,000,610	3,000,610
<b>Sub-Total Production Cost</b>	-	1,438,475	3,000,610	3,000,610	1,438,475	3,000,610	3,000,610
<b>OUTFLOWS</b>	-	1,438,475	3,000,610	3,000,610	1,438,475	3,000,610	3,000,610
<b>Cash Flow Before Financing</b>	-	-1,438,475	1,388,390	1,388,390	-1,438,475	1,388,390	1,388,390

IRR = 31.2%, NPV = 5,478,461.69

### Annex-3.14 Farm to market link road financial budget (one KM)

India IFAD Mizoram Final Design Farm road benefits activity <b>FINANCIAL BUDGET (DETAILED)</b> (In INR) /a	<u>April -- March</u>		
	<u>Without</u>	<u>With</u>	
	<u>Project</u>	<u>Project</u>	<u>Increments</u>
	<u>1 to 20</u>	<u>1 to 20</u>	<u>1 to 20</u>
<b>Main Production</b>			
transport cost reduction	-	3,400	3,400
<b>Cash Flow Before Financing</b>	-	3,400	3,400
<hr/>			
IRR = None, NPV = 25,396.11			
\a one km of gravelled road			

## Annex-4 PRODUCTION MODELS

### Annex-4.1 Jhum plot mixed cultivation (one ha)

Financial budget				Yield and inputs			
India IFAD Mizoram Final Design Jhum cultivation crop <b>FINANCIAL BUDGET</b> (In INR Per ha) /a				India IFAD Mizoram Final Design Jhum cultivation crop <b>YIELDS AND INPUTS</b> (Per ha) /a			
	<b>April -- March</b>				<b>April -- March</b>		
	<b>Existing</b>	<b>New</b>			<b>Existing</b>	<b>New</b>	
	<b>Technology Increments</b>				<b>Technology Increments</b>		
	<b>1 to 20</b>	<b>1 to 20</b>	<b>1 to 20</b>		<b>Unit</b>	<b>1 to 20</b>	<b>1 to 20</b>
<b>Revenue</b>				<b>Main Production</b>			
Paddy	21,350	23,500	2,150	Paddy	ton	0.9	0.9
Maize, shelled	4,000	4,400	400	Maize, shelled	ton	0.2	0.2
Sesame	360	400	40	Sesame	ton	0.0	0.0
Mizo chilli	1,020	1,120	100	Mizo chilli	ton	0.1	0.1
Turmeric	1,720	1,900	180	Turmeric	ton	0.2	0.2
Beans	3,200	3,500	300	Beans	ton	0.1	0.1
<b>Sub-total Revenue</b>	<b>31,650</b>	<b>34,820</b>	<b>3,170</b>	<b>Investment</b>			
<b>Input costs</b>				Paddy seed	Kg	70.0	70.0
Paddy seed	2,100	2,100	-	maize seed	Kg	9.0	9.0
maize seed	810	810	-	Sesame	Kg	0.6	0.6
Sesame	188	188	-	Beans	Kg	2.5	2.5
Beans	500	500	-	Turmeric planting materials	Kg	125.0	125.0
Turmeric planting materials	1,500	1,500	-	Mizo chilli seed	Kg	-	0.1
Mizo chilli seed	-	100	100	<b>Operating</b>			
<b>Sub-total Input costs</b>	<b>5,098</b>	<b>5,198</b>	<b>100</b>	Site/jungle clearance	pers_day	23.0	-
<b>Income (Before Labor Costs)</b>	<b>26,553</b>	<b>29,623</b>	<b>3,070</b>	Hut construction	pers_day	2.0	-
<b>Labor costs</b>				Land Preparation	pers_day	23.0	-
Site/jungle clearance	6,210	-	-6,210	Sow ing	pers_day	5.0	-
Hut construction	540	-	-540	Weeding	pers_day	18.0	-
Land Preparation	6,210	-	-6,210	Harvesting	pers_day	33.0	-
Sow ing	1,350	-	-1,350	Farm transportation	pers_day	10.0	-
Weeding	4,860	-	-4,860				
Harvesting	8,910	-	-8,910				
Farm transportation	2,700	-	-2,700				
<b>Sub-total Labor costs</b>	<b>30,780</b>	<b>-</b>	<b>-30,780</b>				
<b>Income (After Labor Costs)</b>	<b>-4,228</b>	<b>29,623</b>	<b>33,850</b>				
\a One ha: 70% paddy, 10% maize & beans each, 5% chilli & turmeric each sesame 2.5				\a One ha: 70% paddy, 10% maize & beans each, 5% chilli & turmeric each sesame 2.5			



### Annex-4.3 Wetland rice cultivation (one ha)

Financial budget				Yield and inputs				
India IFAD Mizoram Final Design Wetland Rice crop <b>FINANCIAL BUDGET</b> (In INR Per ha) /a				Wetland Rice crop <b>YIELDS AND INPUTS</b> (Per ha) /a				
	<b>April -- March</b> Existing      New Technology    Technology 1 to 20      1 to 20      1 to 20				<b>April -- March</b> Existing      New Technology    Technology 1 to 20      1 to 20      1 to 20			
				Unit				
Revenue	62,500	81,250	18,750	ton	2.5	3.3	0.8	
<b>Input costs</b>				<b>Operating</b>				
Paddy seed	1,500	1,200	-300	<b>Inputs</b>				
<b>Income (Before Labor Costs)</b>	61,000	80,050	19,050	Paddy seed	Kg	50.0	40.0	-10.0
<b>Labor costs</b>				<b>Labor</b>				
Land Preparation	9,450	9,450	-	Land Preparation	pers_day	35.0	35.0	-
Planting	4,050	4,050	-	Planting	pers_day	15.0	15.0	-
Weeding	2,700	5,400	2,700	Weeding	pers_day	10.0	20.0	10.0
spraying	2,160	2,160	-	spraying	pers_day	8.0	8.0	-
Irrigating	1,350	1,350	-	Irrigating	pers_day	5.0	5.0	-
Harvesting	13,500	13,500	-	Harvesting	pers_day	50.0	50.0	-
Farm transportation	1,350	1,350	-	Farm transportation	pers_day	5.0	5.0	-
Watch and ward	6,750	6,750	-	Watch and ward	pers_day	25.0	25.0	-
<b>Sub-total Labor costs</b>	41,310	44,010	2,700					
<b>Income (After Labor Costs)</b>	19,690	36,040	16,350					

### Annex-4.4 Rice cum fish cultivation (one ha model)

Financial budget										
India										
IFAD Mizoram Final Design										
Rice cum pisciculture crop										
April -- March										
<b>FINANCIAL BUDGET</b>										
(In INR Per ha) /a										
	Existing Technology	New Technology								
	1 to 20	1	2	3 to 5	6	7 to 10	11	12 to 15	16	17 to 20
<b>Revenue</b>										
Paddy	43,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000
Fish	-	-	62,500	62,500	62,500	62,500	62,500	62,500	62,500	62,500
<b>Sub-total Revenue</b>	43,000	55,000	117,500	117,500	117,500	117,500	117,500	117,500	117,500	117,500
<b>Input costs</b>										
<b>Investment costs</b>										
Making channels	-	13,500	-	-	13,500	-	13,500	-	13,500	-
Agri Tools	-	4,700	-	-	-	-	-	-	-	-
Fencing cropped area	-	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Azolla tank	-	4,000	-	-	-	-	-	-	-	-
Weeder	-	1,000	-	-	-	-	-	-	-	-
<b>Sub-total Investment Costs</b>	-	24,200	1,000	1,000	14,500	1,000	14,500	1,000	14,500	1,000
<b>Operating Costs</b>										
Lime treatment	-	3,000	2,250	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Fingerlings	-	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500
Fish Feed	-	17,500	17,500	17,500	17,500	17,500	17,500	17,500	17,500	17,500
PP organic	300	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Paddy seed	2,100	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
<b>Sub-total Operating Costs</b>	2,400	28,200	27,450	26,700	26,700	26,700	26,700	26,700	26,700	26,700
<b>Sub-total Input costs</b>	2,400	52,400	28,450	27,700	41,200	27,700	41,200	27,700	41,200	27,700
<b>Income (Before Labor Costs)</b>	40,600	2,600	89,050	89,800	76,300	89,800	76,300	89,800	76,300	89,800
<b>Labor costs</b>										
<b>Sub-total Labor costs</b>	46,710	61,020	47,520	47,520	47,520	47,520	47,520	47,520	47,520	47,520
<b>Income (After Labor Costs)</b>	-6,110	-58,420	41,530	42,280	28,780	42,280	28,780	42,280	28,780	42,280

1/a one ha area; 15% area under pisciculture

## Annex-4.4 Rice cum fish cultivation (one ha model) quantities

Rice cum pisciculture crop		April -- March									
YIELDS AND INPUTS (Per ha) /a		Existing Technology		New Technology							
Unit		1 to 20	1	2	3 to 5	6	7 to 10	11	12 to 15	16	17 to 20
<b>Main Production</b>											
Paddy	ton	1.7	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
Fish	kg	-	-	250.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0
<b>Investment</b>											
Making channels	pers_day	-	50.0	-	-	50.0	-	50.0	-	50.0	-
Agri Tools	set	-	1.0	-	-	-	-	-	-	-	-
Fencing cropped area	lumpsum	-	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
Azolla tank	set	-	1.0	-	-	-	-	-	-	-	-
Weeder	set	-	1.0	-	-	-	-	-	-	-	-
<b>Operating Inputs</b>											
Lime treatment	kg	-	100.0	75.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
Fingerlings	each	-	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
Fish Feed	kg	-	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0
PP organic	litre	1.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Paddy seed	Kg	70.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>Labor</b>											
Pond treatment	pers_day	10.0	50.0	-	-	-	-	-	-	-	-
Land Preparation	pers_day	23.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
Sow ing	pers_day	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Weeding	pers_day	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
Fish feeding	pers_day	-	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Harvesting	pers_day	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0
Fish harvesting	pers_day	-	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Farm transportation	pers_day	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Watch and ward	pers_day	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0

### Annex-4.5 Ginger crop (one ha)

Financial budget				Yield and inputs			
<b>Ginger Crop</b> <b>FINANCIAL BUDGET</b> (In INR Per ha) /a				<b>Ginger Crop</b> <b>YIELDS AND INPUTS</b> (Per ha) /a			
	<b>April -- March</b> Existing      New Technology      Technology 1 to 20      1 to 20      Increments 1 to 20      1 to 20      1 to 20				<b>April -- March</b> Existing      New Technology      Technology 1 to 20      1 to 20      Increments 1 to 20      1 to 20      1 to 20		
Revenue	75,000	87,500	12,500				
<b>Input costs</b>				<b>Unit</b>			
Ginger Planting materials	24,000	24,000	-	ton	3.0	3.5	0.5
<b>Income (Before Labor Costs)</b>	51,000	63,500	12,500	<b>Investment</b>			
<b>Labor costs</b>				Ginger Planting materials	Kg	1,000.0	1,000.0
Planting	5,400	5,400	-	<b>Operating</b>			
Land Preparation	21,600	21,600	-	Planting	pers_day	20.0	20.0
Interculture	8,100	8,100	-	Land Preparation	pers_day	80.0	80.0
Harvesting	5,400	6,750	1,350	Interculture	pers_day	30.0	30.0
Farm transportation	5,400	5,400	-	Harvesting	pers_day	20.0	25.0
Watch and ward	5,400	5,400	-	Farm transportation	pers_day	20.0	20.0
<b>Sub-total Labor costs</b>	51,300	52,650	1,350	Watch and ward	pers_day	20.0	20.0
<b>Income (After Labor Costs)</b>	-300	10,850	11,150				

### Annex-4.6 Chilli crop (one ha)

Financial budget				Yield and inputs				
Mizo Chilli Crop <b>FINANCIAL BUDGET</b> (In INR Per ha) /a				IFAD Mizoram Final Design Mizo Chilli Crop <b>YIELDS AND INPUTS</b> (Per ha) /a				
	<u>April -- March</u> Existing      New <u>Technology    Technology</u> <u>1 to 20      1 to 20      1 to 20</u>			<u>April -- March</u> Existing      New <u>Technology    Technology</u> <u>1 to 20      1 to 20      1 to 20</u>				
				Unit				
Revenue	70,000	85,000	15,000	Yields	ton	3.5	4.3	0.8
<b>Input costs</b>				<b>Investment</b>				
Mizo chilli seed	2,000	2,000	-	Mizo chilli seed	Kg	1.0	1.0	-
Fencing cropped area	3,000	3,000	-	Fencing cropped area	lumpsum	3,000.0	3,000.0	-
<b>Sub-total Input costs</b>	5,000	5,000	-	<b>Operating</b>				
<b>Income (Before Labor Costs)</b>	65,000	80,000	15,000	Planting	pers_day	20.0	20.0	-
<b>Labor costs</b>				Land Preparation	pers_day	80.0	80.0	-
Planting	5,400	5,400	-	Manuring	pers_day	10.0	10.0	-
Land Preparation	21,600	21,600	-	Interculture	pers_day	30.0	30.0	-
Manuring	2,700	2,700	-	Harvesting	pers_day	20.0	25.0	5.0
Interculture	8,100	8,100	-	Farm transportation	pers_day	20.0	20.0	-
Harvesting	5,400	6,750	1,350	Watch and ward	pers_day	20.0	20.0	-
Farm transportation	5,400	5,400	-					
Watch and ward	5,400	5,400	-					
<b>Sub-total Labor costs</b>	54,000	55,350	1,350					
<b>Income (After Labor Costs)</b>	11,000	24,650	13,650					

### Annex-4.7 Garlic crop (one ha)

Financial budget				Yield and inputs				
Garlic Crop				Garlic Crop				
<b>FINANCIAL BUDGET</b>				<b>YIELDS AND INPUTS</b>				
(In INR Per ha) /a				(Per ha) /a				
	April -- March				April -- March			
	Existing	New			Existing	New		
	Technology	Technology	Increments		Technology	Technology	Increments	
	1 to 20	1 to 20	1 to 20		1 to 20	1 to 20	1 to 20	
Revenue	3,750	5,000	1,250	Yields	ton	0.2	0.2	0.1
<b>Input costs</b>				<b>Investment</b>				
Garlic bulblets	400	400	-	Garlic bulblets	Kg	20.0	20.0	-
<b>Income (Before Labor Costs)</b>	3,350	4,600	1,250	<b>Operating</b>				
<b>Labor costs</b>				Land Preparation	pers_day	30.0	30.0	-
Land Preparation	8,100	8,100	-	Planting	pers_day	15.0	15.0	-
Planting	4,050	4,050	-	Interculture	pers_day	20.0	20.0	-
Interculture	5,400	5,400	-	Harvesting	pers_day	5.0	5.0	-
Harvesting	1,350	1,350	-	Farm transportation	pers_day	2.0	2.0	-
Farm transportation	540	540	-	Watch and ward	pers_day	25.0	30.0	5.0
Watch and ward	6,750	8,100	1,350					
<b>Sub-total Labor costs</b>	26,190	27,540	1,350					
<b>Income (After Labor Costs)</b>	-22,840	-22,940	-100					

### Annex-4.8 Turmeric crop (one ha)

Financial budget				Yield and inputs				
Turmeric Crop <b>FINANCIAL BUDGET</b> (In INR Per ha)				Turmeric Crop <b>YIELDS AND INPUTS</b> (Per ha)				
	April -- March			April -- March				
	Existing	New			Existing	New		
	Technology	Technology	Increments	Unit	Technology	Technology	Increments	
	1 to 20	1 to 20	1 to 20		1 to 20	1 to 20	1 to 20	
Revenue	35,000	40,000	5,000	ton	3.5	4.0	0.5	
<b>Input costs</b>				<b>Investment</b>				
Turmeric planting materials	30,000	30,000	-	Turmeric planting materials	Kg	2,500.0	2,500.0	-
<b>Income (Before Labor Costs)</b>	5,000	10,000	5,000	<b>Operating</b>				
<b>Labor costs</b>				Planting	pers_day	20.0	20.0	-
Planting	5,400	5,400	-	Land Preparation	pers_day	80.0	80.0	-
Land Preparation	21,600	21,600	-	Interculture	pers_day	25.0	30.0	5.0
Interculture	6,750	8,100	1,350	Harvesting	pers_day	20.0	25.0	5.0
Harvesting	5,400	6,750	1,350	Farm transportation	pers_day	15.0	20.0	5.0
Farm transportation	4,050	5,400	1,350	Watch and ward	pers_day	20.0	20.0	-
Watch and ward	5,400	5,400	-					
<b>Sub-total Labor costs</b>	48,600	52,650	4,050					
<b>Income (After Labor Costs)</b>	-43,600	-42,650	950					

### Annex-4.9 Onion crop (one ha)

Financial budget				Yield and inputs			
Onion Crop <b>FINANCIAL BUDGET</b> (In INR Per ha)				Onion Crop <b>YIELDS AND INPUTS</b> (Per ha)			
	April -- March Existing      New Technology    Technology    Increments 1 to 20      1 to 20      1 to 20				April -- March Existing      New Technology    Technology    Increments 1 to 20      1 to 20      1 to 20		
<b>Revenue</b>				<b>Unit</b>			
Onion	-	28,000	28,000	ton	-	0.4	0.4
Proxy labour under WOP	5,400	-	-5,400	pers_days	20.0	-	-20.0
<b>Sub-total Revenue</b>	5,400	28,000	22,600				
<b>Input costs</b>							
Onion planting materials	-	90	90				
<b>Income (Before Labor Costs)</b>	5,400	27,910	22,510				
<b>Labor costs</b>							
Land Preparation	-	10,800	10,800	pers_day	-	40.0	40.0
Planting	-	2,700	2,700	pers_day	-	10.0	10.0
Interculture	-	2,700	2,700	pers_day	-	10.0	10.0
Harvesting	-	2,700	2,700	pers_day	-	10.0	10.0
Farm transportation	-	1,350	1,350	pers_day	-	5.0	5.0
Watch and ward	-	2,700	2,700	pers_day	-	10.0	10.0
<b>Sub-total Labor costs</b>	-	22,950	22,950				
<b>Income (After Labor Costs)</b>	5,400	4,960	-440				

### Annex-4.10 Banana crop (one ha)

Financial budget							Yield and inputs							
Banana Plantation <b>FINANCIAL BUDGET</b> (In INR Per ha) /a							Banana Plantation <b>YIELDS AND INPUTS</b> (Per ha) /a							
	Existing Technology							Existing Technology						
	1	2 to 6	7	8 to 12	13	14 to 20	Unit	1	2 to 6	7	8 to 12	13	14 to 20	
Revenue	-	212,500	-	212,500	-	212,500	ton	-	8.5	-	8.5	-	8.5	
<b>Input costs</b>							<b>Investment</b>							
Banana suckers	18,000	-	18,000	-	18,000	-	Banana suckers	sucker	3,000.0	-	3,000.0	-	3,000.0	-
Agri Tools	3,600	3,600	3,600	3,600	3,600	3,600	Agri Tools	set	1.0	1.0	1.0	1.0	1.0	
<b>Sub-total Input costs</b>	<b>21,600</b>	<b>3,600</b>	<b>21,600</b>	<b>3,600</b>	<b>21,600</b>	<b>3,600</b>	<b>Operating</b>							
<b>Income (Before Labor Costs)</b>	<b>-21,600</b>	<b>208,900</b>	<b>-21,600</b>	<b>208,900</b>	<b>-21,600</b>	<b>208,900</b>	Site/jungle clearance	pers_day	40.0	-	40.0	-	40.0	-
<b>Labor costs</b>							Land Preparation	pers_day	23.0	-	23.0	-	23.0	-
Site/jungle clearance	10,800	-	10,800	-	10,800	-	Pitting	pers_day	40.0	-	40.0	-	40.0	-
Land Preparation	6,210	-	6,210	-	6,210	-	Planting	pers_day	40.0	-	40.0	-	40.0	-
Pitting	10,800	-	10,800	-	10,800	-	Interculture	pers_day	45.0	45.0	45.0	45.0	45.0	45.0
Planting	10,800	-	10,800	-	10,800	-	Harvesting	pers_day	-	30.0	-	30.0	-	30.0
Interculture	12,150	12,150	12,150	12,150	12,150	12,150	Farm transportation	pers_day	-	30.0	-	30.0	-	30.0
Harvesting	-	8,100	-	8,100	-	8,100	Watch and ward	pers_day	50.0	50.0	50.0	50.0	50.0	
Farm transportation	-	8,100	-	8,100	-	8,100								
Watch and ward	13,500	13,500	13,500	13,500	13,500	13,500								
<b>Sub-total Labor costs</b>	<b>64,260</b>	<b>41,850</b>	<b>64,260</b>	<b>41,850</b>	<b>64,260</b>	<b>41,850</b>								
<b>Income (After Labor Costs)</b>	<b>-85,860</b>	<b>167,050</b>	<b>-85,860</b>	<b>167,050</b>	<b>-85,860</b>	<b>167,050</b>								

### Annex-4.11 Pine apple crop (one ha)

Pine Apple Plantation FINANCIAL BUDGET (In INR Per ha) /a		April -- March																		
		New Technology																		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18 to 20	
Revenue	-	79,200	306,000	-	79,200	306,000	-	79,200	306,000	-	79,200	306,000	-	79,200	306,000	-	79,200	306,000		
<b>Input costs</b>																				
Pineapple suckers	30,000	-	-	30,000	-	-	30,000	-	-	30,000	-	-	30,000	-	-	30,000	-	-		
Agri Tools	7,830	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<b>Sub-total Input costs</b>	<b>37,830</b>	<b>-</b>	<b>-</b>	<b>30,000</b>	<b>-</b>	<b>-</b>	<b>30,000</b>	<b>-</b>	<b>-</b>	<b>30,000</b>	<b>-</b>	<b>-</b>	<b>30,000</b>	<b>-</b>	<b>-</b>	<b>30,000</b>	<b>-</b>	<b>-</b>		
<b>Income (Before Labor Costs)</b>	<b>-37,830</b>	<b>79,200</b>	<b>306,000</b>	<b>-30,000</b>	<b>79,200</b>	<b>306,000</b>	<b>-30,000</b>	<b>79,200</b>	<b>306,000</b>	<b>-30,000</b>	<b>79,200</b>	<b>306,000</b>	<b>-30,000</b>	<b>79,200</b>	<b>306,000</b>	<b>-30,000</b>	<b>79,200</b>	<b>306,000</b>		
<b>Labor costs</b>																				
Site/jungle clearance	27,000	-	-	27,000	-	-	27,000	-	-	27,000	-	-	27,000	-	-	27,000	-	-		
Removal of basal Leaves	-	2,700	5,130	-	2,700	5,130	-	2,700	5,130	-	2,700	5,130	-	2,700	5,130	-	2,700	5,130		
Planting	27,000	-	-	27,000	-	-	27,000	-	-	27,000	-	-	27,000	-	-	27,000	-	-		
Interculture	13,500	2,700	2,700	13,500	2,700	2,700	13,500	2,700	2,700	13,500	2,700	2,700	13,500	2,700	2,700	13,500	2,700	2,700		
Harvesting	-	5,400	10,800	-	5,400	10,800	-	5,400	10,800	-	5,400	10,800	-	5,400	10,800	-	5,400	10,800		
Farm transportation	-	2,700	5,400	8,100	10,800	10,800	10,800	10,800	10,800	10,800	10,800	10,800	10,800	10,800	10,800	10,800	10,800	10,800		
Watch and ward	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750		
<b>Sub-total Labor costs</b>	<b>74,250</b>	<b>20,250</b>	<b>30,780</b>	<b>82,350</b>	<b>28,350</b>	<b>36,180</b>	<b>85,050</b>	<b>28,350</b>	<b>36,180</b>											
<b>Income (After Labor Costs)</b>	<b>-112,080</b>	<b>58,950</b>	<b>275,220</b>	<b>-112,350</b>	<b>50,850</b>	<b>269,820</b>	<b>-115,050</b>	<b>50,850</b>	<b>269,820</b>											

Pine Apple Plantation YIELDS AND INPUTS (Per ha) /a		Existing Technology																		
		Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18 to 20
Yields	ton	-	2.2	8.8	-	2.2	8.8	-	2.2	8.8	-	2.2	8.8	-	2.2	8.8	-	2.2	8.8	
<b>Investment</b>																				
Pineapple suckers	each	10,000.0	-	-	10,000.0	-	-	10,000.0	-	-	10,000.0	-	-	10,000.0	-	-	10,000.0	-	-	
Agri Tools	set	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
<b>Operating</b>																				
Site/jungle clearance	pers_day	100.0	-	-	100.0	-	-	100.0	-	-	100.0	-	-	100.0	-	-	100.0	-	-	
Removal of basal Leaves	pers_day	-	10.0	19.0	-	10.0	19.0	-	10.0	19.0	-	10.0	19.0	-	10.0	19.0	-	10.0	19.0	
Planting	pers_day	100.0	-	-	100.0	-	-	100.0	-	-	100.0	-	-	100.0	-	-	100.0	-	-	
Interculture	pers_day	50.0	10.0	10.0	50.0	10.0	10.0	50.0	10.0	10.0	50.0	10.0	10.0	50.0	10.0	10.0	50.0	10.0	10.0	
Harvesting	pers_day	-	20.0	40.0	-	20.0	40.0	-	20.0	40.0	-	20.0	40.0	-	20.0	40.0	-	20.0	40.0	
Farm transportation	pers_day	-	10.0	20.0	30.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	
Watch and ward	pers_day	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	

## Annex-4.12 Oranges crop (one ha) existing orchard

Oranges, existing Plantation		April -- March							
<b>FINANCIAL BUDGET</b>		Existing Technology				New Technology			
(In INR Per ha) /a		1	2	3	4 to 20	1	2	3	4 to 20
Revenue		54,000	63,000	72,000	81,000	64,800	75,600	86,400	97,200
<b>Input costs</b>									
Agri Tools		2,890	2,890	2,890	2,890	2,890	-	-	-
Organic Manure		7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500
PP chemicals		2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
<b>Sub-total Input costs</b>		<b>12,890</b>	<b>12,890</b>	<b>12,890</b>	<b>12,890</b>	<b>12,890</b>	<b>10,000</b>	<b>10,000</b>	<b>10,000</b>
<b>Income (Before Labor Costs)</b>		<b>41,110</b>	<b>50,110</b>	<b>59,110</b>	<b>68,110</b>	<b>51,910</b>	<b>65,600</b>	<b>76,400</b>	<b>87,200</b>
<b>Labor costs</b>									
Fencing		13,500	2,700	2,700	2,700	13,500	2,700	2,700	2,700
Manuring		2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700
spraying		2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700
Interculture		2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700
Pruning		2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700
Harvesting		5,400	10,800	10,800	10,800	5,400	10,800	10,800	10,800
Farm transportation		2,700	5,400	5,400	5,400	2,700	5,400	5,400	5,400
Watch and ward		6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750
<b>Sub-total Labor costs</b>		<b>39,150</b>	<b>36,450</b>	<b>36,450</b>	<b>36,450</b>	<b>39,150</b>	<b>36,450</b>	<b>36,450</b>	<b>36,450</b>
<b>Income (After Labor Costs)</b>		<b>1,960</b>	<b>13,660</b>	<b>22,660</b>	<b>31,660</b>	<b>12,760</b>	<b>29,150</b>	<b>39,950</b>	<b>50,750</b>

Oranges, existing Plantation		April -- March							
<b>YIELDS AND INPUTS</b>		Existing Technology				New Technology			
(Per ha) /a		1	2	3	4 to 20	1	2	3	4 to 20
Yields	ton	3.0	3.5	4.0	4.5	3.6	4.2	4.8	5.4
<b>Investment</b>									
Agri Tools	set	1.0	1.0	1.0	1.0	1.0	-	-	-
Organic Manure	ton	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
PP chemicals	lit	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
<b>Operating</b>									
Fencing	pers_day	50.0	10.0	10.0	10.0	50.0	10.0	10.0	10.0
Manuring	pers_day	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
spraying	pers_day	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Interculture	pers_day	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Pruning	pers_day	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Harvesting	pers_day	20.0	40.0	40.0	40.0	20.0	40.0	40.0	40.0
Farm transportation	pers_day	10.0	20.0	20.0	20.0	10.0	20.0	20.0	20.0
Watch and ward	pers_day	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0

### Annex-4.13 Black pepper crop (one ha)

Financial budget						Yield and inputs						
Black Pepper Plantation <b>FINANCIAL BUDGET</b> (In INR Per ha) /a						Black Pepper Plantation <b>YIELDS AND INPUTS</b> (Per ha) /a						
April -- March						April -- March						
New Technology						New Technology						
	1	2	3	4	5 to 20	Unit	1	2	3	4	5 to 20	
<b>Revenue</b>						<b>Main Production</b>						
Black pepper, dried	-	-	45,000	57,000	75,000	Black pepper, dried	kg	-	-	150.0	190.0	250.0
Proxy labour under WOP	-	-	-	-	-	Proxy labour under WOP	pers_days	-	-	-	-	-
<b>Sub-total Revenue</b>	-	-	45,000	57,000	75,000	<b>Investment</b>						
<b>Input costs</b>						Pepper cutting	#	560.0	-	-	-	-
Pepper cutting	5,600	-	-	-	-	<b>Operating</b>						
<b>Income (Before Labor Costs)</b>	-5,600	-	45,000	57,000	75,000	Land Preparation	pers_day	75.0	7.0	7.0	7.0	7.0
<b>Labor costs</b>						Planting	pers_day	50.0	5.0	5.0	5.0	5.0
Land Preparation	20,250	1,890	1,890	1,890	1,890	Staking	pers_day	-	100.0	10.0	5.0	-
Planting	13,500	1,350	1,350	1,350	1,350	Pruning	pers_day	-	-	-	10.0	10.0
Staking	-	27,000	2,700	1,350	-	Maintenance	pers_day	10.0	10.0	15.0	15.0	15.0
Pruning	-	-	-	2,700	2,700	Harvesting	pers_day	-	-	15.0	15.0	15.0
Maintenance	2,500	2,500	3,750	3,750	3,750	Farm transportation	pers_day	-	-	3.0	4.0	5.0
Harvesting	-	-	4,050	4,050	4,050	Drying pepper	pers_day	-	-	5.0	10.0	15.0
Farm transportation	-	-	810	1,080	1,350	Grading pepper	pers_day	-	-	3.0	4.0	5.0
Drying pepper	-	-	1,250	2,500	3,750							
Grading pepper	-	-	750	1,000	1,250							
<b>Sub-total Labor costs</b>	36,250	32,740	16,550	19,670	20,090							
<b>Income (After Labor Costs)</b>	-41,850	-32,740	28,450	37,330	54,910							

### Annex-4.14 Large cardamom (one ha)

Large cardamom plantation		April -- March									
<b>FINANCIAL BUDGET</b>											
(In INR Per ha) /a											
		<b>New Technology</b>									
		<b>1</b>	<b>2</b>	<b>3</b>	<b>4 to 8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14 to 20</b>
Revenue		-	-	87,500	105,000	105,000	105,000	-	-	87,500	105,000
<b>Input costs</b>											
Cardamom sucker		20,000	-	-	-	20,000	-	-	-	-	-
<b>Income (Before Labor Costs)</b>		-20,000	-	87,500	105,000	85,000	105,000	-	-	87,500	105,000
<b>Labor costs</b>											
Land Preparation		16,200	-	-	-	-	-	16,200	-	-	-
Planting		5,400	-	-	-	-	-	5,400	-	-	-
Mulching		5,400	5,400	5,400	5,400	5,400	5,400	5,400	5,400	5,400	5,400
Harvesting		-	-	8,100	8,100	8,100	8,100	-	-	8,100	8,100
Curing and processing		-	-	2,500	2,500	2,500	2,500	-	-	2,500	2,500
Miscellaneous		1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250
<b>Sub-total Labor costs</b>		28,250	6,650	17,250	17,250	17,250	17,250	28,250	6,650	17,250	17,250
<b>Income (After Labor Costs)</b>		-48,250	-6,650	70,250	87,750	67,750	87,750	-28,250	-6,650	70,250	87,750

Large cardamom plantation		April -- March									
<b>YIELDS AND INPUTS</b>											
(Per ha) /a											
		<b>New Technology</b>									
<b>Unit</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4 to 8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14 to 20</b>
Yields	kg	-	-	125.0	150.0	150.0	150.0	-	-	125.0	150.0
<b>Investment</b>											
Cardamom sucker	each	2,000.0	-	-	-	2,000.0	-	-	-	-	-
<b>Operating</b>											
Land Preparation	pers_day	60.0	-	-	-	-	-	60.0	-	-	-
Planting	pers_day	20.0	-	-	-	-	-	20.0	-	-	-
Mulching	pers_day	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Harvesting	pers_day	-	-	30.0	30.0	30.0	30.0	-	-	30.0	30.0
Curing and processing	pers_day	-	-	10.0	10.0	10.0	10.0	-	-	10.0	10.0
Miscellaneous	pers_day	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0

### Annex-4.15 Pond fishery (one ha) production model

India IFAD Mizoram Final Design Pond fishery activity <b>FINANCIAL BUDGET</b> (In INR) /a		April -- March								
		Existing Technology		New Technology						
		1 to 20	1	2 to 5	6	7 to 10	11	12 to 15	16	17 to 20
<b>Revenue</b>										
Fish	-	-	625,000	625,000	625,000	625,000	625,000	625,000	625,000	625,000
Proxy labour under WOP	13,500	-	-	-	-	-	-	-	-	-
<b>Sub-total Revenue</b>	13,500	-	625,000	625,000	625,000	625,000	625,000	625,000	625,000	625,000
<b>Input costs</b>										
Construction of embankment	-	24,300	-	-	-	-	-	-	-	-
Making channels	-	24,300	-	24,300	-	24,300	-	24,300	-	-
Lime treatment	-	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800
Manure	-	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Fingerlings	-	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500
Fish Feed	-	38,750	38,750	38,750	38,750	38,750	38,750	38,750	38,750	38,750
Tools & Equipment	-	5,000	-	5,000	-	5,000	-	5,000	-	5,000
<b>Sub-total Input costs</b>	-	105,650	52,050	81,350	52,050	81,350	52,050	81,350	52,050	81,350
<b>Income (Before Labor Costs)</b>	13,500	-105,650	572,950	543,650	572,950	543,650	572,950	543,650	572,950	543,650
<b>Labor costs</b>										
Watch and ward	-	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000
Harvesting	-	13,500	13,500	13,500	13,500	13,500	13,500	13,500	13,500	13,500
Farm transportation	-	4,050	4,050	4,050	4,050	4,050	4,050	4,050	4,050	4,050
<b>Sub-total Labor costs</b>	-	44,550	44,550	44,550	44,550	44,550	44,550	44,550	44,550	44,550
<b>Income (After Labor Costs)</b>	13,500	-150,200	528,400	499,100	528,400	499,100	528,400	499,100	528,400	499,100

Pond fishery activity <b>YIELDS AND INPUTS /a</b>		Existing Technology								
		Unit	1 to 20	1	2 to 5	6	7 to 10	11	12 to 15	16
<b>Main Production</b>										
Fish	kg	-	-	2,500.0	2,500.0	2,500.0	2,500.0	2,500.0	2,500.0	2,500.0
Proxy labour under WOP	pers_days	50.0	-	-	-	-	-	-	-	-
<b>Investment</b>										
Construction of embankment	pers_day	-	90.0	-	-	-	-	-	-	-
Making channels	pers_day	-	90.0	-	90.0	-	90.0	-	90.0	-
Lime treatment	kg	-	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
Manure	ton	-	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fingerlings	each	-	3,000.0	3,000.0	3,000.0	3,000.0	3,000.0	3,000.0	3,000.0	3,000.0
Fish Feed	kg	-	1,550.0	1,550.0	1,550.0	1,550.0	1,550.0	1,550.0	1,550.0	1,550.0
Tools & Equipment	set	-	1.0	-	1.0	-	1.0	-	1.0	-
<b>Operating</b>										
Watch and ward	pers_day	-	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Harvesting	pers_day	-	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
Farm transportation	pers_day	-	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0



### Annex-4.17 Pig-breeding model (6 piglets + one boar)

Pig breeding, small-scale Act		April -- March								
FINANCIAL BUDGET		Existing Technology		New Technology						
(In INR) /a		1 to 20	1	2 to 5	6	7 to 10	11	12 to 15	16	17 to 20
<b>Revenue</b>										
Piglets	-	165,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000
Proxy labour under WOP	5,400	-	-	-	-	-	-	-	-	-
<b>Sub-total Revenue</b>	<b>5,400</b>	<b>165,000</b>	<b>330,000</b>							
<b>Input costs</b>										
Adult sow	-	120,000	-	120,000	-	120,000	-	120,000	-	120,000
Boar	-	20,000	-	20,000	-	20,000	-	20,000	-	20,000
Pig pen	-	140,000	-	-	-	-	-	-	-	-
Pig feed	-	63,514	63,514	63,514	63,514	63,514	63,514	63,514	63,514	63,514
Local feed	-	28,870	28,870	28,870	28,870	28,870	28,870	28,870	28,870	28,870
Equipment	-	6,000	-	-	-	-	-	-	-	-
Insurance	-	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500
Medicines	-	4,900	4,900	4,900	4,900	4,900	4,900	4,900	4,900	4,900
Medicines and vaccines f	-	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400
Piglets mortality	-	15,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
<b>Sub-total Input costs</b>	<b>-</b>	<b>416,184</b>	<b>145,184</b>	<b>285,184</b>	<b>145,184</b>	<b>285,184</b>	<b>145,184</b>	<b>285,184</b>	<b>145,184</b>	<b>285,184</b>
<b>Income (Before Labor Costs)</b>	<b>5,400</b>	<b>-251,184</b>	<b>184,816</b>	<b>44,816</b>	<b>184,816</b>	<b>44,816</b>	<b>184,816</b>	<b>44,816</b>	<b>184,816</b>	<b>184,816</b>
<b>Labor costs</b>										
Shed construction	-	8,100	540	540	540	540	540	540	540	540
Watch and ward	-	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500
<b>Sub-total Labor costs</b>	<b>-</b>	<b>48,600</b>	<b>41,040</b>							
<b>Income (After Labor Costs)</b>	<b>5,400</b>	<b>-299,784</b>	<b>143,776</b>	<b>3,776</b>	<b>143,776</b>	<b>3,776</b>	<b>143,776</b>	<b>3,776</b>	<b>143,776</b>	<b>143,776</b>

Pig breeding, small-scale Act		Existing Technology		New Technology							
YIELDS AND INPUTS /a		Unit	1 to 20	1	2 to 5	6	7 to 10	11	12 to 15	16	17 to 20
<b>Main Production</b>											
Piglets	each	-	33.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0
Proxy labour under WOP	pers_days	20.0	-	-	-	-	-	-	-	-	-
<b>Investment</b>											
Adult sow	animal	-	6.0	-	6.0	-	6.0	-	6.0	-	6.0
Boar	boar	-	1.0	-	1.0	-	1.0	-	1.0	-	1.0
Pig pen	pen	-	1.0	-	-	-	-	-	-	-	-
Pig feed	kg	-	2,887.0	2,887.0	2,887.0	2,887.0	2,887.0	2,887.0	2,887.0	2,887.0	2,887.0
Local feed	kg	-	2,887.0	2,887.0	2,887.0	2,887.0	2,887.0	2,887.0	2,887.0	2,887.0	2,887.0
Equipment	unit	-	6.0	-	-	-	-	-	-	-	-
Insurance	animal/year	-	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Medicines	animal	-	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Medicines and vaccines f	piglet/year	-	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0
Piglets mortality	piglet	-	3.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
<b>Operating</b>											
Shed construction	pers_day	-	30.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Watch and ward	pers_day	-	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0

### Annex-4.18 Backyard poultry model (20 pullets + 4 cockerels)

Backyard Poultry Activity FINANCIAL BUDGET (In INR)	April -- March																		
	Existing Technology	New Technology																	
	1 to 20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18 to 20
<b>Revenue</b>																			
Eggs	-	6,336	21,024	23,040	6,336	21,024	23,040	6,336	21,024	23,040	6,336	21,024	23,040	6,336	21,024	23,040	6,336	21,024	23,040
Culled bird, hen or cockeral	-	12,500	16,500	16,000	12,500	16,500	16,000	12,500	16,500	16,000	12,500	16,500	16,000	12,500	16,500	16,000	12,500	16,500	16,000
Proxy labour under WOP	5,400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Sub-total Revenue</b>	5,400	18,836	37,524	39,040	18,836	37,524	39,040	18,836	37,524	39,040	18,836	37,524	39,040	18,836	37,524	39,040	18,836	37,524	39,040
<b>Input costs</b>																			
Pullet supplied	-	2,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pullets inducted	-	3,750	5,000	5,000	3,750	5,000	5,000	3,750	5,000	5,000	3,750	5,000	5,000	3,750	5,000	5,000	3,750	5,000	5,000
Cockeral	-	1,200	-	-	1,200	-	-	1,200	-	-	1,200	-	-	1,200	-	-	1,200	-	-
Vet services	-	260	330	330	260	330	330	260	330	330	260	330	330	260	330	330	260	330	330
Poultry shed	-	19,680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment	-	8,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poultry concentrate	-	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925	5,925
Kitchen wastes	-	988	988	988	988	988	988	988	988	988	988	988	988	988	988	988	988	988	988
Mortality	-	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Insurance	-	580	580	580	580	580	580	580	580	580	580	580	580	580	580	580	580	580	580
<b>Sub-total Input costs</b>	-	43,883	13,823	13,823	13,703	13,823	13,823	13,703	13,823	13,823	13,703	13,823	13,823	13,703	13,823	13,823	13,703	13,823	13,823
<b>Income (Before Labor Costs)</b>	5,400	-25,047	23,702	25,218	5,134	23,702	25,218	5,134	23,702	25,218	5,134	23,702	25,218	5,134	23,702	25,218	5,134	23,702	25,218
<b>Labor costs</b>																			
Watch and ward	-	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250
<b>Income (After Labor Costs)</b>	5,400	-45,297	3,452	4,968	-15,117	3,452	4,968	-15,117	3,452	4,968	-15,117	3,452	4,968	-15,117	3,452	4,968	-15,117	3,452	4,968

### Annex-4.18 Backyard poultry model (20 pullets + 4 cockerels)

IFAD Mizoram Final Design Backyard Poultry Activity YIELDS AND INPUTS		April -- March																		
		Existing Technology									New Technology									
		Unit	1 to 20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<b>Main Production</b>																				
Eggs	each	-	792.0	2,628.0	2,880.0	792.0	2,628.0	2,880.0	792.0	2,628.0	2,880.0	792.0	2,628.0	2,880.0	792.0	2,628.0	2,880.0	792.0	2,628.0	2,880.0
Culled bird, hen or cockeral	each	-	25.0	33.0	32.0	25.0	33.0	32.0	25.0	33.0	32.0	25.0	33.0	32.0	25.0	33.0	32.0	25.0	33.0	32.0
Proxy labour under WOP	pers_days	20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Operating</b>																				
<b>Inputs</b>																				
Pullet supplied	bird	-	20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pullets inducted	pullet	-	30.0	40.0	40.0	30.0	40.0	40.0	30.0	40.0	40.0	30.0	40.0	40.0	30.0	40.0	40.0	30.0	40.0	40.0
Cockerel	bird	-	4.0	-	-	4.0	-	-	4.0	-	-	4.0	-	-	4.0	-	-	4.0	-	-
Vet services	bird/year	-	26.0	33.0	33.0	26.0	33.0	33.0	26.0	33.0	33.0	26.0	33.0	33.0	26.0	33.0	33.0	26.0	33.0	33.0
Poultry shed	sq ft	-	240.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment	unit	-	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poultry concentrate	kg	-	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5
Kitchen wastes	kg	-	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5	197.5
Mortality	bird	-	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Insurance	unit/year	-	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
<b>Labor</b>																				
Watch and ward	pers_day	-	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0

### Annex-4.19 Village forestry model (one ha)

Village forestry Plantation FINANCIAL BUDGET (In INR) /a	April -- March									
	Existing Technology			New Technology						
	1 to 20	1	2	3	4 to 6	7 to 9	10	11 to 14	15	16 to 20
<b>Revenue</b>										
Small timber	-	-	-	-	-	-	4,800	12,000	12,000	-
High value timber	-	-	-	-	-	-	-	-	28,500	28,500
Firewood	-	-	-	-	-	3,600	3,600	-	-	-
Pastures & fodder	-	-	-	-	500	500	500	500	500	500
Fruits	-	-	-	-	37,500	37,500	37,500	37,500	37,500	37,500
<b>Sub-total Revenue</b>	-	-	-	-	38,000	41,600	46,400	50,000	78,500	66,500
<b>Input costs</b>										
Seedling	-	17,500	3,500	-	-	-	-	-	-	-
<b>Income (Before Labor Costs)</b>	-	-17,500	-3,500	-	38,000	41,600	46,400	50,000	78,500	66,500
<b>Labor costs</b>										
Site/jungle clearance	-	18,900	-	-	-	-	-	-	-	-
Planting	-	18,900	3,780	-	-	-	-	-	-	-
Staking	-	-	2,700	4,050	4,050	4,050	4,050	4,050	4,050	4,050
Mulching	-	5,400	2,700	-	-	-	-	-	-	-
Harvesting	-	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100
Watch and ward	-	27,000	13,500	8,100	8,100	8,100	8,100	8,100	8,100	8,100
<b>Sub-total Labor costs</b>	-	78,300	30,780	20,250	20,250	20,250	20,250	20,250	20,250	20,250
<b>Income (After Labor Costs)</b>	-	-95,800	-34,280	-20,250	17,750	21,350	26,150	29,750	58,250	46,250

Village forestry Plantation YIELDS AND INPUTS /a	Unit	Existing Technology			New Technology						
		1 to 20	1	2	3	4 to 6	7 to 9	10	11 to 14	15	16 to 20
<b>Main Production</b>											
Small timber	m3	-	-	-	-	-	-	6.0	15.0	15.0	-
High value timber	m3	-	-	-	-	-	-	-	-	19.0	19.0
Firewood	m3	-	-	-	-	-	9.0	9.0	-	-	-
Pastures & fodder	ton	-	-	-	-	0.5	0.5	0.5	0.5	0.5	0.5
Fruits	ton	-	-	-	-	15.0	15.0	15.0	15.0	15.0	15.0
<b>Investment</b>											
Seedling	each 100	-	350.0	70.0	-	-	-	-	-	-	-
<b>Operating</b>											
Labour	pers_day		290.0	114.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0

### Annex-4.20 Turmeric processing plant model

Financial budget			Yield and inputs		
Turmeric processing plant Activity <b>FINANCIAL BUDGET</b> (In INR)			Turmeric processing plant Activity <b>YIELDS AND INPUTS</b>		
	<b>April -- March</b>			<b>New Technology</b>	
	<b>ew Technology</b>			<b>In</b>	
	<b>1</b>	<b>2 to 20</b>	<b>Unit</b>	<b>1</b>	<b>2 to 20</b>
Revenue	-	4,389,000	Yields	1000 bags	- 133.0
<b>Input costs</b>			<b>Investment</b>		
<b>Investment costs</b>			Packaging machine	set	1.0 -
Grinding machine	300,000	-	Grinding machine	set	1.0 -
Slicing machine	150,000	-	Slicing machine	set	1.0 -
Other Tools	25,000	-	Other Tools	set	1.0 -
Factory building	500,000	-	Factory building	building	1.0 -
<b>Sub-total Investment Costs</b>	975,000	-	<b>Operating</b>		
<b>Operating Costs</b>			Purchase of fresh turmeric	ton	- 80.0
Purchase of fresh turmeric	-	1,280,000	Packaging Bags (100 gm)	1000#	60.0 133.0
Packaging Bags (100 gm)	150,000	332,500	Operation & maintenance	year	0.5 1.0
Operation & maintenance	84,375	168,750	Other operating costs	year	0.5 1.0
Other operating costs	125,000	250,000	Marketing costs	year	- 1.0
Marketing costs	-	208,200	Management costs	year	0.5 1.0
Management costs	104,100	208,200	Factory operating labour	pers_day	- 2,048.0
Factory operating labour	-	552,960			
<b>Sub-total Operating Costs</b>	463,475	3,000,610			
<b>Sub-total Input costs</b>	1,438,475	3,000,610			
<b>Income (Before Labor Costs)</b>	-1,438,475	1,388,390			

## Appendix 11: Compliance with IFAD policies

1. IFAD’s Strategic Framework provides the overall goal and objectives of the Fund and its key policy guidelines provide the parameters of project design and implementation. The Country Strategic Opportunities Programme (COSOP) for India (2011-2016<sup>51</sup>) aims at promoting sustainable and climate variability-resilient agriculture in rain fed smallholdings. The design of FOCUS builds on IFAD’s relevant policies and frameworks particularly the 2016-2025 Strategic Frameworks, the targeting and gender mainstreaming policy, the Environment and Natural Resources Management Strategy, the climate change strategy, the Policy to improve access to Land and security of Tenure, Scaling up Framework and the Knowledge Management Strategy. The below table delineates how the design responds to IFAD’s key policies and strategies pertinent to the project.

IFAD POLICY/ STRATEGY	COMPLIANCE
<b>IFAD’s Strategic Framework (2016-2025)</b>	<p>IFAD’s Strategic Framework (2016-2025) reiterates its unique mandate of improving rural food security and nutrition through remunerative, sustainable and resilient livelihoods and to enable rural poor overcome poverty. The Framework identifies five principles of engagement namely targeting, empowerment, gender equality, innovation, learning and scaling up and partnerships which are all relevant to the FOCUS project.</p> <p>The overall goal of the project is to increase household agricultural income of rural highland communities in Nagaland and Mizoram and enhance their resilience to climate change. The project’s development objective is to increase the environmental sustainability and profitability of farming systems practiced by highland farmers. The project will improve the resilience and productivity of farming systems by increasing the resilience of crop and livestock production systems to climate change; strengthen the market linkages and sales of key agricultural and horticultural crops and livestock</p>
<b>India COSOP 2011-16</b>	<p>The COSOP has two strategic objectives: (1) Increased access to agricultural technologies and natural resources and (2) Increased access to financial services and value chains. The COSOP ascertains IFAD’s focus on the poorest, most marginalized and remote of the rural poor in rain-fed areas with special emphasis on (i) tribal communities, (ii) smallholder farmers; (iii) the landless; (iv) women; and (v) unemployed youth.</p> <p>FOCUS adheres to both the strategic objectives of the COSOP with its emphasis on climate resilient agriculture and value chain development. The project is being implemented in the states of Mizoram and Nagaland which have more than 95% tribal population. There is a clear focus on small holder farmers, women, landless and youth.</p>
<b>Environmental Natural Resource Management (ENRM) Policy</b>	<p>The goal of IFAD’s ENRM policy approved in May 2015<sup>52</sup> is “to enable poor rural people to escape from and remain out of poverty through more-productive and resilient livelihoods and ecosystems.” The purpose is “to integrate the sustainable management of natural assets across the activities of IFAD and its partners. IFAD recognizes that poor farm HHs are in the front line of climate change impacts; the ecosystems and biodiversity on which they rely are increasingly degraded.</p> <p>The project is aligned to IFAD ENRM strategy as it aims to mitigate the risks</p>

<sup>51</sup>The COSOP 2011-2015 has been extended by one year to cover the design of the current project.

<sup>52</sup>IFAD’s Environment and Natural Resource Management Policy: Resilient livelihoods through the sustainable use of natural assets. May 2011.

	<p>associated with shortening <i>jhum</i> cycles and promote sustainable increase in agricultural productivity. The very rationale for the project FOCUS is to restore the balance between the ecological imperatives of the complex highland ecology in the North Eastern states of Mizoram and Nagaland and the growing human needs by integrating modern scientific and technological knowledge with traditional know-how, experience and locally evolved systems of resource governance.</p> <p>The key focus of the project is on improving current <i>jhum</i>/ shifting agriculture practices and improving management of <i>jhum</i> fallows with the aim of increasing productivity and lengthening the <i>jhum</i> cycle. This will involve growing of cover crops, especially the fertility building and leguminous plants during the pre-crop and fallow periods, planting and growing of high value leguminous, timber and fuel wood plants / trees on contour bunds, and better agronomy and introduction of new and high value low volume crops in the system.</p> <p>The project will engage with the existing community institutions (CIs) such as the VC/ VDB for participatory land use plans. The project will fund Community Conservation Area Management. This will involve contour bunding, contour trenching and water harvesting structures and biological measures including seeding the area with leguminous plants.</p>
<p><b>IFAD Climate Change Strategy (2010) and IFAD's Social, Environmental and Climate Assessment Procedures (2014)</b></p>	<p>IFAD's climate change strategy (May 2010) recognizes that the speed and intensity of climate change are outpacing the ability of poor rural people and societies to cope. The goal of this strategy is to maximize IFAD's impact on rural poverty in the context of climate change. FOCUS is fully aligned to the Climate Change Strategy.</p> <p>The project design assessed the environmental impacts of the project components (i.e. project activities, locations and magnitude of components) against the "IFAD's Social, Environmental and Climate Assessment Procedures (2014)" and the SECAP Report is available.</p> <p>FOCUS is not likely to have any adverse environment impacts on the project areas in Nagaland or Mizoram. In fact, it will have beneficial impacts through the development of land and water resources following an environmentally sensitive approach, including conservation of soil and rainwater, diversification of farming systems, introduction of tree crops and agro-forestry, creation of Community Conserved Areas, improved management of <i>Jhum</i> fallows and increasing the <i>Jhum</i> cycle. However, it is by requirement classified as <b>Category B</b> as it will operate in highland areas and would include resource development activities akin to watershed development.</p> <p>The Himalayan States are classified as the most environmentally sustainable among Indian States on the basis of the Environmental Sustainability Index developed by the Institute for Financial Management and Research<sup>53</sup>. Among the eight NER States, Mizoram is ranked as 1<sup>st</sup> and Nagaland is ranked as 7<sup>th</sup>. As rain-fed, <i>Jhum</i> based farming is a major livelihood source vulnerable to climate change, the project is therefore classified as a <b>high climate risk</b> project.</p>
<p><b>IFAD's Policy to improve access to Land and security of Tenure</b></p>	<p>The issues pertaining to land tenure are critical to the project design. The two states have different land tenure status.</p> <p>Land in Mizoram is generally community managed and state controlled with traditional free access to all households living in the villages. In 2013, GoM</p>

<sup>53</sup><http://www.ifmrlead.org/wp-content/uploads/2015/OWC/Brief-ESI-2011.pdf>

	<p>issued guidelines for provision of title deeds to individual households and groups to undertake permanent agriculture activities on community lands which were earlier used for <i>jhum</i> cultivation. This effort has hastened the process of settled agriculture and there has been substantial reduction in <i>jhum</i> cultivation. There is need to provide additional support to the poorest households so that they are able to take maximum advantage of this policy of the government.</p> <p>In Nagaland 3 types of land ownership pattern exist: (i) private lands which are used for both <i>jhuming</i> and also for terraced rice cultivation; (ii) clan lands which are owned by a clan collectively and used for fuel wood collection; and (iii) community lands owned collectively by the entire village which is largely used as conservation forests and for fuel wood collection. There are no land tenure issues in Nagaland and households largely have <i>equitable access to land resources</i>. However, the land ownership is <i>de jure</i> as there are no land records and title documents. There are only disputes related to boundary and the dispute resolution mechanism is vested with the village council <i>recognizing the cultural heritage and identity</i> of the indigenous people.</p> <p>The project will adhere to the specific policies pertaining to land tenure in the two states. However, there will be considerable focus on PLUP led by the village level CIs to ensure all households are involved in the process.</p>
<p><b>IFAD's Knowledge Management Strategy</b></p>	<p>FOCUS is aligned with IFAD's Knowledge Management strategy, especially in the following areas (i) strengthening the process of knowledge sharing and learning within and between the two states and in the NE region as a whole; (ii) development of partnerships (e.g. with FAO/ ICAR), to provide a broader base of knowledge sharing and learning and; (iii) promotion of a dynamic regional platform (preferably in partnership with ICAR) for knowledge sharing and learning. The programme will use (human and financial) resources to enhance its impact by sharing knowledge and learning between the two states and with other states in the region which have a sizeable practice of shifting agriculture.</p>
<p><b>Scaling up Framework (2015)</b></p>	<p>Given the large-scale problem of reducing rural poverty that it is mandated to address and the limited resources available from official development assistance (ODA), IFAD needs to increase the impact of every dollar it invests in agriculture and rural development. For this reason, scaling up the results of successful development initiatives is an overarching priority that directly supports the achievement of IFAD's mandate</p> <p>The Project aims to scale up emerging lessons from three major projects, namely, SLEM and NEPED in Nagaland and NLUP in Mizoram. Whereas the former two has demonstrated the effectiveness of investing in improved <i>Jhum</i> management, the latter has focussed on finding a viable alternative to <i>Jhum</i> by promoting settled agriculture. Both approaches have been found to be useful in addressing issues such as low productivity, forest /soil degradation and poor incomes of farmers. The project will scale up the lessons of these projects in their respective states while also facilitating cross learning and adoption of key lessons across the two states. Additionally, as the practice of <i>Jhum</i> is common across the entire North Eastern region, the project will also serve as a learning site for all NE states who can explore adoption/ scaling up of one or both of these models. Refer to Table 4 for detailed responses to the Scaling up Framework.</p>

<b>IFAD's Policy for Gender equality and Women's empowerment</b>	The project activities, implementation arrangements and M&E system have been designed in compliance with the IFAD Targeting Policy as well as the IFAD policy on gender equality and women's empowerment. For more details please see table 1 & 2 below.
<b>IFAD's Policy for indigenous people</b>	IFAD's policy on Engagement with Indigenous Peoples (2009) aims to enhance development effectiveness and to ensure that indigenous peoples' communities in rural areas are empowered to improve their well-being, income and food security through self-driven development that builds on their identity and culture.  The project is being implemented in the states of Nagaland and Mizoram which have respectively 92.8% and 96.6% tribal population in their rural areas. Almost the entire population covered through the project consists of scheduled tribes. The project acknowledges and builds on local, traditional knowledge and institutions of the people. For more details refer to Table 3 below.

**TABLE 1. KEY FEATURES OF GENDER SENSITIVE DESIGN**

ISSUES	PROJECT COMPLIANCE
1. The project design report contains – and project implementation is based on - gender-disaggregated poverty data and an analysis of gender differences in the activities or sectors concerned, as well as an analysis of each project activity from the gender perspective to address any unintentional barriers to women's participation.	The project design is based on the analysis of gender differences and adequate safeguards have been built to ensure equal participation. The project would ensure full participation of women in capacity building, project planning and implementation. The project will also build capacity of project staff to effectively address issues of gender mainstreaming and social inclusion.
2. The project design report articulates – or the project implements – actions with aim to: <ul style="list-style-type: none"> <li>• Expand women's economic empowerment through access to and control over productive and household assets</li> </ul>	Specific actions will be taken to promote the role of women in management of farm and related enterprises. Women play a key role in management of livestock and the project lays emphasis on both backyard poultry as well as the more remunerative pig value chains (and dairy in Mizoram). Where present, women's credit groups and societies will serve as the centres of credit activities enhancing the credit worthiness of women and develop them as partners in the development process.
<ul style="list-style-type: none"> <li>• Strengthen women's decision-making role in the household and community, and their representation in membership and leadership of local institutions</li> </ul>	Representation of women is already mandated by State policy and laws in the Village Council (VC), the principal local governance institution at the village level, and the Village Development Board, the sub-committee of the VC responsible for implementation of government programmes.

	<p>In Nagaland the project will be creating <i>Jhum</i> Resource Management Committee (JRMCS) under the Village Council and the representation of women and Women’s organizations in this committee will be ensured. In Mizoram the participatory processes envisaged for land use planning will include women which will draw them into public life of the village and give a voice in matters related to the community. Women representation will be ensured in all the committees to be established by the project and while selecting beneficiaries of the project interventions. The project will invest in capacity building of the women to enhance their active participation in these village level bodies. The participatory planning process and inclusion of women in the CIs will draw women into the public life of the village and give them a voice in matters related to the community.</p>
<ul style="list-style-type: none"> <li>• Achieve a reduced workload and an equitable workload balance between women and men.</li> </ul>	<p>Women play a key role in agriculture in the project areas contributing about 75 percent of labour in <i>jhum</i><sup>54</sup>. Short <i>Jhum</i> cycles are one of the biggest source of drudgery for the women who have to undertake household work in addition to travelling to <i>jhum</i> areas (which are often far from home). The lengthening of <i>jhum</i> cycles and/ or shift towards settled agriculture will have a strong positive impact in reducing drudgery for women. The other major cause of drudgery is in firewood collection. To address this the project will actively promote the uptake of LPG Gas cylinders. Additionally, the project will explore the use of machines for highland agriculture.</p>
<p>3. The project design report includes one paragraph in the targeting section that explains what the project will deliver from a gender perspective.</p>	<p>Yes</p>
<p>4. The project design report describes the key elements for operationalizing the gender strategy, with respect to the relevant project components.</p>	<p>The project design explicitly lays out strategies for gender mainstreaming.</p>
<p>5. The design document describes - and the project implements - operational measures to ensure gender- equitable participation in, and benefit from, project activities. These will generally include:</p>	
<p>5.1 Allocating adequate human and financial resources to implement the gender strategy</p>	<p>Yes</p>
<p>5.2 Ensuring and supporting women’s active participation in project-related activities, decision-making bodies and committees, including setting specific targets for participation.</p>	<p>Yes, as explained above.</p>

<sup>54</sup>NEPED (2007). Adding Value to Shifting Cultivation in Nagaland, India. Kohima, Nagaland p.14.

<p>5.3 Ensuring that project/programme management arrangements (composition of the project management unit/programme coordination unit, project terms of reference for staff and implementing partners, etc.) reflect attention to gender equality and women's empowerment concerns.</p>	<p>Yes, the proposed structure provides for equal representation of women in programme management.</p>
<p>5.4 Ensuring direct project/programme outreach to women (for example through appropriate numbers and qualification of field staff), especially where women's mobility is limited</p>	<p>The project design makes provisions for specifically engaging women for certain positions based on their competitive advantage. For example, the key person in supporting livestock development would be a CAHW, with one in each village who will be trained to provide preventive health services and first aid, as well as providing advice on improved husbandry practices. With women having a major role in livestock, wherever possible the CAHW will be a woman.</p>
<p>5.5 Identifying opportunities to support strategic partnerships with government and others development organizations for networking and policy dialogue</p>	<p>The project will work closely with local institutions and the state government to advocate for greater and more active role of women in the traditional CIs.</p>
<p>6. The project's logical framework, M&amp;E, MIS and learning systems specify in design – and project M&amp;E unit collects, analyses and interprets sex- and age-disaggregated performance and impact data, including specific indicators on gender equality and women's empowerment.</p>	<p>Yes.</p>

**TABLE 2. IFAD TARGETING POLICY- CHECKLIST FOR DESIGN**

ISSUES	PROJECT COMPLIANCE
<p>1. Does the main target group - those expected to benefit most- correspond to IFAD's target group as defined by the Targeting Policy (poorer households and food insecure)?</p>	<p>In Nagaland the project will cover 137,000 rural households and in Mizoram 64,500 rural Households of whom about 95% will be active farmers.</p> <p>As the project would involve participatory land use planning for the entire village and seek to create community conserved areas and firewood forests besides <i>Jhum</i> improvement, upland terraced rice stabilisation and value chain development, the project will target all households in selected villages which include a range of different tribal groups (22 tribes in Nagaland and 15 in Mizoram overall). Thus, saturation approach will be followed within each cluster to ensure comprehensive land use planning for the entire village landscape. However within these areas, specific interventions will be undertaken to support the</p>

	poorest households, the youth and women.
2. Have target sub-groups been identified and described according to their different socio-economic characteristics, assets and livelihoods - with attention to gender and youth differences? (Matrix on target group characteristics completed?)	Yes sub target groups such as youth and women have been identified according to their different socio economic characteristics. For example, Special measures will be implemented to ensure that rural youth are fully involved in taking up on and off-farm activities. Some of the civil society organizations and other agencies will be involved to train youth in off farm activities and handholding to start enterprises with financial support.
3. Is evidence provided of interest in and likely uptake of the proposed activities by the identified target sub-groups? What is the evidence? (Matrix on analysis of project components and activities by principal beneficiary groups completed?)	Yes the experience from NEPED and SLEM in Nagaland and NLUP in Mizoram demonstrates a high level of interest among the population sub-groups in the proposed project activities. Additionally, the activities have been identified based on the interaction of the design team with the community members.
4. Does the design document describe a feasible and operational targeting strategy in line with the Targeting Policy, involving some or all of the following measures and methods:	
4.1 Geographic targeting – based on poverty data or proxy indicators to identify, for area based projects or programmes, geographic areas (and within these, communities) with high concentrations of poor people	<p>The identification of the project districts has been done to ensure that only hill districts are included and districts where other large scale projects are being implemented through other donors are excluded.</p> <p>Within the districts the project will identify households based on the following criteria:        In Nagaland the project will select a cluster of about 60-80 villages in each of the 8 districts depending on the size of the districts. The main village clusters selection criteria include: (i) at least 75% of the villages with more than 60% of the households undertaking <i>jhum</i> cultivation; (ii) more than 50% of the <i>jhum</i> cultivating villages have a <i>jhum</i> cycle of eight years and less; (iii) one cluster per district covering the blocks falling in the cluster in its entirety to ensure that the cluster boundary is in consonance with the administrative boundaries for ease of management; (iv) existence of access roads; and (v) potential for cultivating high value crops on <i>jhum</i> land.</p> <p>In Mizoram, the project will be implemented in all the villages of the four identified project districts.</p> <p>A saturation approach will be followed to ensure comprehensive land use planning for the entire village landscape and provision of support services to address the needs of most of the</p>

	households who are involved in farm activities.
4.2 Direct targeting - when services or resources are to be channelled to specific individuals or households	This will be done for identification of the poorest households to ensure that they are provided additional services, as appropriate.
4.3 Self targeting – when goods and services respond to the priority needs, resource endowments and livelihood strategies of target groups	This will apply in the engagement of households in various value chains as well as for adoption of LPG gas cylinders.
4.4 Empowering measures - including information and communication, focused capacity- and confidence-building measures, organisational support, in order to empower and encourage the more active participation and inclusion in planning and decision making of people who traditionally have less voice and power	This will be done through the engagement of village level CIs, membership based NGOs such as the Young Mizo Association in Mizoram and other NGOs in Nagaland, and through capacity building of the marginalised groups, especially women. Participatory processes will be employed to seek participation of the poorest.
4.5 Enabling measures –to strengthen stakeholders’ and partners’ attitude and commitment to poverty targeting, gender equality and women’s empowerment, including policy dialogue, awareness-raising and capacity-building	The project design includes all enabling measures to strengthen stakeholders’ and partners’ attitude and commitment to poverty targeting, gender equality and women’s empowerment. This will be implemented at the state, district and village level through sensitization, capacity building and necessary policy provisions.
4.6 Attention to procedural measures - that could militate against participation by the intended target groups	The project design has put in adequate procedural measures to ensure participation of the intended target group, primarily the households practicing <i>Jhum</i> . This includes targeting of villages with high <i>Jhum</i> practice, and short <i>jhum</i> cycles and engaging the CIs to ensure all households are engaged in PLUP.
4.7 Operational measures - appropriate project/programme management arrangements, staffing, selection of implementation partners and service providers	The project will be anchored in the respective state Agriculture Departments which is sensitive to the issues relating to <i>Jhum</i> . With the Agriculture Production Commissioner being the overall Mission Director, effective convergence with other concerned departments will be achieved smoothly. Finally, at the village level the engagement of existing CIs will facilitate the engagement of entire village communities.
5. Monitoring targeting performance. Does the design document specify that targeting performance will be monitored using participatory M&E, and also be assessed at mid-term review? Does the M&E framework allow for the collection/analysis of sex disaggregated data and are there gender sensitive indicators against which to monitor/evaluate outputs, outcomes and impacts?	Yes; the project design document specifies use of participatory M&E and also provides for collection and analysis of gender disaggregated data.

**TABLE 3. IFAD POLICY FOR INDIGENOUS PEOPLE**

ISSUES	PROJECT COMPLIANCE
<p>1. The project design report is in line with IFAD Policy on Engagement with Indigenous Peoples and takes into account the socio economic and cultural specificities of the indigenous peoples' communities living in the project area. It provides baseline information on their demographic, social, cultural, and political characteristics; the land and territories that they have traditionally owned or customarily used or occupied; and the natural resources they manage or depend upon</p>	<p>The project is being implemented in the states of Nagaland and Mizoram which have respectively 92.8% and 96.6% tribal population in their rural areas. Almost the entire population covered through the project consists of scheduled tribes. Thus the design is appropriately informed by the available data pertaining to the Scheduled Tribes in the two states. The project acknowledges and builds on local, traditional knowledge and institutions of the people and is in consonance with the nine principles of engagement espoused in the IFAD Policy on Engagement with Indigenous Peoples.</p> <p>Additionally, it must be stressed that both Nagaland and Mizoram have been granted special status by the Constitution of India.</p> <p>The state of Mizoram comes under the Sixth Schedule of the Constitution of India which lays down a framework of autonomous decentralized governance with legislative and executive powers over subjects like water, soil, land, local customs and culture. The councils under the sixth schedule have been given more power than the local governments under the 73rd and 74th amendments in the rest of the country. It has been established that this autonomy paradigm has brought a degree of equilibrium within the tribal societies mainly via the formal dispute resolution under customary laws and through control of money-lending etc.</p> <p>Article 371 (A) is a special provision granted to the state of Nagaland: in this regard not only the customary law, social practice and belief of the people of Nagaland but also the resources of the state is veridantly safeguarded from the intervention of the union government and its various policies unless the State Assembly so decides by resolution.</p> <p><i>Given these special provisions for the two states which safeguard the customary knowledge, practices and culture, the project, while adhering to the key principles of IFAD IP Policy, will do so in consultation with the respective state governments.</i></p>
<p>2. The project design report includes disaggregated data by indigenous group and geographical location</p>	<p>There is data available on the different tribal groups in each of the project states/ districts and the project refers to this, where applicable. Tribal communities are geographically distributed, with very little intermixing. As the Village Council, a representative body of the communities, plays a pivotal role in the planning and implementation of the project activities, the specific concerns of the local tribal population will be addressed during implementation.</p>
<p>3. The project design report identifies, interventions which respond to the</p>	<p>Yes. The activities were identified in consultation with the communities during the design process and these build</p>

<p>needs and priorities as expressed by the targeted indigenous peoples' communities and which build on their knowledge, cultural systems, and institutions.</p>	<p>on their traditional knowledge, cultural systems and local institutions.</p>
<p>4.1 Ensuring that representatives of the indigenous peoples' communities, partners of the project, are present at all stages of the project cycle and that a consultation plan leading to their Free, Prior and Informed Consent is embedded in the project design and the consultation and participation process is documented</p>	<p>The project design has systematically engaged with the tribal communities at all stages and the implementation plan also proposes their engagement at various stages.</p> <p>With regards the FPIC, even though the design proposes it, its adoption will depend on the decision of the respective state governments who, under the constitution of India have been given a high degree of independence that safeguard the traditional knowledge, practice and culture of the tribal communities.</p>
<p>4.2 Ensuring that project/programme activities are co-created and co-managed by the indigenous peoples communities</p>	<p>The Village Council, a representative body of the local tribal communities, play a critical role in the implementation of the project, leading on the process of PLUP as well as in other community level activities.</p>
<p>4.3 Ensuring the service-providers and extension workers used by the project (public or private) have the capacity and are trained to reach out to indigenous peoples.</p>	<p>These being essentially tribal states, the service providers are mostly from the Scheduled Tribes and/ or very well equipped to provide services to the tribal communities. Additionally, most of the community workers hired by the project will be from the community.</p>
<p>4.4 Ensuring that the project design report includes measures to strengthen  a) the social, legal and technical capacity of the government institutions to address IPs issues in the project area; b) IPs' institutions and organizations in the project area</p>	<p>Yes, and this has been explained above.</p>
<p>4.5 Ensuring that information disclosure on the project is in accordance with prevailing IPs' customs and traditions and printed material is written in the IPs language</p>	<p>Information disclosure will be in accordance with the prevailing tribal customs and traditions. As regards printed material these would be in the language being commonly used by the tribal communities.</p>
<p>5. M&amp;E mechanisms are participatory and adapted to capture indigenous peoples' perceptions and perspectives. M&amp;E systems include specific indicators to measure the well-being, poverty and sustainability in a way that is relevant to indigenous peoples.</p>	<p>The M&amp;E systems are participatory and have been devised to capture all key aspects of the project including the well-being of the target population, all of whom are likely to be scheduled tribe.</p>

**TABLE 4. SCALING UP FRAMEWORK**

KEY ISSUES	PROJECT RESPONSE/ STRATEGY
<p><b>02.</b> What is to be scaled up? Are the lessons learned from previous interventions sufficiently rigorous to justify bringing them to scale?</p>	<p>The state of Nagaland has implemented two projects- SLEM and NEPED, elements of which will be scaled up in FOCUS Nagaland. In Mizoram the state government implemented NLUP, lessons from which will inform the design of FOCUS Mizoram.</p> <p>SLEM focused on improving <i>Jhum</i> to make it sustainable and more productive rather than advocating its abandonment. It demonstrated that productive potential of <i>Jhum</i> lands can be enhanced and soil degradation reduced by introducing various soil and water conservation measures in <i>Jhum</i> areas. Once the potential of land is enhanced, <i>Jhum</i> cycles can be increased to allow regeneration of biomass and restore soil fertility, making the farming system more productive and sustainable. . As a pilot initiative, SLEM worked in only 40 villages in three districts.</p> <p>An independent study assessed the outcomes of SLEM which includes improved vegetation cover by over 2 000 hectares of land in project areas, reduction in soil erosion rate from 50 m/ha per year to 26 m/ha per year, 10 percent increase in incomes of 4 400 women as a result of sale of organic farm produce from <i>Jhum</i> fields, 15-20 percent increase in average annual incomes of 5 008 households from increased yield of <i>Jhum</i> fields, increase in <i>Jhum</i> cropping phase from two to three years in pilot <i>Jhum</i> farms as a result of timely introduction of soil and water conservation measures, benefits to over 800 <i>Jhum</i>-practicing households from the introduction of integrated farm development practices that integrate crop, livestock, fishery, forestry and horticulture and reduce soil erosion etc.</p> <p>The key focus of NLUP is on switching over to permanent and sustainable livelihood activities as an alternative to <i>Jhum</i> (shifting) cultivation; land reforms for giving permanent land ownership rights to farmers and effective land use plan with judicious mix of agri-horti and plantation crops, agro-forestry, micro-enterprise etc. NLUP, has succeeded in reducing dependence of farmers on <i>Jhum</i> practices from 66.40% to 46.14% and correspondently settled cultivation has increased from 16.19% to 27.20% in the last 5 year as well as the income of the farmers. NLUP expects to eventually increase income of farmers by 7 to 10 times compared to income from <i>Jhuming</i> at present.</p>
<p><b>03.</b> If a project is innovating/testing a new model/approach, to</p>	<p>Both SLEM and NLUP were introduced as an innovative approach to deal with <i>Jhum</i>, albeit in two different ways.</p>

<p>what extent has the project identified the areas and approaches for accumulating knowledge during implementation in order to guide future decisions on scaling up?</p>	<p>The projects have been assessed through third party evaluations and midterm studies.</p>
<p><b>04.</b> What is the appropriate ultimate scale of the intervention the IFAD project or programme supports in the country? In other words, how many people, households, districts, etc., could and should ultimately be reached? What will be the economic impact?</p>	<p>The scale up will cover 64,500 rural households in 4 out of 8 districts in Mizoram and 137,000 rural households in 8 out of 11 districts in Nagaland. Depending on the success of the initiative it can be scaled up to cover the entire states of Mizoram and Nagaland (except plains). As all the states in North East India deal with <i>jhum</i>, the models could be scaled up across the entire region.</p>
<p><b>05.</b> Where will sustainability come from in the future and what is the rationale in the choice of the key partners?</p>	<p>The key focus of the project is (1) to create ecological balance through either sustained increase in <i>Jhum</i> cycles and/or gradually shifting to sedentary farming; and (2) enhancing farmer's income so that the pressure on land is reduced. In so doing the project will strengthen sustainability of upland farming systems and their capacity to respond to climate change. It is expected that most of the changes brought about during the project life cycle will be self-sustaining.</p> <p>The organisation which will be responsible for anchoring the project is the DoA in Mizoram and Nagaland. This is because the department brings together significant funds from the Centrally Sponsored schemes under 4 flagship schemes and has outreach up to the village level. These schemes will continue to operate after the project life and will provide needed support to households and communities post project lifecycle.</p>
<p><b>06.</b> To what extent is a scaling-up approach able to maintain selectivity and simplicity in project design? Is the project avoiding the risk of adding complexity while scaling up?</p>	<p>The project is scaling up select elements/ strategies of NLUP and SLEM, which have demonstrated success such as Participatory Land use planning. The design is simple with two programme components.</p>
<p><b>07.</b> What is the likelihood that the key drivers of the scaling-up process will be able to lead and sustain the efforts beyond the project?</p>	<p>The state Dept of Agriculture which anchored the SLEM and NLUP projects and will now be anchoring FOCUS are the repository of knowledge related to the successful interventions and the lessons learned. They are well placed to lead the activities beyond the project. Besides, the village level planning and implementation will be anchored by the Village Councils which are traditional CIs and which have also played an active role in the implementation of SLEM and NLUP.</p>

<p><b>08.</b> Are the economic and financial benefits sufficiently attractive to drive expansion and sustain the initiative in the long term?</p>	<p>Yes, as explained in 1.</p>
<p><b>09.</b> Has the project identified the right “spaces” that will permit the intervention to grow to the desired scale? Is the project sufficiently integrating policy engagement and knowledge to open the necessary spaces?</p>	<p>Yes. This is a two state project and proposes to engage a regional institution such as ICAR to conduct specific studies and to organize periodic learning events in the region to facilitate cross learning in the region, undertake documentation and dissemination and inform policies. It is to be noted that the state of Nagaland is currently in the process of formulating its Land Use Policy and could learn from the experiences of Mizoram which has already formulated and rolled out its New Land Use Policy.</p> <p>Knowledge sharing and exchange through a regional entity will also help to generate interest in other NE states who are tackling similar issues of shifting agriculture.</p>
<p><b>10.</b> Is the government providing the required fiscal space to sustain project financing?</p>	<p>Yes, the government is contributing significantly through parallel financing and convergence funds, channeling a significant share of the Centrally Sponsored Schemes to the project area. Additionally the respective state governments will release INR 15.00 crore as endowment grant to the Society responsible for implementing the project. Breakdown of financing by key partners and states is as below:</p> <p>In Mizoram the total project cost is estimated at about USD 78.85 million and will be financed by an IFAD loan of USD 35.25 million, parallel financing of USD 17.19 million through Central Sector Schemes (CSSs), and GoM counterpart funding of USD 11.79 million (including state share for CSSs), convergence funding USD 12.75 million, and a beneficiary contribution and bank loan of USD 1.43 million.</p> <p>In Nagaland the total project cost is estimated at about USD 89.20 million and will be financed by an IFAD loan of USD 40.25 million, a GoN counterpart funding of USD 11.69 million, Parallel financing from CSSs of USD 19.70 million, IFAD grant of USD 0.55 million, Beneficiary contribution of USD 1.74 million and convergence funding USD 13.08 million. Convergence funding will be mainly through MGNREGS funding to Village Development Boards.</p>
<p><b>11.</b> Are actions likely to be coordinated with partners and the momentum maintained?</p>	<p>Yes the co-ordination is well worked out in the DPR</p>
<p><b>12.</b> Are there adequate procedures for documenting the progress, lessons learned and impacts of the scaling-up</p>	<p>Yes, the project will engage with a regional entity like the ICAR Regional office for North East to undertake documentation, facilitate cross learning and exchanges, organise regional events for knowledge sharing.</p>

<p>effort?</p>	<p>Additionally project will have a robust M&amp; E system for regular data collection and analysis; impact studies at baseline and end term and an MIS.</p>
<p><b>13.</b> Does the project's M&amp;E system track whether the scaling-up process is moving in the right direction, as identified at the design stage?</p>	<p>Yes. It is also proposed to engage a technical agency such as FAO to provide technical guidance and support to the project.</p>
<p><b>14.</b> How will the information generated by M&amp;E be fed back to key stakeholders and the broader public, and used to make necessary course corrections?</p>	<p>Explained in 8 and 11 above.</p>
<p><b>15.</b> Have obstacles and risks been identified and addressed through mitigation measures?</p>	<p>Yes as listed in the risk section of the DPR</p>

## Appendix 12: SECAP Review Note

### A. Major landscape characteristics and issues (Social, natural resources, and climate)

1. The project will be implemented in the states of Nagaland and Mizoram, in the North-east region of India. The State of Nagaland was formally inaugurated on December 1, 1963, as the 16<sup>th</sup> State of the Indian Union. It is bound by Assam in the West, Myanmar (Burma) on the east, Arunachal Pradesh and part of Assam on the North and Manipur in the South. The State consists of eleven Administrative Districts, inhabited by 16 major tribes along with other sub-tribes. Each tribe is distinct in character from the other in terms of customs, language and dress; although all tribes belong to the Naga ethnic group. Mizoram is a mountainous region which became the 23<sup>rd</sup> State of the Union in February 1987. It was one of the districts of Assam till 1972, when it became a Union Territory. Flanked by Bangladesh on the west and Myanmar on the east and south, Mizoram occupies an area of great strategic importance in the north-eastern corner of India, having a long international boundary of 722 kms.
2. The Constitution (Seventy-Third Amendment) Act, 1992, which came into force w.e.f. 24<sup>th</sup> April, 1993, inserted Part IX in the Constitution of India and accorded Panchayats a Constitutional status as institutions of local self-governance for rural India. Article 243M (1) of the Constitution exempts Scheduled Areas and Tribal Areas referred to in Clause (1) and (2) of article 244 from application of the provisions of Part IX of the Constitution. However, article 243M (4) (b) empowers the Parliament to legislate and extend the provisions of Part IX to Scheduled Areas and Tribal Areas referred to in clause (1), subject to such exceptions and modifications as may be specified in such law and no such law shall be deemed to be an amendment of the Constitution for the purpose of article 368.
3. The fifth Schedule of the Indian Constitution deals with the administration and control of Scheduled Areas as well as of Scheduled Tribes residing in any State other than the States of Assam, Meghalaya, Tripura and Mizoram. At present, Fifth Schedule Areas exist in 10 States viz. Andhra Pradesh, Chhattisgarh, Gujarat, Himachal Pradesh, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Rajasthan and Telangana.
4. The sixth schedule of the Constitution of India provides for local self-government for the tribal people in the northeast, by making special provisions for the administration of the tribal dominated areas in four states viz. Assam, Meghalaya, Tripura and Mizoram. As per article 244 and 6<sup>th</sup> Schedule, these areas are called "Tribal Areas", which are technically different from the Scheduled Areas under fifth schedule.
5. While both the areas under 5<sup>th</sup> schedule and 6<sup>th</sup> schedule have dominance of the tribal people, the Constitution calls them with different names viz. Scheduled Areas under 5<sup>th</sup> schedule and Tribal Areas under 6<sup>th</sup> schedule. While executive powers of the union extend in Scheduled Areas with respect to their administration in 5<sup>th</sup> schedule; the 6<sup>th</sup> Scheduled Areas remain within executive authority of the state. While 5<sup>th</sup> schedule envisages creation of Tribal Advisory Council, 6<sup>th</sup> schedule provides for District Councils and Regional Councils with certain legislative and judicial powers.
6. Further, article 371A and 371G confer special autonomy provisions for Nagaland and Mizoram, respectively; enhancing the autonomy and power of the Nagaland and Mizoram state legislatures vis-à-vis the Indian Parliament.
7. In Nagaland, the project activities will be implemented in eight out of 11 districts, namely, Mon, Longleng, Zunheboto, Wokha, Kiphire, Phek, Mokokchung and Kohima. In Mizoram, the project activities will be implemented in four out of the eight districts, namely, Kolasib, Serchhip, Mamit and Champhai.

## B. Socio-cultural context

### 1. Nagaland

8. The hilly State of Nagaland is predominantly rural with over 71% of the population living in villages (Census 2011) and a poverty Headcount rate of 19.3%<sup>55</sup> in 2012. The total area of Nagaland is 16,579 sq. km and the total population is 1.98 million with an average population density of 119 per sq km<sup>56</sup>. The sex ratio of the state is 931 females per 1000 males. The literacy rate in the state is 80.11 percent.<sup>57</sup>

9. The state is inhabited by 16 major tribes – *Angami, Ao, Chakhesang, Chang, Kachari, Khamniungan, Konyak, Kuki, Lotha, Phom, Pochury, Rengma, Sangtam, Sumi, Yimchunger and Zeme-Liangmai (Zeliang)*, as well as sub-tribes. Each of the 16 odd tribes and sub-tribes that dwell in this exotic hill State is unique in character with its own distinct customs, language and dress. They can easily be distinguished by the colourful and intricately designed costumes, jewellery and beads that they adorn. The traditional ceremonial attire of each tribe is in itself, an awe inspiring sight to behold; the multi-coloured spears and *daos* decorated with dyed goats' hair, the headgear made of finely woven bamboo interlaced with orchid stems, adorned with boar's teeth and hornbill's feathers, elephant tusk armlets. In days of yore, every warrior had to earn each of these items through acts of valour, to wear them.

10. Most of the Naga villages are located on hilltops, which make supply of drinking water a challenging task. The percentage of households with an improved drinking-water source<sup>58</sup> is 80.9 percent for rural areas. The percentage of rural households using clean fuel for cooking such as electricity, LPG/natural gas, and biogas is only 14.4 percent. Nagaland has a significant burden of infectious diseases that is closely linked to sanitation and water facilities. Improved sanitation facilities<sup>59</sup> are used by 79 percent of rural households.<sup>60</sup>

### 2. Mizoram

11. Mizoram is an isolated, land-locked state characterized by steep, parallel forested hills with exceptional biological diversity. It has a geographical area of 21,081 sq. km and total population of 1.09 million with an average population density of 52 persons per sq. km. Of the total population of 1,091,014 in Mizoram, almost half i.e. 529,037 (48.49 percent) are living in rural areas and 561,977 (51.52 percent) are living in urban areas. The state has a poverty headcount of 31.1%<sup>61</sup> in 2012. The sex ratio of the state is higher than the national average (976 females per 1000 males as compared to national average of 940 females per 1000 males). The literacy rate in the state is 91.58 percent.<sup>62</sup>

12. About 95% of the current population is of diverse tribal origins who settled in the state, mostly from Southeast Asia, over waves of migration starting about the 16th century but mainly in the 18th century. This is the highest concentration of tribal people among all states of India, and they are currently protected under Indian constitution as a Scheduled Tribe. Of the 15 tribes in the state majority are *Mizos*, but there are also some *Maras, Chakmas, Riangs* and *Bru*. World-renowned for their hospitality, *Mizos* are a close-knit society with no class distinction and no discrimination on grounds of sex. The entire society is knitted together by a peculiar code of ethics '*Tlawmgaihna*' an untranslatable term meaning on the part of everyone to be hospitable kind, unselfish and helpful to others.

---

<sup>55</sup>Government of India, Ministry of DoNER: <http://www.mdoner.gov.in/content/poverty-estimates>

<sup>56</sup> The national average is 382 per sq km.

<sup>57</sup>Census Data, 2011

<sup>58</sup> Piped water into dwelling/yard/plot, public tap/standpipe, tube well or borehole, protected dug well, protected spring, rainwater, community RO plant.

<sup>59</sup> Flush to piped sewer system, flush to septic tank, flush to pit latrine, ventilated improved pit (VIP)/biogas latrine, pit latrine with slab, twin pit/composting toilet, which is not shared with any other household.

<sup>60</sup> National Family Health Survey-4 (2015-16)

<sup>61</sup> Government of India, Ministry of DoNER: <http://www.mdoner.gov.in/content/poverty-estimates>

<sup>62</sup>Census Data, 2011

13. Although the terrain in Mizoram is difficult, however the percentage of households with an improved drinking-water source<sup>63</sup> is 87.8 percent for rural areas. The percentage of rural households using clean fuel for cooking such as electricity, LPG/natural gas, and biogas is only 29.9 percent. Improved sanitation facilities<sup>64</sup> are used by 73.1 percent of rural households.<sup>65</sup> Women’s high workloads are exacerbated by deficiencies in basic water and sanitation services in rural areas. Deficiencies in basic services increase the time and effort expended on household water collection, waste disposal, and family hygiene; women are usually responsible for these duties, which generally constrain the time available for income-earning.<sup>66</sup>

## C. Natural resources and Natural Resource Management

### 1. Nagaland

14. Nagaland has an area of 16,579 sq. km. and inhabits a total population of 1.97 million, which is 0.16 percent of the country’s population (Census, 2011).

**Table 1: Nagaland: At a glance**

#	Particulars	Unit	Value
1.	Total Area	Sq. km	16,579
2.	Forest Cover <sup>67</sup>	Sq. km (%)	13,345 (80.49%)
3.	Forest Area	Sq. km (%)	8,629 (52.04%)
4.	Area under Agriculture	Ha	3,89,120
	a. Gross Sown Area	Ha	2,60,000
	b. Net Sown Area	Ha	2,48,354
	c. Area Sown More than Once	Ha	9,000
5.	Area under Irrigation		
	a. Irrigated Area	Ha	66,000
	b. Net Irrigated Area	Ha	62,000
6.	Area under Shifting Cultivation	Ha	123,909 <sup>68</sup>
7.	No. of Cultivators	in lakh	5.444
8.	No. of Agricultural labourers	in lakh	0.338
9.	No. of families practicing Shifting Cultivation		1,16,046

**Source:** Official web page of the Government of Nagaland, updated 18/March/2014 (accessed at: <https://www.nagaland.gov.in/portal/portal/StatePortal/AboutNagaland/NaturalResources>)

15. *Jhum* is the predominant farming system in the highlands across the State of Nagaland and the principal source of rural livelihoods<sup>69</sup> with nearly 97% of the villages practising *Jhum*. In addition to *Jhum*, wet terraced paddy is cultivated on hill terraces using the traditional *Zabo*<sup>70</sup> systems of

<sup>63</sup> Piped water into dwelling/yard/plot, public tap/standpipe, tube well or borehole, protected dug well, protected spring, rainwater, community RO plant.

<sup>64</sup> Flush to piped sewer system, flush to septic tank, flush to pit latrine, ventilated improved pit (VIP)/biogas latrine, pit latrine with slab, twin pit/composting toilet, which is not shared with any other household.

<sup>65</sup> National Family Health Survey-4 (2015-16)

<sup>66</sup> Human Development Report. 2011

<sup>67</sup> The forest cover includes all lands which have a tree canopy density of 10 percent & above and a Minimum Mapping Unit (MMU) of one hectare. The forest cover reported in the ISFR does not make any distinction between the origins of forest stand (whether natural or man-made) or tree species; and encompasses all types of lands irrespective of their ownership, land use and legal status. Thus, all areas bearing tree species including bamboos, orchards, coconut, palm, etc. within recorded forest, private, community or institutional lands meeting the above defined criteria have been termed as forest cover (India State of Forest Report, FSI, 2015).

<sup>68</sup> Kuotsuo, R. et al., 2014. Shifting Cultivation: An ‘Organic Like’ Farming in Nagaland. *Indian Journal of Hill Farming*, December, 27(2), pp. 23-28.

<sup>69</sup> Over 97% villages in Nagaland practice *Jhum*, the few exceptions being in Dimapur, Kohima, Mokokchung and Wokha. In more than 50% villages, 50% or more households practice *Jhum* and about 85% villages have more than 25% households engaged in *Jhum*.

<sup>70</sup> *Zabo* or *Ruza* literally means impounding water and is an indigenous system of harvesting rainwater in practice for centuries as an integral part of the farming system based on upland terraced rice cultivation. It includes maintaining a forest cover in the catchment upstream of the rice terraces, a water storage pit/pond, channels to guide the runoff from the forest and canals to

harnessing rainwater runoff, mainly in Phek inhabited predominantly by the Chakhesang tribe and to a lesser extent in Kohima and Wokha districts. Horticulture and spice cultivation on a small scale as a source of cash through trade within and outside the State and livestock rearing (mainly pig fattening and backyard poultry) supplement rural livelihoods.

16. The land-use statistics of Ministry of Agriculture (2012-13) highlight the patterns as: recorded forest area (52.24%), net area sown (23.02%), land not available for cultivation (5.76%), land under miscellaneous tree crops and groves (5.67%), culturable wasteland (4.26%), fallow lands other than current fallows (6.02%), current fallows (3.03%)<sup>71</sup>.

**Table 2(a): Land Use Pattern of Nagaland**

Land use	Area in '000 ha	Percentage
Total Geographical Area	1,658	
Reporting area for land utilization	1,652	100
Forests	863	52.24
Not available for cultivation <sup>72</sup>	95	5.76
Permanent pastures and other grazing lands	0	0
Land under Misc. Tree crops and groves	94	5.67
Culturable wasteland <sup>73</sup>	70	4.26
Fallow lands other than current fallows <sup>74</sup>	99	6.02
Current fallows <sup>75</sup>	50	3.03
Net Area Sown <sup>76</sup>	380	23.02

**Source:** Land use Statistics, Ministry of Agriculture, GOI, 2012-13

17. The total forest cover in the state is 12,966 sq. km.<sup>77</sup>, along with a tree cover of 381 sq. km. (India State of Forest Report, 2015). The forest cover is 78.21 percent of the total area of Nagaland. The distribution of forest cover is illustrated in Figure 2(a) (Annex 1). The India State of the Forest Report (2015) reports a decrease in forest cover in all districts of Nagaland, except Mon. As reported, the main reasons for decrease in forest cover are shifting cultivation and other biotic pressure on forest lands. As such, forests represent the richest natural resource of the State. Nagaland is also very rich in biodiversity with abundance of animal, insect and plant species. The State has a wealth of herbal, medicinal and aromatic plants with tremendous economic potentials.

18. Nagaland is largely a mountainous state. The Naga Hills rise from the Brahmaputra Valley in Assam to about 2,000 feet (610 m) and rise further to the southeast, as high as 6,000 feet (1,800 m). Mount Saramati at an elevation of 3,841 metres is the state's highest peak. This is where the Naga Hills merge with the Patkai Range in which form the boundary with Burma. Rivers such as the Doyang and Diphu to the north, the Barak river in the southwest, dissect the entire state. The large tracts of total land area of the state under forest cover act as a haven for flora and fauna. The evergreen tropical and the sub-tropical forests are found in strategic pockets in the state.

19. The tropical and sub-tropical evergreen forests of Nagaland consist of a variety of flora — including palms, bamboo, rattan as well as timber and mahogany forests. While some forest areas

---

transport the water from the *Zabo* to paddy terraces. It is practiced predominantly by the Chakhesang tribe, known for their highly developed terrace making skills.

<sup>71</sup>India State of Forest Report, 2015

<sup>72</sup>This includes forest area under non-Agriculture use, barren and uncultivable land.

<sup>73</sup> All lands available for cultivation, whether not taken up for cultivation or taken up for cultivation once, but not cultivated during the current year and the last five years or more in succession for one reason or the other. Such lands may be either wholly or partly covered with shrubs and jungles, which are not put to any use. Land once cultivated but not cultivated for five years in succession are also included in this category.

<sup>74</sup> All lands, which are taken up for cultivation but are temporarily out of cultivation for a period of not less than one year and not more than five years.

<sup>75</sup> Cropped area, which are kept fallow during the current year but was cultivated in the previous year. For example with any seeding area is not cropped in the same year, it may be treated as current fallow.

<sup>76</sup> Total area sown with crops and orchards; counting area sown more than once in the same year, only once.

<sup>77</sup> The total forest cover of Nagaland is further distributed as: 1,296 sq. km. of very dense forest, 4,695 sq. km. of moderately dense forest, 6,975 sq. km. of open forest and 622 sq. km. of scrub.

have been cleared for *jhum* cultivation, many scrub forests, high grass, reeds; secondary dogs, pangolins, porcupines, elephants, leopards, bears, many species of monkeys, sambar, harts, oxen, and buffaloes thrive across the state's forests. At times, there have been incidences of human-wildlife conflict in the state. The great Indian hornbill is one of the most famous birds found in the state. Blyth's tragopan, a vulnerable species of pheasant, is the state bird of Nagaland. It is sighted in Mount Japfü and Dzükou Valley of Kohima district, Satoi range in Zunheboto district and Pfüterero in Phek district. Of the mere 2500 tragopans sighted in the world, Dzükou valley is the natural habitat of more than 1,000.

20. The state is also known as the "falcon capital of the world." Rhododendron is the state flower. The state has at least four species which is endemic to the state. *Mithun* (a semi domesticated gaur) found only in the north-eastern states of India, is the state animal of Nagaland and has been adopted as the official seal of the Government of Nagaland. It is ritually the most valued species in the state. To conserve and protect this animal in the northeast, the National Research Centre on Mithun (NRCM) was established by the Indian Council of Agricultural Research (ICAR) in 1988.

21. Nagaland has four main rivers, namely, Doyang, Dhansiri, Dhiku, and Tizu. Of these, the first three flow towards the west through Assam plains, to join the mighty Brahmaputra, while Tizu river flows towards the east and south-east, and pours into the Irrawady in Myanmar. The Barak, itself a tributary of Brahmaputra, also drains a small area in Peren district. The drainage map of Nagaland is presented in Figure 3, Annex 1.

22. The state comprises of four agro-climatic zones, namely, (i) Hot per-humid climate (ii) Hot moist sub-humid climate (iii) Warm humid climate, and (iv) Warm per-humid climate.

23. The soils of Nagaland belong to 4 orders, 7 sub-orders, 10 great groups, 14 sub-groups and 72 soil families. The 4 orders found in Nagaland are: (i) Alfisols (ii) Entisols (iii) Inceptisols and (iv) Ultisols. Inceptisols<sup>78</sup> dominate the soils of the State with 66% followed by Ultisols<sup>79</sup> 23.8%, Entisols<sup>80</sup> 7.3% and Alfisols<sup>81</sup> 2.9% of the total 16.6 million Hectares of the State Geographical area. The soil map of the state is presented in Figure 4, Annex 1.

24. Mountains are among the most fragile environments on Earth. The hilly topography, heavy seasonal rains, and the traditional farming practices lead to heavy soil erosion. Soil erosion due to heavy rain leads to increased acidity of soils because Calcium, Magnesium, and Sodium minerals are washed out from soils and at the same time mineral like Iron, Copper and Aluminium in the soil becomes toxic to plants. The mineral imbalance leads to reduced Phosphorus availability to the plant affecting the growth of rice plant. In 2008, the Indian Council of Agricultural Research (ICAR) estimated that without any soil conservation measures, the soil loss in *jhum* cultivation area will be about 40-90 tons per hectare (ICAR Complex, NER, Shillong).

## 2. Mizoram

25. Mizoram has an area of 21,081 sq. km. and inhabits a total population of 1.09 million, which is 0.09 percent of the country's population (Census, 2011).

26. In Mizoram, Agriculture and allied sector account for 16% of the State GDP but support 60% of the population. 9.84% of the total land is under fallow conditions and 4.47% is under net sown area.

---

<sup>78</sup>**Inceptisols** are a soil order in USDA soil taxonomy. They form quickly through alteration of parent material. These are usually the weakly developed young soil, though they are more developed than *entisols*. They have no accumulation of clays, iron oxide, aluminium oxide or organic matter. They have an *ochric* or *umbric* horizon and a *cambic* sub-surface horizon.

<sup>79</sup>**Ultisols** are highly weathered forest soil, which tend to be reddish in colour because of residual iron and aluminum oxides in the horizon. The increased precipitation in *ultisol* regions means greater mineral alteration, more leaching, and therefore, a lower level of fertility. Fertility is further reduced by certain agricultural practices and the effect of soil damaging crops such as cotton and tobacco. These soils need substantial management.

<sup>80</sup>**Entisols** are usually young or underdeveloped, lack vertical development of horizons. These are less fertile soils.

<sup>81</sup>**Alfisols** are pale, grayish brown to reddish in colour with moderate-to-high reserves of basic cations and are fertile. However, their productivity depends on moisture and temperature. They are supplemented by the moderate application of lime and other chemical fertilizers.

Only 3% of land is suitable for paddy cultivation. Overall, the people are highly dependent on natural resources, mainly forests, for their livelihood. Mizoram has a forest cover of 18,748 sq. km., the highest cover in the country in terms of percentage area (88.93%) under forests (India State of Forest Report, 2015). *Jhuming* is the pre-dominant land use system which covers 63% of the total cropped area. With reduction in *Jhum* cycles the systems suffer from low productivity, soil erosion, water scarcity, biodiversity loss and fragmentation of forest cover, thereby heightening vulnerability of rural households to climate change. This necessitates better and more efficient management of *Jhum* while simultaneously promoting settled agriculture.

27. The land-use statistics of Ministry of Agriculture (2012-13) highlight the patterns as: recorded forest area (75.71%), net area sown (5.54%), land not available for cultivation (4.54%), land under miscellaneous tree crops and groves (1.96%), culturable wasteland (0.32%), fallow lands other than current fallows (9.27%), current fallows (2.41%)<sup>82</sup>.

**Table 2(b): Land Use Pattern of Mizoram**

Land use	Area in '000 ha	Percentage
Total Geographical Area	2,108	
Reporting area for land utilization	2,094	100
Forests	1,585	75.71
Not available for cultivation	95	4.54
Permanent pastures and other grazing lands	5	0.25
Land under Misc. Tree crops and groves	41	1.96
Culturable wasteland	7	0.32
Fallow lands other than current fallows	194	9.27
Current fallows	50	2.41
Net Area Sown	116	5.54

**Source:** Land use Statistics, Ministry of Agriculture, GOI, 2012-13

28. The total forest cover in the state is 18,748 sq. km<sup>83</sup>, along with a tree cover of 535 sq. km. (India State of Forest Report, 2015). The forest cover is 88.93 percent of the total area of Mizoram. The distribution of forest cover is illustrated in Figure 2(b) (Annex 1). The India State of the Forest Report (2015) reports a decrease in forest cover in all districts of Mizoram.

29. Tropical Semi Evergreen, Tropical Moist Deciduous, Subtropical Broadleaved Hill and Subtropical Pine Forests are the common vegetation types found in Mizoram. Bamboo is common in the state, typically intermixed with other forest vegetation; about 9,245 km<sup>2</sup> (44%) of state's area is bamboo bearing.

30. Perching on the high hills of North Eastern corner, Mizoram is a storehouse of natural beauty with its endless variety of landscape, hilly terrains, meandering streams deep gorges, rich wealth of flora and fauna. Almost all kinds of tropical trees and plants thrive in Mizoram. The hills are marvellously green. The state has two national parks and six wildlife sanctuaries - Blue Mountain (Phawngpui) National Park<sup>84</sup>, Dampa Tiger Reserve<sup>85</sup> (largest), Lengteng Wildlife Sanctuary<sup>86</sup>, Murlen National Park<sup>87</sup>, Ngengpui Wildlife Sanctuary<sup>88</sup>, Tawi Wildlife Sanctuary<sup>89</sup>, Khawnglung Wildlife Sanctuary<sup>90</sup>, and Thorangtlang Wildlife Sanctuary<sup>91</sup>.

<sup>82</sup>India State of Forest Report, 2015

<sup>83</sup> The total forest cover of Mizoram is further distributed as: 138 sq. km. of very dense forest, 5,858sq. km. of moderately dense forest and 12,752 sq. km. of open forest.

<sup>84</sup> Phawngpui National Park is located in the *Lawngtlai* district.

<sup>85</sup>Dampa Tiger Reserve is within *Mamit* District.

<sup>86</sup>Lengteng Wildlife Sanctuary is located in the *Champhai* district.

<sup>87</sup> Murlen National Park is located in the *Champhai* district.

<sup>88</sup> Ngengpui Wildlife Sanctuary is located in the *Lawngtlai* district.

<sup>89</sup> Tawi Wildlife Sanctuary is located in the *Aizawl* district.

<sup>90</sup> Khawnglung Wildlife Sanctuary is located in *Lunglei* district.

<sup>91</sup>Thorangtlang Wildlife Sanctuary is located in *Lunglei* district.

31. Mizoram has the most variegated hilly terrain in the eastern part of India. The hills are extremely rugged and steep and are separated by rivers which flow either to the north or the south creating deep gorges between the hill ranges. Mizoram is a land of rolling hills, rivers and lakes. As many as 21 major hills ranges or peaks of different heights run through the length and breadth of the state with the highest peak 'Phawngpui (Blue Mountain) towering 2,065 metres above the sea level. The average height of the hills to the west of the state is about 1,000 metres.

32. Mizoram terrain is, according to Geological Survey of India, an immature topography, and the physiographic expression consists of several almost North-South longitudinal valleys containing series of small and flat hummocks, mostly anticlinal, parallel to sub-parallel hill ranges and narrow adjoining synclinal valleys with series of topographic highs. The general geology of western Mizoram consists of repetitive succession of Neogene sedimentary rocks of Surma Group and Tipam Formation viz. sandstone, siltstone, mudstone and rare pockets of shell limestone. The eastern part is Barail Group. Mizoram, lies in seismic zone V, according to the India Meteorological Department; as with other northeastern states of India, this means the state has the highest risk of earthquakes relative to other parts of India.

33. The biggest river in Mizoram is Chhimtuipui, also known as Kaladan, Kolodyne or Chimtuipui. It originates in Myanmar, four tributaries and the river is in patches. The Western part is drained by Karnaphuli (Khawthlang tuipui) and its tributaries. A number of important towns including Chittagong in Bangladesh is situated at the mouth of the river. Before Independence, access to other parts of the country was possible only through the river routes via Cachar in the north, and via Chittagong in the South. Entry through the later was sealed when the Sub-continent was partitioned and ceded to E. Pakistan (now Bangladesh) in 1947.

34. Although many rivers and streamlets drain the hill ranges the most important and useful rivers are the Tlawng (also known as Dhaleswari or Katakhal), Tut (Gutur), Tuirial (Sonai) and Tuivawl which flow through the northern territory and eventually join river Barak in Cachar district. The rivers have a gentle drainage gradient particularly in the south.

35. Lakes are scattered all over the state, but the most important of them are Palak, Tamdil, Rungdil; and Rengdil. The Palak lake is the biggest in Mizoram, is situated in Chhimtuipui district in southern Mizoram and covers an area of 30 Ha. It is believed the lake was created as a result of an earthquake or a flood. The local people believe a village which was submerged still remains intact deep under the waters.

36. The Tamdil lake is a natural lake situated 85 kms from Aizawl. Legend has it there was once a huge mustard plant in this place. When the plant was cut off, jets of water sprayed from the plant and created a pool of water, and thus the name Tamdil which means of 'Lake of Mustard Plant'. Today, the lake is an important tourist attraction and a holiday resort.

37. The most significant lake in Mizo history, Rih Dil, is ironically located in Burma, a few kilometres from the Indo-Burma border. It was believed that the departed souls pass through this lake before making their way to Pialral or heaven. Mizoram is also called as peninsula state, as it has three sides covered with international land and one side covered with domestic land.

38. Due to its geo-climatic condition, the entire state is one of the most hazard prone states in the country. The state is annually swept by cyclonic storms, cloudbursts, hailstorms and landslides. To make matters worse, the State falls under Seismic Zone V, and thus liable to be hit by strong earthquakes. Small tremors are felt every now and then in and around the state.

## **D. Climate**

### **1. Nagaland**

39. Nagaland has a largely monsoon climate with high humidity levels. Annual rainfall averages around 70–100 inches (1,800–2,500 mm), concentrated in the months of May to September. Temperatures range from 21°C to 40°C. In winter, temperatures do not generally drop below 4°C, but

frost is common at high elevations. The state enjoys a salubrious climate. Summer is the shortest season in the state that lasts for only a few months. The temperature during the summer season remains between 16°C to 31°C. Winter makes an early arrival and bitter cold and dry weather strikes certain regions of the state. The maximum average temperature recorded in the winter season is 24°C. Strong north-west winds blow across the state during the months of February and March.

## 2. Mizoram

40. Mizoram has a pleasant climate. The upper part of the hills are predictably cold, cool during the summer, while the lower reaches are relatively warm and humid. It is generally cool in summer and not very cold in winter. During winter, the temperature varies from 11°C to 21°C and in the summer it varies between 20°C to 29°C. Storms break out during March-April, just before or around the summer.

41. The entire area is under the direct influence of the monsoon. It rains heavily from May to September and the average rainfall in Aizawl is 208 cm. Winter in Mizoram is wonderfully blue, and in the enchanting view of wide stretches of a vast lake of cloud. Mizoram receives an average annual rainfall of 2500 mm and is categorized as high risk region with higher degree of climate variability resulting in floods and droughts.

42. Taken all in all, Mizoram is made up of wooded hills, swift flowing rivers quicksilver streams and still lakes, the combination of all this is a rarity. It is the combination of these physical features that has given Mizoram its own charm and fascination.

## E. Potential project's social, environmental, and climate change impacts and risks

43. **Key potential impacts:** Shifting cultivation is prevalent in all the north-eastern states. Ecologically, these regions are far worse than realized. Apart from losing vegetation and biomass due to the practice of shifting cultivation, many other ecological factors too have been affected. Due to shifting cultivation practice on slopes, down-stream siltation of the water bodies is apparent in many districts. Protection and repair of drainage basins for conservation of ecological resources, including water, need large amounts of financial input. The shifting cultivation areas normally receive moderate to high rainfall. Due to splash forces generated from the rain drops, the erosion of precious top soil occurs. Thus, the major factors which influence the rate of soil erosion are rainfall, topography of the terrain, and the kind of vegetation and soil conditions.<sup>92</sup>

44. The traditional and primary agricultural practice of *jhum* in the two states of Nagaland and Mizoram is built around utilizing the heavy monsoonal rainfall. Scanty rainfall and inadequate natural or artificial storage/harvesting facilities for rain water imply that the cultivation during the Rabi season is insignificant.

45. The project places emphasis on increasing the household agricultural income of rural highland communities in Nagaland and Mizoram, and enhancing their resilience to climate change. Implementation of the project will have several positive impacts on the social and natural environment, namely, reduced soil erosion, soil and rainwater conservation, restored soil fertility, and regeneration of biomass. The project has been conceived to increase the environmental sustainability and profitability of farming systems practiced by the highland farmers in eight districts of Nagaland and four districts of Mizoram. The project approach is predicted to enhance farmers' income, while at the same time improve soil productivity and reduce forest/soil degradation, and doing this in a way that builds resilience to climate vulnerability. In conclusion, in order to reduce these climate-related vulnerabilities, as well as the risk of promoting maladaptive activities, it is important to consider the following responses.

---

<sup>92</sup>Singh, J. S. *et al.*, in *Eco-Development Guidelines and Model of Development of the Central Himalaya*, Department of Botany, Kumaun University, Nainital, 1986, p. 48.

46. The following table summarises possible negative environmental and climate change impacts during project implementation, as well as steps to address these, for inclusion in the project document.

**Table 3: Project potential environmental and CC impacts and proposed response measures**

Potential project impacts	Measures to address the impacts
Improved profitability of farming could provide incentives for increased use of pesticides and fertilizers, which may adversely impact on soil fertility, water quality and air pollution which would further impact on health of humans, livestock and other animals	In Nagaland, organic farming is in practice and will be promoted under the proposed project as well. In Mizoram, fertilizer and pesticide application will be in doses too low to cause environmental harm. <i>Jhum</i> is a form of naturally organic farming as farmers do not use pesticides or fertilizers (burning of trees provides necessary potash to the soil). Promotion of IPM for pest control. Integrated approach to farming, inclusive of crop rotation, cover crops, mulches, etc. to maintain soil fertility. Promotion of crop farming along with trees
Improved profitability from farming may provide incentives for organised, unsustainable, over-exploitation of available forest and water resources, which may further constrain the available natural resource base.	Assess economic, environmental and social costs and benefits of adaptation responses based on a thorough analysis of available downscaled climate projections. Define practical criteria in determining how specific climate adaptation interventions are promoted to reduce current and expected risk levels cost-effectively. Invest in off-farm livelihood diversification. Invest in agroforestry and denotification of species to facilitate planting them and using them as commercial species Invest in expanding the community conserved areas and forests as a result of the participatory land use planning and higher environmental awareness Managed conversion from <i>Jhum</i> to settled agriculture
Increased inequality amongst the rural population as a fallout of missing out on proper implementation of the ideal targeting approach as envisaged in project design	Stringent monitoring of the project implementation, esp. the selection of target households (focusing on the poorest households, landless, and agricultural labourers). Promote communitarian systems of resource governance embedded in the cultural ethos and customs of the highland communities in the two States. Work through existing village level institutions, i.e. Village Councils (VCs) in Nagaland and Mizoram, and the line departments to build capacity and commitment to climate risk management, rather than build project specific institutions to avoid duplication and conflict, and ensure institutional sustainability of climate response.
Increase in <i>Jhum</i> cycles may also be affected by degradation and over-exploitation of forests, including fire and overgrazing	Invest in sustainable forest management, afforestation and reforestation, fire breaks, social fencing, community forest management of NTFP, grazing management, promotion of alternative energy sources for cooking, food processing and product development
Landslide and seismic risks are not properly assessed prior to the construction/improvement of agri-link roads and construction of collection centres for farm produce	Conduct an environmental assessment prior to the construction/ improvement of roads/ buildings that would take into consideration natural and climate risks as well as environmental and social safeguards

## F. Climate change and adaptation

47. The climate change and adaptation related parameters are first discussed for Nagaland in this section, followed by Mizoram later on.

### 1. Nagaland

48. The Indian Network for Climate Change Assessment (INCAA) in its report 'Climate Change and India: A 4X4 Assessment - A sectoral and regional analysis for 2030s' for the purpose of observed

climate and climate change projections classifies the country into four regions – the Himalayan region, the North-Eastern region, the Coastal region and the Western Ghats. The Nagaland state, with most of its landmass part of the North-Eastern Hills, falls within the Himalayan and the North Eastern region. The trend of projections for both the regions is similar, as indicated in the table below.

**Table 4: Projected climate change parameters in 2030s with respect to 1970s**

Features		Himalayan/North Eastern Region
Temperature		Increase
Precipitation		Increase
Extreme Temperature		Increase
Extreme Precipitation	Intensity	Increase
	Number of Rainy Days	Increase

**Source:** Climate Change and India: A 4X4 Assessment - A sectoral and regional analysis for 2030s, MOEFCC, GOI, 2010

48. Specifically, the projections for climate change for the North-Eastern region by the Indian Network for Climate Change Assessment in its report 'Climate Change and India: A 4X4 Assessment', are summarised below:

- a. **Precipitation:** The projected mean annual rainfall is varying from a minimum of 940±149mm to 1330 ±174.5 mm. The increase with respect to 1970's is by 0.3% to 3%. The north-east also show a substantial decrease in rainfall in the winter months of January and February in 2030's with respect to 1970's with no additional rain projected to be available during the period March to May and October to December. In fact, recent data indicates the same pattern. However, the monsoon rainfall during June, July and August is likely to increase by 5 mm in 2030's with reference to 1970's, a rise of 0.6%.
- b. **Annual Surface Temperature:** Surface air temperature is projected to rise by 25.8 to 26.8°C in 2030's with a standard deviation ranging from 0.8 to 0.9. The rise in temperature with respect to 1970's is ranging from 1.8 to 2.1°C.

49. **Extreme Precipitation:** The frequency of rainy days is projected to be more and there will be an increase in intensity of rainy days by 2-12% in 2030s.

50. **Observed Trends in Climate.** (Figures 5-6, Annex 2). Indian Institute of Science (IISc), Bangalore<sup>93</sup> has analysed the climate change trends for Nagaland, at the district level, using temperature and rainfall as the key climate variables for analysis. In summary, the observations are:

51. As part of the study, the high resolution (0.5° x 0.5° lat. and long.) daily gridded rainfall dataset for a period of 35 years (1971–2005) provided by Indian Meteorological Department (IMD) was analysed to understand the precipitation trends. The analysis focused on the monsoon season as more than 95 percent of precipitation falls over Nagaland during that period. For temperature trends, the Climatic Research Unit Time Series (CRU TS) version 2.10 on a 0.5° lat x 0.5° long resolution monthly dataset spanning 102 years (1901-2002) were used. District-wise data was obtained by re-gridding the dataset to 0.1° lat. x 0.1° long and re-aggregating by the districts to study the climate variability at district level.

52. **Observed Precipitation Trends:** A majority of districts of Nagaland experienced an increase in monsoon precipitation in the past 100 years (Figure 5, Annex 2). However, Wokha showed a decrease in precipitation of 0.26 mm/day. The precipitation trend shows high variability with Zunheboto (4.67 mm/day) and Tuensang (3.96 mm/day) showing a high increase in precipitation.

53. **Observed Temperature Trends:** The analysis of temperature records for Nagaland shows a steady warming trend in both the minimum and maximum temperatures, over the past 100 years. The districts of Wokha, Zunheboto, Tuensang and Phek have registered an increase in minimum temperature of more than 1.6°C. The minimum temperature in Mon has increased by about 1.4°C (Figure 6(a), Annex 2). The maximum temperature also shows an increasing trend all across Nagaland (Figure 6(b), Annex 2). The maximum temperature in the district of Wokha has increased by

<sup>93</sup> Prof. Ravindranath of Indian Institute of Science and his team carried out this study, and were sponsored by the GIZ/KfW.

1.17°C, and in Phek the increase in maximum temperature is of the order of 1.1°C. The northern districts, in comparison, have experienced a smaller increase in absolute value of maximum temperature. For example in Mon the maximum temperature has increased by 0.57°C, in Zunheboto by 0.69°C, and in Tuensang the maximum temperature has increased by 0.77°C respectively. Overall, the trend of last 100 years shows that increase in minimum temperature is slightly higher in absolute terms than the increase in maximum temperature.

54. The observed district wise trends in minimum and maximum temperature during the period 1901 and 2002 and precipitation during the period 1971 and 2005 are summarised in the table below. As can be seen, information for Kohima (which includes Peren and Dimapur district, carved out of it during the past decade and a half) and Mokokchung is not available for the period, and is, therefore, a limitation.

**Table 5: Summary of the observed trends in temperature and precipitation**

District	Change in precipitation (1971-2005)	Change in Minimum Temperature (1901-2002)	Change in Maximum Temperature (1901-2002)
Mon	+2 - 3 mm/day	+1.4°C	+0.57°C
Tuensang <sup>^</sup>	+3 - 4 mm/day	+1.6°C	+0.77°C
Mokokchung	No data	No data	No data
Wokha	Negative change	+1.6°C	+1.17°C
Zunheboto	>4mm/day	+1.6°C	+0.69°C
Phek	1 - 2 mm/day	+1.6°C	1.1°C
Kohima	No data	No data	No data

**Note:** <sup>^</sup> Includes Longleng, Kiphire

55. **Climate Change projections.** The projections for various climate parameters for the state of Nagaland are summarized in this section.

56. **Temperature:** In the mid-century (2020-2050), the state is projected to experience an increase in annual average temperature between 1.6°C and 1.8°C (Figure 7(a), Annex 2). Southern districts show higher increase in temperature, with Kohima, Wokha, Phek, Zunheboto and Tuensang showing an increase in temperature between 1.7°C and 1.8°C. The Northern districts of Mon and Mokokchung are projected to have an increase in average temperature of between 1.6°C and 1.7°C.

57. **Precipitation:** The total annual rainfall in Nagaland within the same period is projected to increase state-wide (Figure 7(b), Annex 2). The southern districts of Nagaland are likely to receive higher rainfall with respect to the northern districts. The southern districts of Kohima, Zunheboto, and Phek are projected to obtain more than 20 percent increase in rainfall with respect to base line. Wokha and Tuensang are projected to receive an increase in precipitation by 15 percent and 20 percent. The northern most districts of Mon and Mokokchung are projected to receive an increase in precipitation of between 10 percent and 20 percent. A gradient decrease in precipitation is projected as the latitude increases.

58. **Extreme Precipitation:** Increase in extreme rainfall events (100 mm/day) is projected in some districts of the state. Phek, Tuensang, and Kohima are projected to experience an increase in extreme rainfall events of 2 or more days per year. These are the same districts that exhibited an increase in absolute value of rainfall as well. The northern districts of Zunheboto, Wokha, Mon, Mokokchung all exhibit less than 2 days increase in extreme events per year.

59. Heavier precipitation during monsoon will manifest itself into higher surface runoffs, higher frequency of landslides, higher soil erosion and hence heavier silt load in the rivers leading to frequent meandering of rivers and river bank erosion. The higher run-offs may lower the recharge capacity of soils in and around the spring heads of perennial springs, damage existing water storage structures built in the hills, lead to loss in soil minerals, and may make non-landslide prone areas also prone to landslides. Erratic and heavy rains also lead to frequent landslides and damages to irrigation infrastructure, affecting agricultural activities in the command area.

60. **Droughts and Floods:** Increase in moderate drought like condition (onset of drought) is projected for Nagaland during 2021-2050s, with northern states facing more drought weeks than the southern states. The drought weeks across Nagaland are likely to increase by 25-50 percent in 2021-2050s with respect to current base line scenario. The projections also indicate higher flood discharge in the southern districts of Phek and Kohima, an increase of 10 - 25 percent more flood discharge is likely to take place with respect to current discharge rates in these districts.

61. The climate projections for the state are summarized in the table below.

**Table 6: Climate projections for Nagaland in 2021-2050**

Climate parameter	Districts	Projected Change in 2021-2050s with respect to base line (1961-1990)
Temperature	Kohima, Wokha, Phek, Zunheboto and Tuensang,	+ 1.7-1.8°C
	Mon, Longleng and Mokokchung	+1.6°C-1.7°C
Precipitation	Kohima, Zunheboto, and Phek	+20%
	Wokha and Tuensang	+15-20%
	Mon, Longleng and Mokokchung	+10-20%
Extreme rainfall (>100 mm/day)	Phek, Tuensang, Kohima	>2 or more days
	Zunheboto, Wokha	1.0 – 2.0 days
	Mon, Mokokchung	0 – 1.0 days

62. **Agricultural vulnerability profile.** Agricultural vulnerability assessment for Nagaland is presented in the Nagaland State Action Plan on Climate Change (SAPCC). Indicators for agricultural vulnerability assessment were selected based on the dynamics of the region and data availability such as rainfall variability, area under rain-fed crops, rural population density, net sown area, area under high yielding crop varieties, amount of fertilizers and manure used, groundwater availability, mean crop yields, etc. These indicators were quantified mostly with data from secondary sources across districts and at the state level. Further, for the future scenario, the same set of indicators was estimated, incorporating simulation trials for crop yield function. The assessment representing the year 2010 has been referred to as the 'baseline'. With the same set of indicators, impact projections for the short-term (2021-2030) incorporating the outputs of climate model projections are assessed. The vulnerability profiles for the agricultural sector are developed for the two scenarios namely baseline/current scenario and A1B scenario, a moderate climate scenario. Figure 8 shows district-wise agricultural vulnerability profile of Nagaland for baseline as well as A1B scenario. Out of the 8 districts considered, Tuensang, Wokha, Mon, Mokokchung, Phek and Zunheboto districts fall in the highly vulnerable to moderately vulnerable category. For climate impacted scenario, the district Tuensang is very highly vulnerable.

63. **Projected Impact of Climate Change on Forests and Biodiversity.** (Figure 9-10, Annex 2).The change in rainfall pattern changes, humidity and temperature increases and larger number of extreme events, leads to a higher projected Net Primary Productivity (NPP)<sup>94</sup> figures for the forests in Nagaland. Various factors, as discussed in the previous section, leading to greater human interference in eco-systems and modelling results using the biophysical vegetation model IBIS with climate scenario inputs from PRECIS from the study carried out by Ravindranath of Indian Institute of Science (IISc), Bengaluru indicate that of the 515 forested grids of 50kmx50km resolution covering Nagaland forests, only 16.7 percent of those grids will be impacted by climate change in the short-term period of 2030s and undergo change in vegetation type in Mid Century (MC) period (2021-2050) due to changes in observed climate with respect to baseline (BL) period (1961-1990). The grids

<sup>94</sup> **Net Primary Productivity** (NPP) is the amount of carbon uptake after subtracting *Plant Respiration* (RES) from *Gross Primary Productivity* (GPP). GPP is the total rate at which the ecosystem captures and stores carbon as plant biomass, for a given length of time.

corresponding to the likely change in the forest types correspond to the western region of Mon district, northern region of Tuensang and north-eastern region of Mokokchung.

64. Climate change is also likely to aggravate human induced pressures on eco-systems leading to progressive biodiversity decline. However, there is insufficient understanding at the moment on the exact nature of the complex interactions of various pressures and the responses of ecosystems and the time span over which these will play out. Species extinction at the local level is a cause of concern as it can reduce societal options for adaptation. For the mountain regions in the state, it is expected as experienced in other mountains that, with current level of increase in mean annual temperature over various parts of the Himalayas, an upward movement of plants is expected (INCCA Report #2).

65. With a vast majority of the population dependent on agriculture and natural resources for livelihoods, changes in natural resource base due to climate change will affect livelihood of rural households directly. Conversely, the high dependence of livelihoods on natural resources, especially forest produce, also puts a question mark on the sustainability of the resource use. It is, therefore, important to climate-proof livelihoods of those who are dependent on natural resources, and make the resource use by them more sustainable, reducing their carbon footprint. A shift away from natural resource usage may not be an appropriate strategy in view of the vast land resources, with a low population density of 119 persons per sq. km.

66. Climate change impacts on livelihoods can arise out of crop failures due to delayed or erratic monsoonal rainfalls, loss of harvest due to flash floods and landslides, shift from self-employment to wage labour as agriculture productivity gets affected, increase in labour requirements to harness water due to drying up sources, etc. Shift in forest vegetation, biodiversity and cover will also have positive or negative impact on the livelihood of local communities. As demonstrated in the study conducted by Indian Institute of Science, geographically, the rural and urban households in Tuensang, Kiphire, Longleng and Mon are more vulnerable to climate change than the other districts.

## 2. Mizoram

67. A study by remote sensing center in Mizoram that tracks climatic parameters (namely rainfall, temperature and humidity) of Aizawl City for a period of twenty years (1986-2005) in Aizawl city has been summarised below. The data were compared and analyzed for two decades taking an average data for 10 years interval as well as 5 years interval to arrive at brief conclusive results on the overall climate change in Mizoram.

- a. **Rainfall:** The Pattern of rainfall in Mizoram during the past 20 years, i.e. from 1986 to 2005 follows the usual expected trend in which maximum downpour occurred during the monsoon seasons and declines during the rest of the seasons. However, when analyzed on a yearly basis the trend shows a gradual decline and then a sudden increase from 1990 to 1995. In fact, during the span of the 20 years study period, 1995 recorded the highest rainfall of 3185.98 mm whereas 1994 had the lowest rainfall with a measure of 2278.29 mm only. From here onwards, the trend does not show either a sharp increase or decrease in rainfall.

When analyzed on an average monthly basis per year, the trend shows a gradual increase from January and reaches its peak maximum during July-August and then continues to decrease sharply by the end of the year. Anyway, when taken as a whole the average annual rainfall for the studied 20 years accounts to 2793.67 mm which can be credited to the contribution of downpour recorded during the monsoon seasons. On analysis of the two decades, the monthly average rainfall during 1996-2005 when compared to the previous decade of 1986-1995 shows a gradual increase during the month of March, May, September and then a remarkable increase during the month of July.

Thus, it can be interpreted that there is change in the rainfall trend when analyzed and compared between the two decades, but not on an extremely large scale which again shows that this trend can further change the pattern for the consecutive 10 years rainfall data. If this usual small scale change in trend continues, then Mizoram is not expected to experience a sharp decrease in

rainfall unless there are other climatic elements that unexpectedly alter the usual trend, which is mostly above the 2000 mm mark.

- b. **Temperature:** Temperature data has also been analyzed using 20 years temperature data collected and studied for two decades. The average monthly maximum temperature taken during the decade of 1996-2005 shows an increase over the previous decade of 1986- 1995, during the early part (January-February) as well as later part (November-December) of the years. However, not much increase is observed during the rest of the months on comparison and the trend is somewhat parallel to each other.

However when analyzed on a whole, there has been an increase in the average maximum temperature during 1996-2005 by +0.28°C, over the decade of 1986-1995, which denotes a trend in increase in temperature during the last decade. The same increase is also reflected in the average minimum temperature recorded for the decade of 1996-2005 which is +0.30°C, much higher than that recorded for the previous decade of 1986- 1995. The rate of increase is clearly reflected when the overall monthly average temperature recorded for both decades shows an increase of +0.29°C. The overall trend in temperature also shows a gradual increase during the 1996-2005 decade. The increase in temperature as per the data indicates that there might be further rise in the heat wave in the years to come.

- c. **Humidity:** Humidity is another climatic element that has close relation to temperature and rainfall and also plays a key role in affecting the climate of a region. Average data on humidity for 20 years was collected and analyzed for a period of 5 years each. The results studied for each period clearly indicated that there was a gradual and progressive increase in humidity during the entire span of 20 years. In each of the 5 years period data that was analyzed, the trend seemed to decrease during the month of February but then gradually increased till August where it reached its maximum and then decreased during the end of each year. All the data recorded were within the wide range of +50% to +90% relative humidity, with the highest percentage recorded during June to August. Taken as a whole, the average relative humidity studied at 5 years interval for a span of 20 years indicated a gradual increase from 73.14% in 1986-1990 to 81.42% in 2001-2005, a marked increase of +8.28% during last two decades.

68. Data that have been used to study climate change in this context are necessarily simplified representations of the climate system prevailing during 1986-2005. Despite the inevitable limitations, the climate data simulations more or less accurately reproduce the large-scale seasonal distributions of pressure and temperature. In addition, the large-scale structure of precipitation (rainfall) and heat flux (temperature variations) also closely resembles the observed estimates on a global scale (which was +0.3 and +0.6° C during the last 150 years).

69. Considering all the results obtained from the study, it can be said that the climate parameters studied, have either direct or indirect relation to increased atmospheric concentrations of the principal anthropogenic greenhouse gases (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, CFCs) which have subsequently increased in significant amount during the last two decades. Elevated concentrations are predicted to persist in the immediate atmosphere for years to come if we do not reduce emissions of greenhouse gases by the end of the next decade. Moreover, the increased atmospheric levels of these gases, especially CO<sub>2</sub>, increase the IR (Infrared) energy absorbed by the atmosphere, thereby producing a warming influence at the ground level and sub-surface as a result raising the mean temperatures by a few more degrees.

70. **Current climate variability in Mizoram.** Climate variability refers to variations in the mean state (of temperature, monthly rainfall, etc.) and other statistics (such as standard deviations, statistics of extremes, etc.) of the climate on all temporal and spatial scales beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability), or to variations in natural (e.g. solar and volcanic) and external forcing (external variability).

71. **Rainfall variability:** Majority of districts of Mizoram experienced an increase in precipitation in the past 100 years (Figure 11, Annex 3). There are just slight differences between the absolute values of increase in precipitation, the Champhai district observing the highest increase in precipitation over the last 100 years, (>13%). The districts of Mamit, Serchhip, Lunglei, Lawngtlai, and Saiha had an increase in precipitation of 3.62 mm/day/100 years. These districts are primarily in the South and the West of Mizoram. Kolasib also observed an increase in precipitation.

72. **Temperature variability:** The analysis of temperature records for Mizoram shows a steady warming trend in both the minimum and maximum temperatures (Figure 12, Annex 3). The minimum temperature trend (Figure 12(a), Annex 3) indicates an increase of  $\geq 1.5^{\circ}\text{C}$  in Kolasib which is located in the northern-most tip of the state. The districts in the northern part of the state show a higher increase in minimum temperature than the southern districts. The maximum temperature trend (Figure 12(b), Annex 3) shows an increase in of  $\geq 1.2^{\circ}\text{C}$  in all the districts, with northern districts exhibiting a higher increase in maximum temperature. Overall, the minimum temperature trend is higher in absolute terms than the maximum temperature trend.

73. **Future climate projections for Mizoram.** The observations are:

- The state is projected to experience an increase in temperature above  $1.6^{\circ}\text{C}$  and lesser than  $1.75^{\circ}\text{C}$ .
- The projected increase for annual average temperatures for the northern-most district of Kolasib is the highest.
- The southern districts are predicted to have a lesser increase in average temperature than the northern districts.
- The entire state of Mizoram is projected to receive an increase in precipitation.
- The southern and western districts of Mizoram are projected to obtain higher rainfall.
- The northern-most tip of the state, Kolasib is also projected to receive an increase in precipitation of more than 10%.

74. **Projected increase in average temperature:** The projected increase in average temperature in the state by mid-2030's is shown in Figure 13, Annex 3.

75. **Projected changes in rainfall.** The projected change in total annual rainfall and for the southwest monsoon season (June, July, August and September months abbreviated as or JJAS) is shown in Figure 14, Annex 3. The entire state of Mizoram is projected to receive an increase in precipitation.

- The southern and western districts of Mizoram are projected to obtain higher rainfall.
- The northern-most tip of the state, Kolasib is also projected to receive an increase in precipitation of more than 10%.

76. **District-wise projection of extreme events in precipitation.** An increase in the number of extreme rainfall days is projected for the state.

- The eastern part of the state, Champhai, Serchhip and Saiha observed more than 1 day of extreme precipitation (Table 7).
- The Northern and Western part of the state, Kolasib, Aizawl, Mamit, Lunglei and Lawngtlai exhibited an increase in extreme event of at least 1 day more.

Table 7: **District-wise change in the number of days (in a year, on an average) when the rainfall exceeds 100 mm per day for Mizoram**

#	District	Annual increase in extreme event days
1.	Champhai, Saiha, Serchhip	1.0 – 2.0
2.	Mamit, Aizawl, Lawngtlai, Lunglei, Kolasib	0.0 – 1.0

\*\* A heavy rainfall day is defined as a day when the rainfall exceeds 100 mm

77. **Impact of climate change on crop yield.** INFOCROP is a generic dynamic crop model developed to simulate the effects of weather, soils, agronomic management practices (including

planting, nitrogen, residues and irrigation) and major pests on crop growth, yield, soil carbon, water and nitrogen, and the associated impacts on rice production. It can be used for a variety of applications at field, farm and regional levels. The various inputs required by the model include information on rice variety sown, location, soil type, type of sowing, irrigation, fertilizer application, climate data, pest type and diseases. Two model runs were performed-the first simulation called “baseline” using climate data averaged over the period 1975-2005 and fixed CO<sub>2</sub> concentration at 370 ppm and the second simulation incorporating changes in precipitation and temperature for 2035 and with a CO<sub>2</sub> concentration of 466 ppm.

78. It is observed that there will be a reduction in rice yield by 2035 in the five districts of Mizoram. The district Mamit, in the western region of the state is projected to experience a decrease of 5% in rice yield, while the districts of Lunglei, Aizawl and Kolasib are projected to experience a decrease of 8% in rice yield.

79. **Agricultural vulnerability profile:** Agricultural vulnerability assessment is an important pre-requisite for undertaking any planning work or developmental projects aimed at climate resilient sustainable agricultural development. Indicators for agricultural vulnerability assessment were selected based on the dynamics of the region and data availability such as rainfall variability, area under rain-fed crops, rural population density, net sown area, area under high yielding crop varieties, amount of fertilizers and manure used, groundwater availability, mean crop yields, etc. These indicators were quantified mostly with data from secondary sources across districts and at the state level. Further, for the future scenario, the same set of indicators was estimated incorporating simulation trials for crop yield function. The assessment representing the year 2010 has been referred to as the ‘baseline’. With the same set of indicators, impact projections for future short-term (2021-2030) incorporating the outputs of climate model projections were assessed. The vulnerability profiles for the agricultural sector are developed for the two scenarios namely baseline/current scenario and A1B scenario, a moderate climate scenario. The district-wise agricultural vulnerability profile of Mizoram for baseline as well as A1B scenario is shown in Figure 15, Annex 3. As per these projections, the district Saiha presents the highest agricultural vulnerability, followed by district Aizawl.

80. **Forest vulnerability profile of Mizoram.** A Composite Forest Vulnerability Index was calculated for each district, for two scenarios: Current CFVI and Future CFVI. The forest vulnerability profile of Mizoram for future climate scenario is shown in Figure 16, Annex 3. Based on the CFVI, it was found that the forests of the following districts of Mizoram have high CFVI (have high to moderate vulnerability): Serchhip, Aizawl and Lunglei: the forests in these districts will be the first to show negative impacts when the projected climate changes are actually observed.

## **G. Environmental and social category (A, B, C)**

81. The project is not likely to have any adverse environment impacts on the project areas in Nagaland or Mizoram. In fact, it will have beneficial impacts through the development of land and water resources following an environmentally sensitive approach, including conservation of soil and rainwater, diversification of farming systems, introduction of tree crops and agro-forestry, creation of Community Conserved Areas, improved management of *Jhum* fallows and increasing the *Jhum* cycle, as well as conversion of *jhum* to settled agriculture. The project is expected to have positive social impacts as it would follow an inclusive approach, will be implemented through existing village institutions i.e. VCs, both traditional and statutory, enhance the capacity of these institutions and support greater participation of women and youth in project activities. However, it is by requirement classified as **Category B** in the **environmental and social category** as it will operate in highland areas and would include resource development activities akin to watershed development. Given the risks of landslides (particularly in Mizoram), it is recommended that environmental impact assessments will be undertaken for road works or building construction.

## 1. Climate risk category (High, Moderate, Low)

82. The Himalayan States including Nagaland and Mizoram are classified as the most environmentally sustainable among Indian States on the basis of the Environmental Sustainability Index (ESI) developed by the Institute for Financial Management and Research<sup>95</sup>. As per the results of ESI 2011, the states that are most sustainable are largely in the Northeastern region including Nagaland and Mizoram. It is projected that during 2020-2050, the project states will experience an increase in annual average temperature of 1.6°C-1.8°C compared to 4°C increase in the western coast of India. The total annual rainfall in Mizoram is expected to remain at the current level and in case of Nagaland it is expected to increase by 15%. About 0-2 extreme rainfall events (more 100 mm/day) of 0-2 days are expected to occur in Mizoram and Nagaland.<sup>96</sup>

83. *Jhum* based farming system which is a major source of livelihoods being a rain fed farming system is vulnerable to climate change. FOCUS proposes to implement agriculture-related interventions on *jhum* land, taking into account climate change and its impact on food production and livelihoods. The proposed climate resilient interventions include: (i) soil and water conservation measures to reduce soil erosion and to increase moisture holding; (ii) introduction of varieties tolerant to drought and flood; (iii) introduction of agro-forestry to provide insulation against sudden changes in temperature, increasing soil profile recharge, reducing soil erosion and providing mulch and organic matter; (iv) increasing soil fertility through leguminous cover crops, leguminous trees and bio-fertilizers; (v) improved nursery management; (vi) pest management through bio-control agents; (vii) improvement in the management of terrace rice cultivation with introduction of improved high yielding varieties of paddy; (viii) irrigation support for water storage and delivery systems; (ix) introduction of fish/ duck farming systems in terrace rice lands for diversification; (x) protection from fire in fallow *jhum* through introduction of cover crops; (xi) water source protection as a part of village forest /community forest conservation; and (xii) introducing a system of increasing the cultivation period in the same plot to reduce forest burning every year.

84. The main climate change parameters affecting the agriculture link roads and other connectivity related infrastructure are increased rainfall intensity, duration and frequency and greater variation in maximum and minimum temperature. Climate change is expected to increase the road's exposure to the following risks: (i) loss or damage to road assets due to flooding and landslides; (ii) reduction in road safety and reliability due to flood and landslides; (iii) reduction in road connectivity; (iv) damage to farm land and forest due to flood and landslides; and (v) increase maintenance cost.

85. In response to the identified risks, the project intends to implement climate resilient interventions in construction which include: (i) conducting pre-investment studies for selection of stable, economic and shortest routes; (ii) carrying out detailed survey and design of the road to limit the gradients and better slopes within the standards; (iii) conducting geometric design to optimize balanced cut and fill; (v) raising construction quality - incorporate higher specifications on works and materials to improve quality of works; (vi) applying safety factors to design assumptions such as increased size of drains and culverts, bridge openings, etc.; (vii) avoiding geologically sensitive areas; (viii) reducing slopes and gradients; (ix) increasing protective works; (x) applying scour protections and check dams to reduce gradients of drains; (xi) applying bioengineering measures; (xii) providing sufficient maintenance budget and manage maintenance efficiently; and (xiii) enforcing truck axle load regulations (if required). These measures will be introduced during the detailed design stage and appropriately incorporated in the Bill of Quantities.

86. In view of the above, the project is classified as a **moderate climate risk** project. The project will support climate risk assessment during the project implementation.

---

<sup>95</sup><http://www.ifmrlead.org/wp-content/uploads/2015/OWC/Brief-ESI-2011.pdf>

<sup>96</sup>State Action Plan on Climate Change for Nagaland and Mizoram

## 2. Recommended features of project design and implementation

87. Nagaland and Mizoram, being states with a majority of the farming population practicing *Jhuming*, the traditional farming systems have come under increasing stress due to increased population pressure, rising needs and aspirations of a traditional society in rapid transition, and changing climate patterns. It is crucial to invest in building resilience of the community towards climate variability that impacts the highland farming systems. This section discusses some additional interventions that would be taken into consideration during project design.

88. Component-1 on "Improved *Jhum* Management" will seek to introduce sustainable resource management practices in the *Jhum* areas through participatory land use planning using remote sensing maps. This component will cover activities like preparation of land use plan for the village using land use maps and land suitability classification maps; soil and rainwater conservation measures; improving current *jhum* and improved management of *jhum* fallows; and village forest conservation and support to existing settled agriculture. In the case of Mizoram, in addition to the activities proposed for Mizoram an additional activity of supporting landless households through promotion of Farmers Interest Groups (FIGs) to take up settled agriculture coupled with provision of land titles will be taken up. The main intention is to increase *Jhum* cycle and enhance productivity in *Jhum* areas. This component will have two sub-components: (i) Better *jhum* and conservation; and (ii) Support to settled agriculture including terrace rice cultivation for increased yields.

89. Under Component 2, "Value Chain and Market Access", the project will support development of value chains for selected commodities that have markets in the NER and also outside the states, have longer shelf life or high value to weight ratios (e.g. large cardamom) in view of the weak communications infrastructure. Activities like aggregation, grading, storage, certification, packaging and branding will be funded under the project, providing support for production and marketing related activities. Among livestock, pig rearing and fattening has large potential as the States are unable to meet their domestic demands; Nagaland imports significant quantities of pork. The project will support development of feed production, breeding and basic health services. In Mizoram, there is additionally significant scope for developing bamboo value chain. This component will need the support of entrepreneurs and agencies that have adequate knowledge of markets and trained manpower. These will be procured by the respective state project management units. The project will build market access infrastructure in both the states and climate resilient construction practices will be built into these activities. This component will have two sub-components: (i) Value chain development; and (ii) market access infrastructure.

90. Component-3 on "Project Management" will establish management and administrative procedures including finance, accounting, auditing and a monitoring and evaluation (M&E) system in line with IFAD and state government guidelines. The component will also facilitate knowledge management, using data from the M&E system to inform policy dialogue and structured knowledge exchange within and between the project sites across the two project states and other NE states as well as with the Ministry of DoNER in the GoI, so that emerging lessons from the project could be integrated into state plans of other North Eastern states where *Jhum* is being practiced. This will be achieved by (i) FAO would build capacities of state and district level staff for better land use planning and nursery techniques (i) building the capacity of state and district institutions to generate MIS (including through enhanced M&E capacities); (ii) supporting the finalisation and enforcement of the public policies related to *Jhum* management and (iii) knowledge sharing between the project areas and at the regional level based on opportunities and demands.

91. The environmental and climate change assessment prepared for IFAD's India Country Strategic Opportunities Program (COSOP 2016-2021) concluded that it is clear that farmers and other local stakeholders do not have to be convinced about the importance of climate change and are generally well aware of the consequences of climate change on their farming systems and livelihoods. However, developing local adaptation responses is constrained with a high degree of information uncertainty and complexity. Therefore, the technical options to be designed under the project should be based on a thorough analysis of available climate projections at the district level. Furthermore, diversification of

land use/farming systems, crop productivity enhancement and development of climate resilient and equitable farm based value chains can help achieve the project's development objective of increasing the environmental sustainability and profitability of farming systems practiced by highland farmers in Nagaland and Mizoram.

92. From an institutional point of view, this project will use the existing basic institutional framework for participatory planning and implementation to ensure sustainability. As all development activities in the village, including MGNREGA, are implemented under the aegis of the VDB in Nagaland and VC in Mizoram, it is imperative that project activities will be scaled up by these institutions through convergence with various government development programmes. A Village Council (VC) is the principal local governance institution at the village level, and the Village Development Board (VDB) is the sub-committee of the VC responsible for implementation of government programmes. Use of 3-D village maps, setting up of FIGs and *Jhum* Resources Management Committees (JRMC), formulation and adoption of appropriate village land use policies by VCs based on land suitability maps and farmer-led multiplication by adoption of improved nursery techniques for crops and trees and exchange of selected upland paddy cultivars under the guidance of the State Agriculture Research Station (SARS) are among the likely project innovations.

93. It has been noted that where these institutions have operated collectively, effectively and efficiently, local farmers and households have successfully improved management of agriculture, forests and natural resources and diversified their incomes and livelihood sources. Building adaptive capacity for the poor and most vulnerable requires first social inclusion at the local level, and second, support by middle and higher-level institutions that enable access of these local people to assets and act to facilitate adaptation<sup>97</sup>.

94. The participatory planning process and inclusion of women in the CIs will draw women into the public life of the village and give them a voice in matters related to the community. Where present, women's credit groups will serve as the centre of credit activities enhancing the credit worthiness of women as partners in the development process. The project will also build capacity of project staff to effectively address issues of gender mainstreaming and social inclusion.

95. **Mitigation measures.** Drawing on the significant lessons emerging from from the implementation of at least three projects in the two states, the project seeks to demonstrate the effectiveness of a twin approach of promoting better management of *Jhum* on the one hand and gradually shifting towards sedentary agriculture on the other.

96. In Nagaland, the project seeks to demonstrate pathways for sustainable and climate resilient *Jhum* management that enhance productivity and farmer incomes from *Jhum* and lead to improved regeneration on *Jhum* fallows in the intervening periods between *Jhum* cycles.

97. In Mizoram, the project strives to provide sustainable income to farming families who comprise nearly three-fourths of the total population, by weaning them away from the labour intensive and low value shifting cultivation practice; promoting livelihoods by encouraging small scale industries and small trades; land reclamation and afforestation by introducing sedentary farming systems and land reforms; environment protection and restoration through various means such as expansion of rain catchment areas for recharging springs and underground water, encouraging rearing of domestic animals and poultry for increased meat production to discourage hunting to protect the fauna, etc.

98. **Multi-benefit approaches.** The targeted communities will be benefitted as a whole by focusing on strengthening capacities of the State agencies and community based institutions, and empower them to improve the governance and quality of their *Jhum* lands, develop and implement climate resilient resource management systems, biodiversity and ecosystem conservation. Improvement in the natural resource management will facilitate better rainwater management, soil and water conservation, climate resilient *Jhum* field management, diversification of land use/farming systems,

---

<sup>97</sup> Sterrett, Charlotte (2011) Review of Climate Change Adaptation Practices in South Asia (Oxfam).

crop productivity enhancement and development of climate resilient and equitable farm based value chains.

99. **Participatory processes.** The implementation of the project has been envisaged through community participation. As the project would involve participatory land use planning for the entire village and seek to create community conserved areas and firewood forests besides *Jhum* improvement, upland terraced rice stabilisation and value chain development, the project will target all households in selected villages which include a range of different tribal groups (22 different tribes in Nagaland and 15 in Mizoram overall). About 65% of the target group would comprise of *Jhum* farmers. The focus will be on vulnerable households, such as women-headed households, old people without support systems and agricultural labourers, as target beneficiaries for project interventions. The project will adopt a strategy of gender and youth mainstreaming as well.

### 3. Analysis of alternatives.

100. Apart from the approach envisaged in project design, a few other alternate options that could have been considered for making the project district climate-resilient were analysed as well. Although the proposed project focusses on the soil and water conservation measures, effective and sustainable management of the States' groundwater and surface water resources can also be tapped, particularly through interventions related to rainwater harvesting which is an abundant resource in the north-east. However, the potential small-scale interventions towards groundwater and surface water management may render these economically infeasible for the present project to uptake. Alternate design options explored during the course of the field visits and consultations are briefly mentioned below

- a) Increasing area under rice cultivation to meet the food requirements of the families / communities was an option explored during field visits. This was not substantiated during discussions with farmers as the income was mainly from cash crops like spices and piggery.
- b) Concentrating on the improvement of current *jhum* was also discussed but the area under fallow *jhum* was a critical to the efforts of increasing *jhum* cycle. It was therefore, decided to consider both current and fallow *jhum* lands for project interventions.
- c) Though many other cash crops like ginger, arecanut, pineapple, chayote are grown on a large scale and volumes of produce large, it was decided that the project should focus on high value and low volume crops like turmeric, large cardamom and naga / mizo chilli as they are easier to store and transport to other places efficiently.
- d) The watershed approach was also explored during discussions with the district and state level agencies who had experience of implementing the Integrated watershed management program (IWMP) in Nagaland and Mizoram. However, it was not feasible to get immediate benefits to farmers since watershed approach was focusing on soil and water conservation in a given area and not on production oriented approaches for increasing farm incomes.

## H. Institutional analysis

101. The GoI is aware of the challenges ahead and has taken some initiatives to address the climate change impact on agriculture. India's National Action Plan on Climate Change (NAPCC), released in 2008, was the first major milestone to achieve the objectives of a socially inclusive and sustainable economic growth. Development of climate resilient crops, expansion of weather insurance mechanisms, improved agricultural practices and a 20 percent enhancement in water use efficiency in farming are highlighted. In 2009, the Ministry of Environment and Forests called upon the States to expeditiously prepare the State Action Plans on Climate Change (SAPCC) consistent with the strategy outlined in NAPCC. The Governments of Nagaland and Mizoram have developed their SAPCCs, whereby most of the interventions aimed at improving the climate resilience/adaptation ability of the communities, public or private infrastructures and preserving the eco-systems are proposed to be undertaken and implemented at the State level. Besides, technology improvements in production, consumption and other related sectors at the State level are also critical in enhancing the effectiveness of national policies for mitigation.

102. In the two target states, there are significant lessons emerging from the implementation of at least three projects which demonstrate the effectiveness of a twin approach of promoting better management of *Jhum* on the one hand and gradually shifting towards sedentary agriculture on the other. The projects are NEPED<sup>98</sup>, funded by the India-Canada Environmental Facility (ICEF) during 1995-2006, the Sustainable Land and Ecosystem Management in shifting cultivation areas of Nagaland for ecological and livelihood security (SLEM) project funded under UNDP-GEF in Nagaland to introduce modest changes in *Jhum* management practices and the New Land Use Policy (NLUP) in Mizoram which promotes sedentary agriculture. Additionally, the North Eastern Region Community Resource Management Project for Upland Areas (NERCORMP), a project supported by IFAD in two phases and implemented in Manipur, Meghalaya and the hill districts of Assam has demonstrated the effectiveness of community-based planning and implementation to usher in more sustainable land use systems.

103. The states aim to scale up emerging lessons from two major projects, namely, SLEM in Nagaland and NLUP in Mizoram. Whereas the former has demonstrated the effectiveness of investing in improved *Jhum* management, the latter has focussed on finding a viable alternative to *Jhum* by promoting settled agriculture. Both approaches have been found to be useful in addressing issues such as low productivity, forest/soil degradation and poor incomes of farmers. The project will scale up the lessons of these projects in their respective states while also facilitating cross learning and adoption of key lessons across the two states. Additionally, as the practice of *Jhum* is common across the entire North Eastern region, the project will also serve as a learning site for all NE states that can explore adoption/scaling up of one or both of these models.

104. In Nagaland, SLEM focused on improving *Jhum* to make it sustainable and more productive rather than advocating its abandonment. It demonstrated that productive potential of *Jhum* lands can be enhanced and soil degradation reduced by introducing various soil and water conservation measures in *Jhum* areas. Once the potential of land is enhanced, *Jhum* cycles can be increased to allow regeneration of biomass and restore soil fertility, making the farming system more productive and sustainable. A key innovation of the SLEM project was introduction of Participatory Land Use Planning (PLUP) in its project villages by setting up land use committees (LUC) under the Village Council. With technical guidance of the project staff and consultation with households in the village, LUCs developed land use plans for *Jhum* rotation and site-specific soil and water conservation measures.

105. The NLUP in Mizoram is a versatile mechanism for a stable State economy, environment protection and land reforms and reclamation. The scheme envisages self-sufficiency for beneficiary families in consonance with traditional Mizo values. While the primary objective is economic empowerment of farmers and improvement of rural economy, NLUP also takes care of issues such as food security, product market linkage and value addition, opening of new employment opportunities, strengthening community bonds, maintenance of ecological balance through regeneration of forest and water sources and prevention of soil erosion. Its key focus is on switching over to permanent and sustainable livelihood activities as an alternative to *Jhum* (shifting) cultivation; land reforms for giving permanent land ownership rights to farmers and effective land use plan with judicious mix of agri-horti and plantation crops, agro-forestry, micro-enterprise etc. The State envisages formulation of a Land Use Policy that will create a State Land Use Council to replace the present Land Use Board, enact enabling laws to set up village LUCs and facilitate technical support to the LUCs from line departments. The project will support further policy dialogue in this respect if requested by the State Government.

106. As in the case of SLEM and NLUP, this project will use this basic institutional framework for participatory planning and implementation to ensure sustainability.

---

<sup>98</sup> Implemented in two phases, the first phase (1995-2001) was called Nagaland Environment Protection and Economic Development through People's Action and the second phase (2001-06) was called Nagaland Empowerment of People through Economic Development. [https://www.nagaland.gov.in/Nagaland/GovernmentAndPrivateBodies/Department\\_of\\_NEPED.html](https://www.nagaland.gov.in/Nagaland/GovernmentAndPrivateBodies/Department_of_NEPED.html)

107. The present national policies for environmental management are contained in *National Forest Policy, 1988, the National Conservation Strategy and Policy Statement on Environment and Development, 1992, and the Policy Statement on Abatement of Pollution, 1992*. Some sector policies such as the *National Agriculture Policy, 2000, National Water Policy, 2002*; have also contributed towards environmental management. All of these policies have recognized the need for sustainable development in their specific contexts and formulated necessary strategies to give effect to such recognition. The National Environment Policy seeks to extend the coverage, and fill in gaps that still exist, in light of present knowledge and accumulated experience. Its principal objectives are: (i) Conservation of critical environmental resources; (ii) Livelihood security for the poor; (iii) Inter-generational equity; (iv) Integration of environmental concerns in economic and social development; (v) Efficiency in environmental resource use; (vi) Environmental governance; and (vii) Enhancement of resources for environmental conservation.

108. The Environmental Impact Assessment (EIA) is the principal methodology for appraising and reviewing new projects; and significant devolution of powers to the State level is foreseen. Currently, a weak enforcement of environmental compliance is attributed to inadequate technical capacities, monitoring infrastructure, and trained staff in enforcement institutions. In addition, there is an insufficient involvement of the potentially impacted local communities in the monitoring of compliance, and absence of institutionalized public-private partnerships in enhancement of monitoring infrastructure<sup>99</sup>.

109. National Policy for Farmers, 2007 has also emphasized the need of improving water services to address the issues of quality, adequacy and equity distribution of water and water-use efficiency. The government has also set up National Rain-fed Authority of India. The DoA has also followed a cluster-based approach for Rain-fed Area Development (RAD) under National Mission for Sustainable Agriculture. Strategic Research and Extension Plan (SREP) is being prepared under Agricultural Technology Management Agency (ATMA) for each district through Participatory Rural Appraisal (PRA).

110. National Tribal Policy, 2006 has been outlined to prevent the alienation of land owned by STs and for empowerment of tribal communities to promote self-governance and self-rule as per the provisions and the spirit of Panchayats (Extension to the Scheduled Areas) Act, 2006. The objective of Panchayats (Extension to the Scheduled Areas) Act, 2006 is to safeguard and preserve the traditions and customs of the people living in fifth Scheduled areas, their social, religious and cultural identities, and traditional management of practices of common resources. None of the areas in Nagaland or Mizoram are included in the fifth schedule areas as defined under PESA.

## **I. Monitoring and Evaluation**

111. The project's M&E system will take into account the project log-frame and the RB-COSOP results. M&E data will be disaggregated by gender and by age. Being predominantly tribal population, the data may, if required, be collected/analysed with respect to the most vulnerable tribes. A management information system will be developed in line with other ongoing projects. Baseline and post-implementation surveys as well as annual outcomes surveys will be carried out to document project impact. Outcome surveys will be carried out annually as per the new guidelines developed by IFAD for this purpose.

112. The project reporting system will produce consolidated reports on project progress and results, including the annually reported RIMS indicators of outputs and outcomes. The project will develop a Knowledge Management strategy and action plan. This will include internal learning through regular progress review meetings and the generation of knowledge products, such as newsletters, briefs, training materials, technical manuals, booklets, posters, videos, etc. The project will also strive to be a platform for learning for the other states in NER wherever *Jhum* is being practiced. A project website will be established in each of the two states as a knowledge sharing tool, with information on good

---

<sup>99</sup> Government of India. 2006, National Environment Policy.

practices and innovations shared with NITI Ayog, DEA and Ministry of DoNER and also displayed on the IFAD Asia website.

113. It is recommended that the M&E officer and project staff collect GPS coordinates of all interventions to plot the data in maps and provide a visual representation of activities. This approach enhances monitoring, impact assessment and overall accountability.

#### **J. Further information required to complete screening, if any**

114. The information available herein and presented in the SECAP Note is sufficient to complete the screening, and no further information is required in this context.

#### **K. Budgetary resources and schedule**

115. The total project cost for Nagaland is estimated at about USD 90.06 million and will be financed by an IFAD loan of USD 40.25 million and IFAD Grant of USD 0.55 million, parallel financing of USD 13.26 million equivalents through Central Sector Schemes (CSS) and GoN contribution to CSSs of USD 1.55 million equivalents, convergence funding USD 13.13 million equivalents, beneficiary contribution of USD 3.90 million and GoN counterpart funding of USD 17.42 million equivalents including taxes and duties and staff salaries.

116. The total project cost for Mizoram is estimated at about USD 79.31 million and will be financed by an IFAD loan of USD 35.25 million and IFAD Grant of USD 0.45 million, parallel financing of USD 14.98 million equivalents through Central Sector Schemes (CSS) and GoM contribution to CSSs of USD 1.98 million equivalents, convergence funding USD 13.13 million equivalents, beneficiary contribution of USD 2.37 million and GoM counterpart funding of USD 11.14 million equivalents including taxes and duties and staff salaries.

117. The project seeks to increase the *Jhum* cultivation period to three years from the present levels of one to two years. In order to have significant and sustainable impact, it is proposed to work on two *Jhum* blocks/cycles in each project village. In view of the rugged hilly terrain, poor road connectivity and work distribution during the year in case of *Jhum* cultivation, project implementation would be staggered across years with about one-third of the project villages covered every year, completing one cycle in all project villages in three years. The project duration is therefore proposed to be six years from Loan Effectiveness.

#### **L. Record of consultations with beneficiaries, civil society, general public, etc.**

118. The mission members undertook field visits to project districts in Nagaland and Mizoram during the design mission. Teams of the mission members undertook field visits to select villages in identified project districts in Nagaland and Mizoram. The field visits were designed to have a first-hand knowledge of the topography, agricultural practices and local practices and management by village institutions. During field visits, design members observed the various practices of *jhum* cultivation like slashing the vegetation, burning of the dried grass/vegetation, local agricultural practices like log wood bunding, protection of trees of value. In the low lands, paddy cultivated in the terraces had been harvested and in some villages where water was available, second crops like potato were being cultivated. Community conserved areas in some villages were also visited by the teams in Nagaland.

119. Information and data were gathered during the field interactions on all aspects of agriculture production of key crops, *jhum* practices locally adopted, animal husbandry practices and assessment of the incomes from these activities, markets for these produce and constraints and problems affecting the marketing of agriculture produce and animal husbandry. Discussions were held with village council members, village development board members, *jhum* farmers and women in the villages visited by the design mission in Nagaland and Mizoram. Discussions were also organised at the district level with officials of the development departments like agriculture, horticulture, sericulture, soil and water conservation, fisheries, animal husbandry and veterinary, forestry, irrigation and few

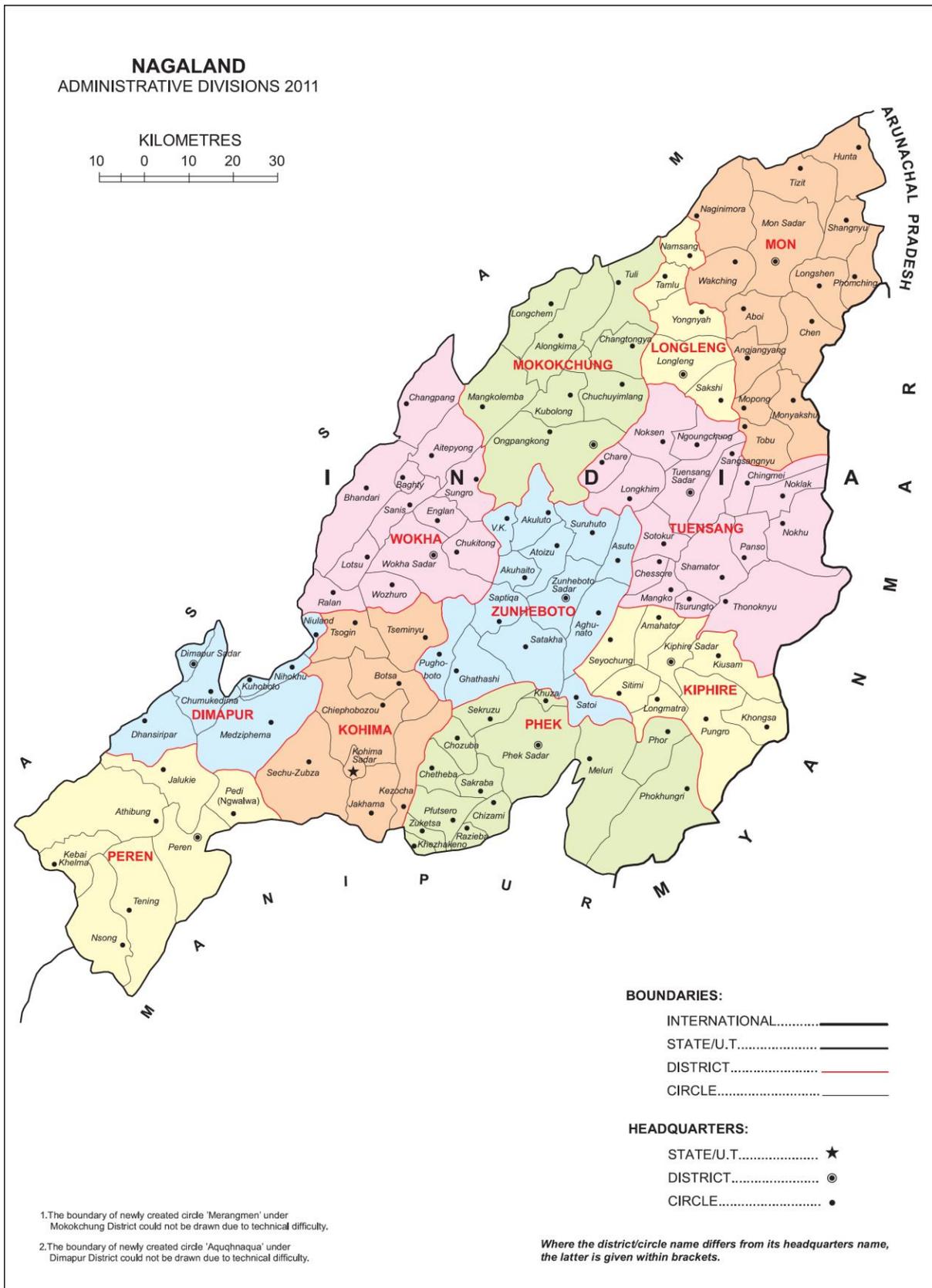
representatives of local NGOs and district commissioners in all the project districts of Nagaland and Mizoram.

120. After the completion of the field visits, the design mission members interacted with officials of state level development departments like agriculture, horticulture, soil and water conservation, forestry, fisheries, irrigation, sericulture, animal husbandry and veterinary. As a part of the preparations of the wrap up meeting at the state level, draft recommendations of the mission on the major components and assumptions were also discussed with the concerned departments

121. The design mission members also met officials of departments like revenue, finance and planning who play a key role in the planning and financing of the project activities and other central/state sector schemes in Nagaland and Mizoram. Meeting were also held with select local entrepreneurs and agencies involved in the management of the value chain of a few commodities to understand the process and assess financial requirements.

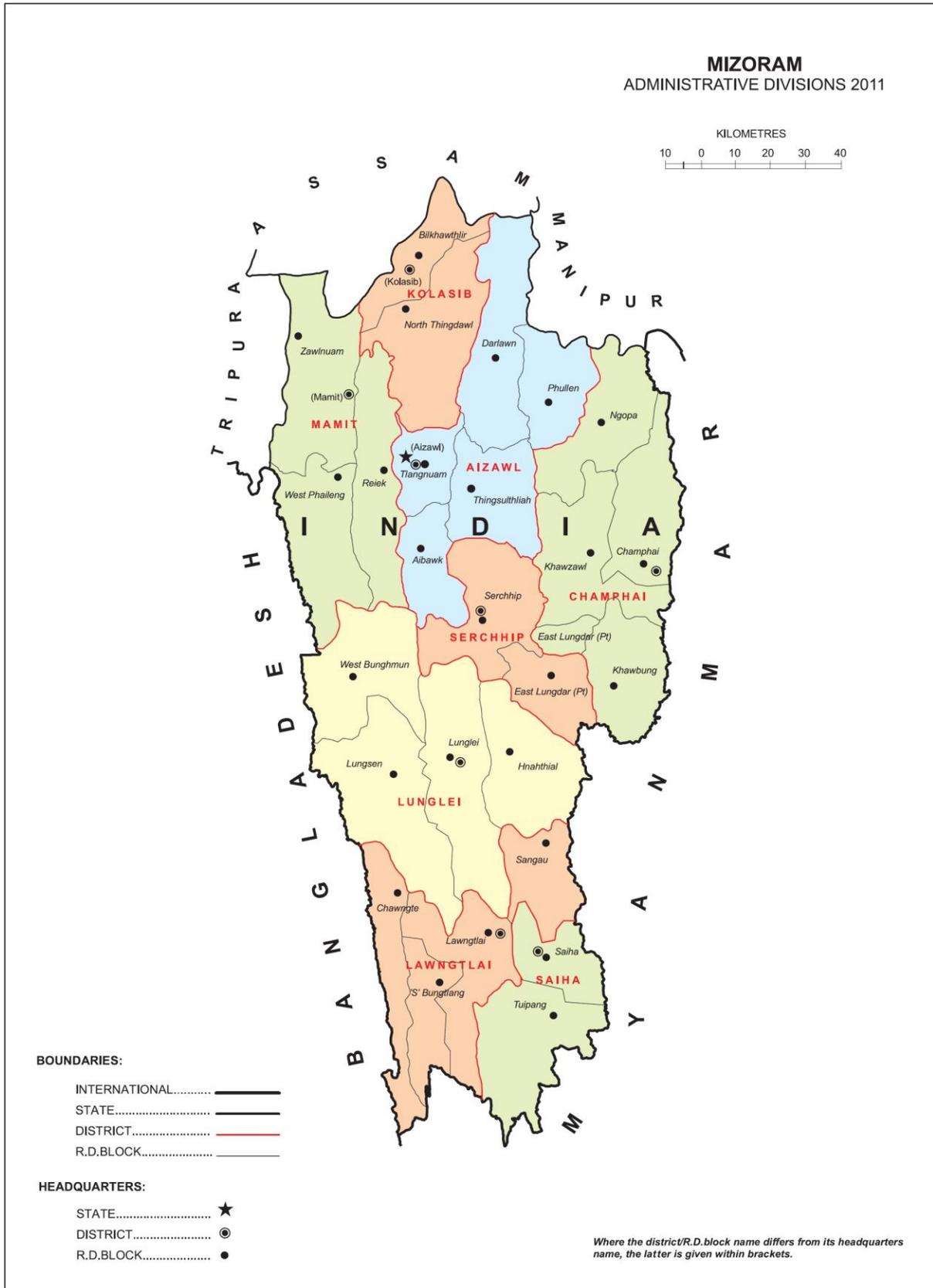
Annex 1

Figure 1(a): A map of Nagaland



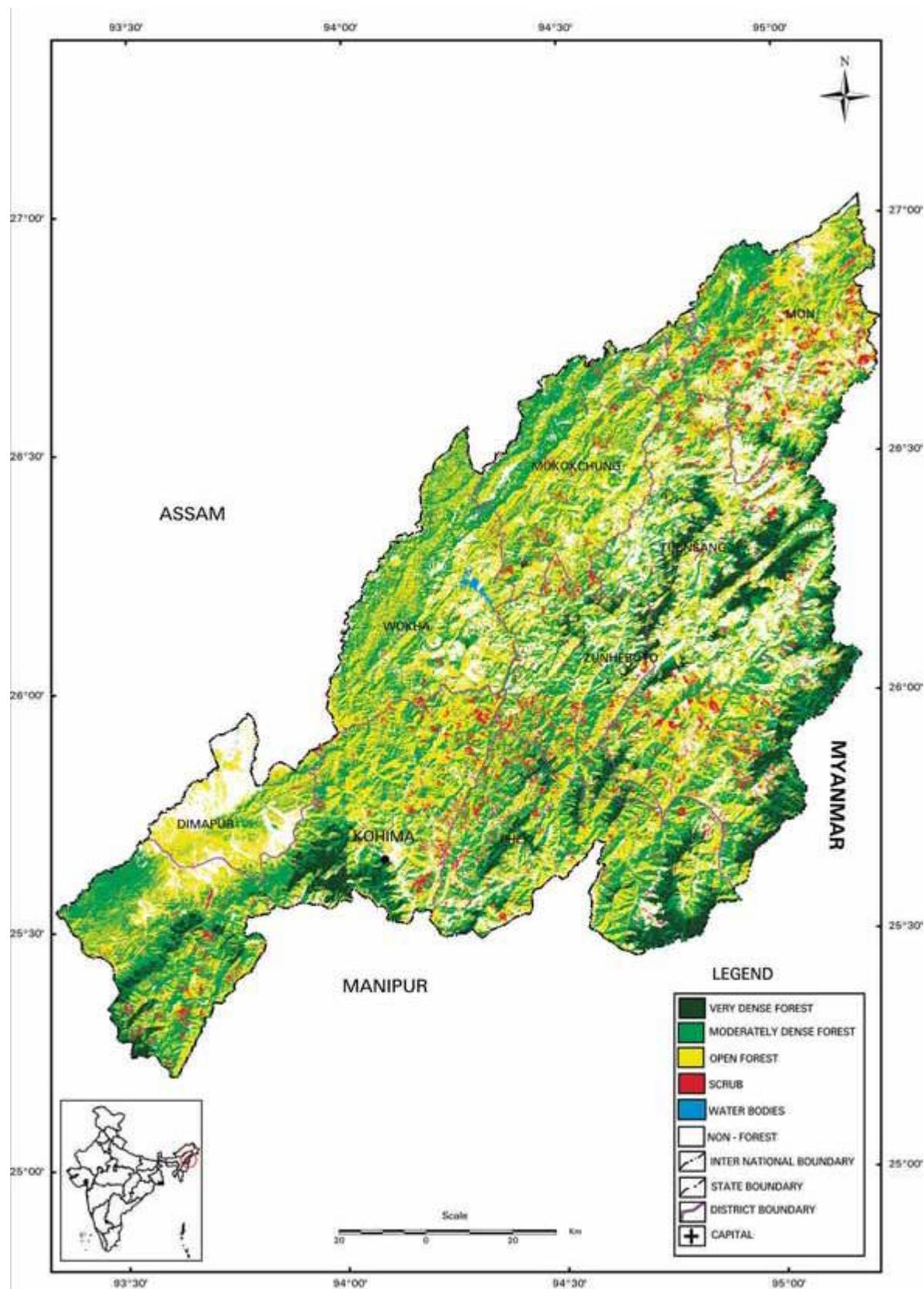
Source: Administrative Atlas of India, Census of India, 2011

Figure 1(b): A map of Mizoram



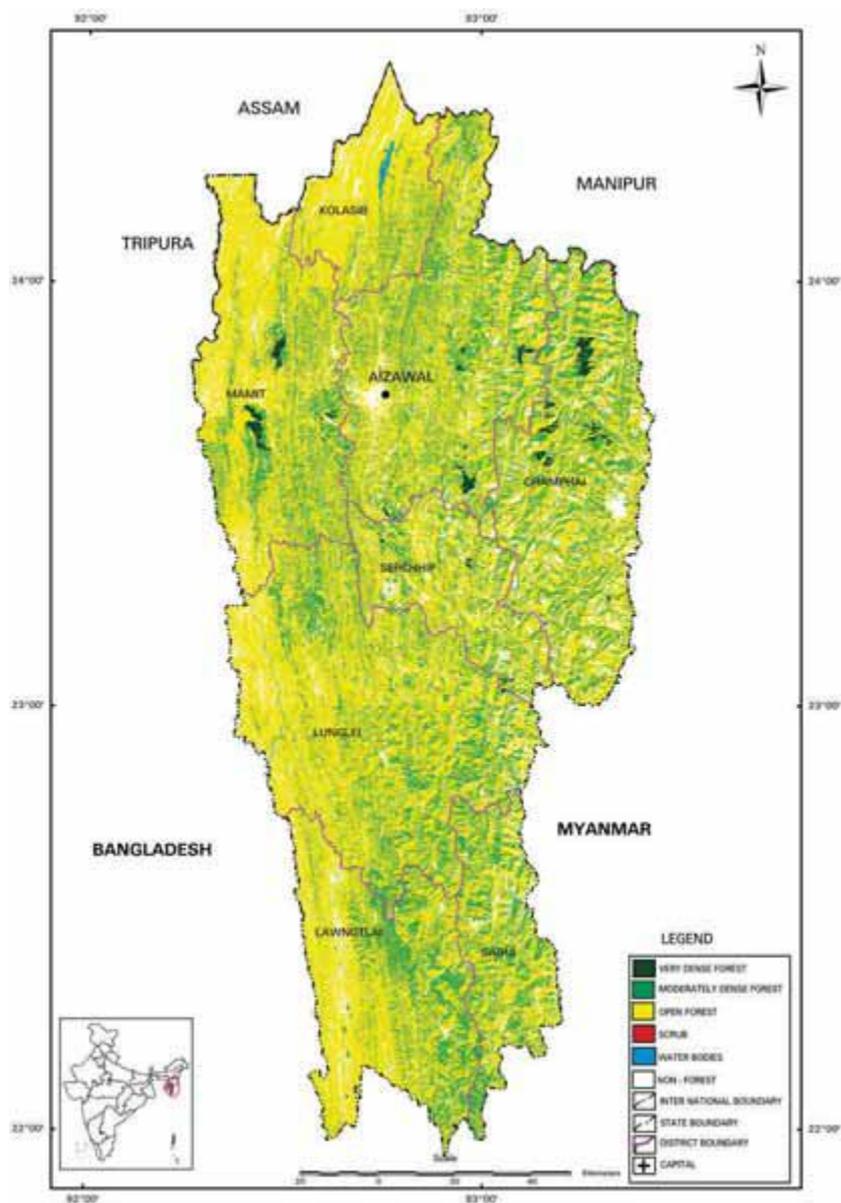
Source: Administrative Atlas of India, Census of India, 2011

Figure 2(a): *Forest cover map of Nagaland*



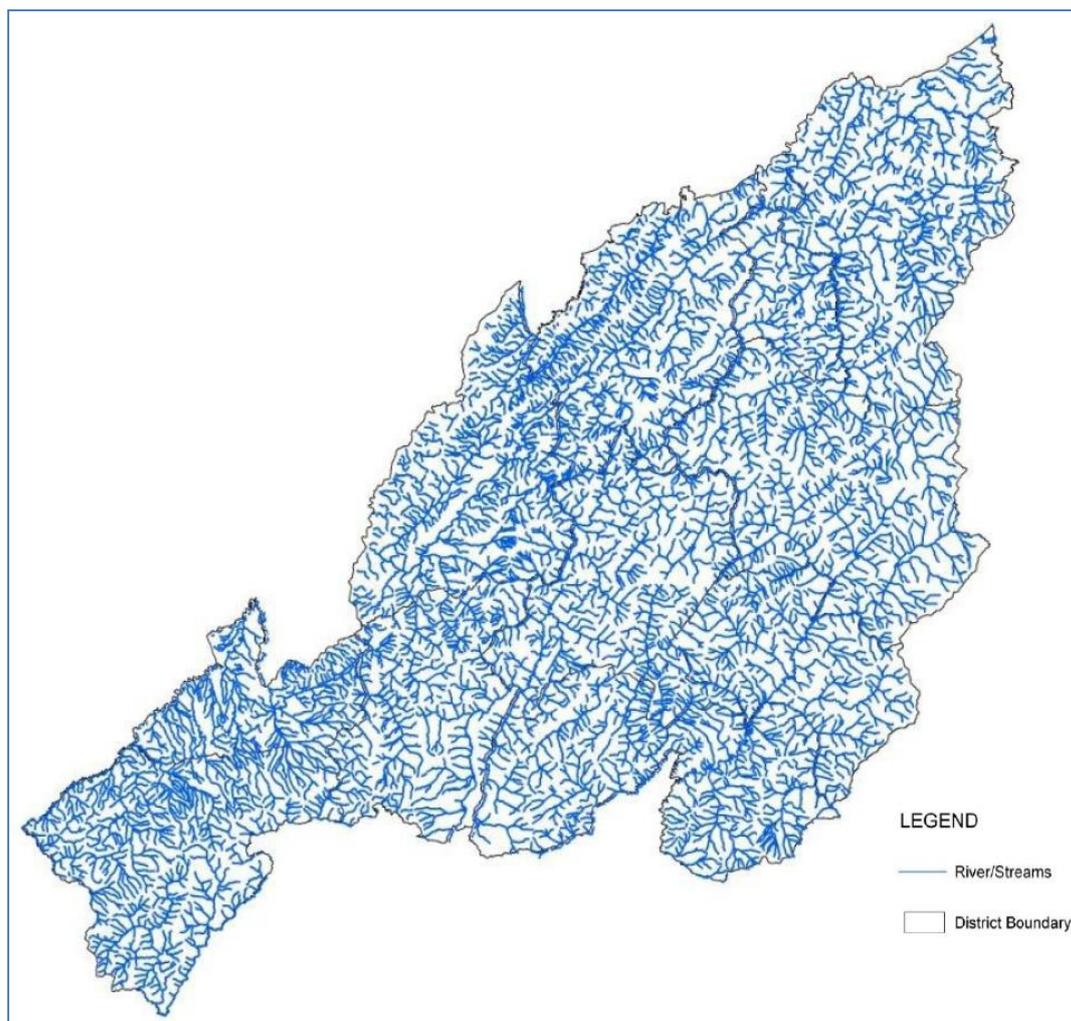
Source: India State of Forest Report, FSI, 2015

Figure 2(b): *Forest cover map of Mizoram*



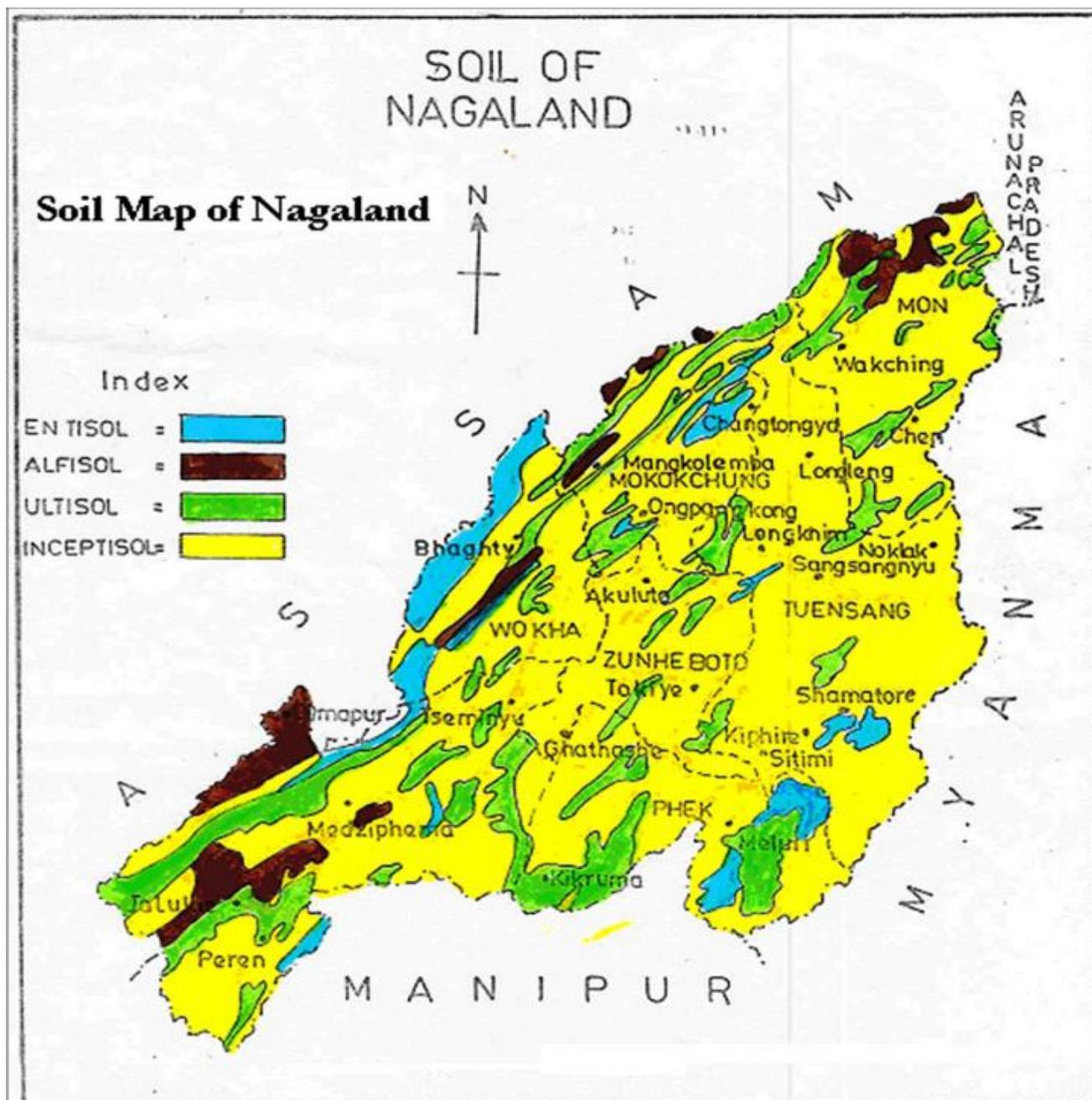
**Source:** India State of Forest Report, FSI, 2015

Figure 3: ***Drainage map of Nagaland***



**Source:** Nagaland State Action Plan on Climate Change (SAPCC), Govt. of Nagaland, 2012

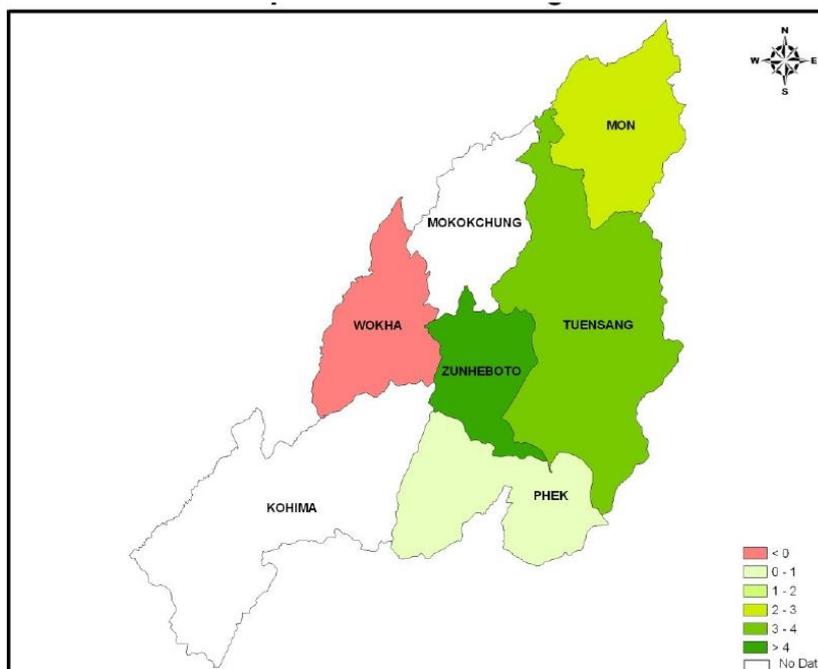
Figure 4: **Soil map of Nagaland**



**Source:** Department of Soil and Water Conservation, Govt. of Nagaland

**Annex 2**

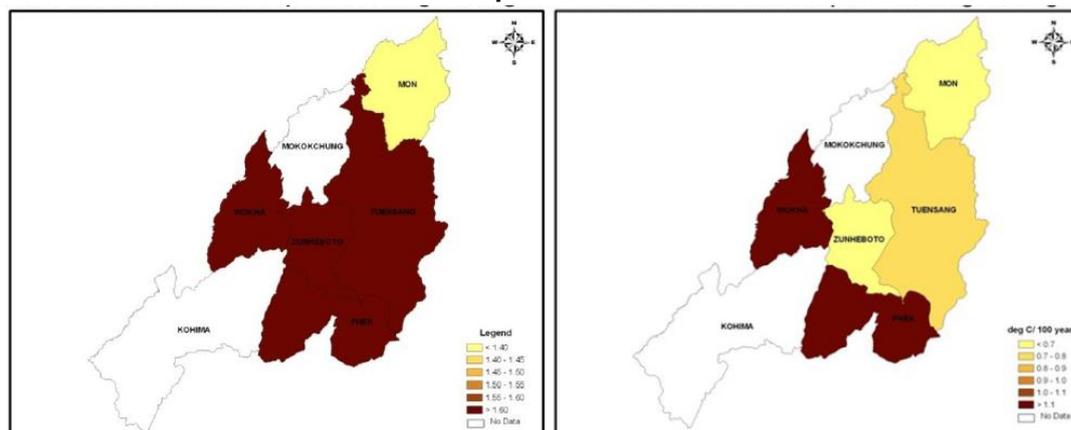
**Figure 5: District-wise precipitation trend (mm/day per 100 yr) of south-west monsoon (June-September) for the period 1975-2005\***



**Source:** Nagaland State Action Plan on Climate Change (SAPCC), Govt. of Nagaland, 2012

\* The districts of Dimapur, Kohima and Mokokchung have no observations.

**Figure 6: Spatial pattern of temperature trends for JJAS ( $^{\circ}\text{C}$  per 100 yr) over Nagaland for the period 1901-2002\***



**(a) Spatial Pattern of Minimum Temperature Change for Nagaland**

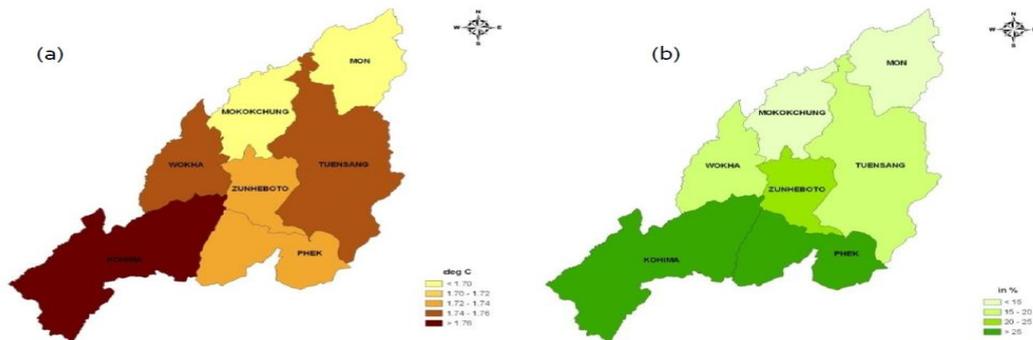
**(b) Spatial Pattern of Maximum Temperature Change for Nagaland**

**Source:** Nagaland State Action Plan on Climate Change (SAPCC), Govt. of Nagaland, 2012

\* No data present for Dimapur, Kohima and Mokokchung.

Figure 7(a): **District-wise projected increase in annual average temperature (°C) for the period 2021-2050 (A1B SRES scenario) compared to baseline (1975), projected by HadRM3 model**

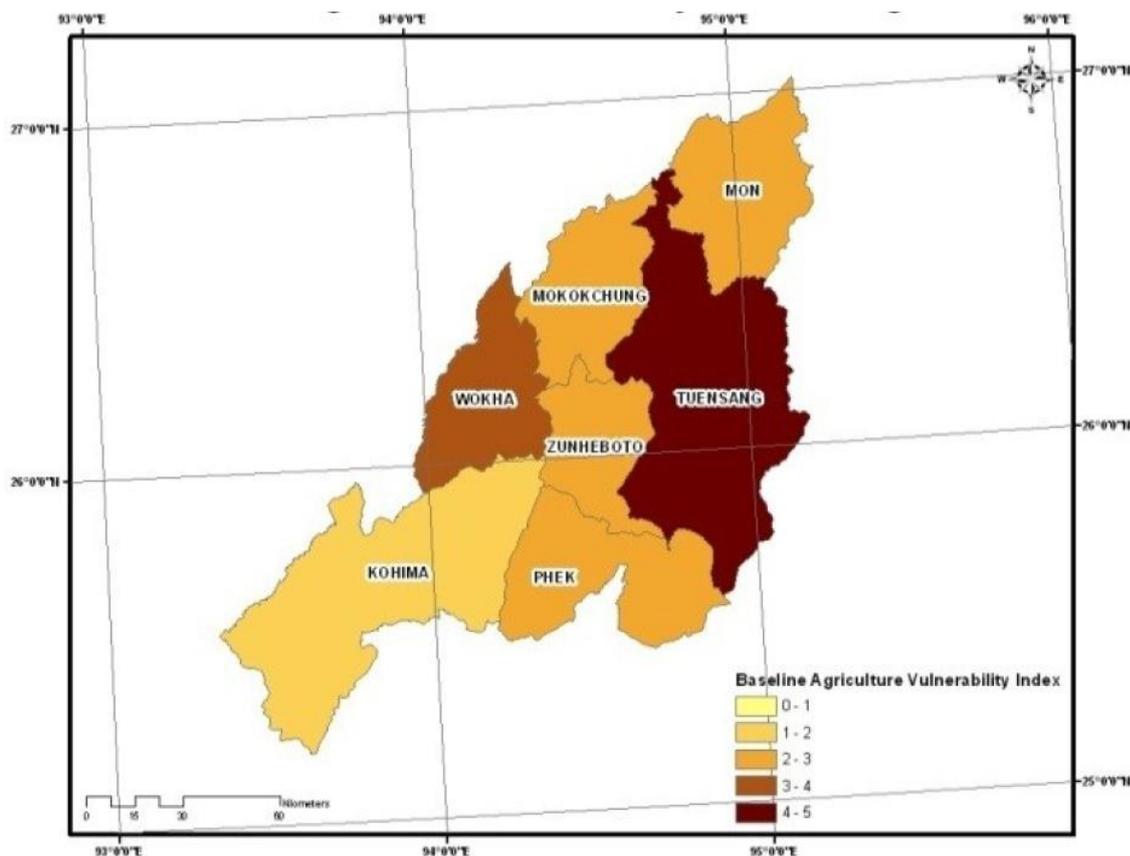
Figure 7(b): **District-wise projected increase in annual rainfall and JJAS rainfall for the period 2021-2050 (A1B SRES scenario) compared to baseline (1975), , projected by HadRM3 model**



Source: Nagaland State Action Plan on Climate Change (SAPCC), Govt. of Nagaland, 2012

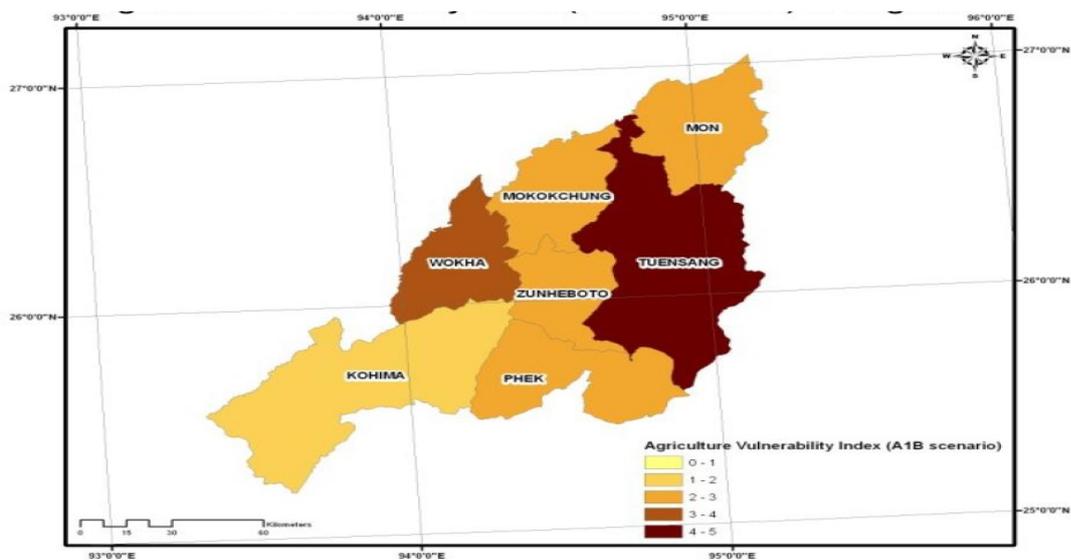
Figure 8: **District-wise agricultural vulnerability profile of Nagaland for baseline and A1B scenario (where 0-1 represents very low vulnerability and 4-5 represents very high vulnerability)\***

Figure 8(a): **Baseline Agriculture Vulnerability Index of Nagaland**



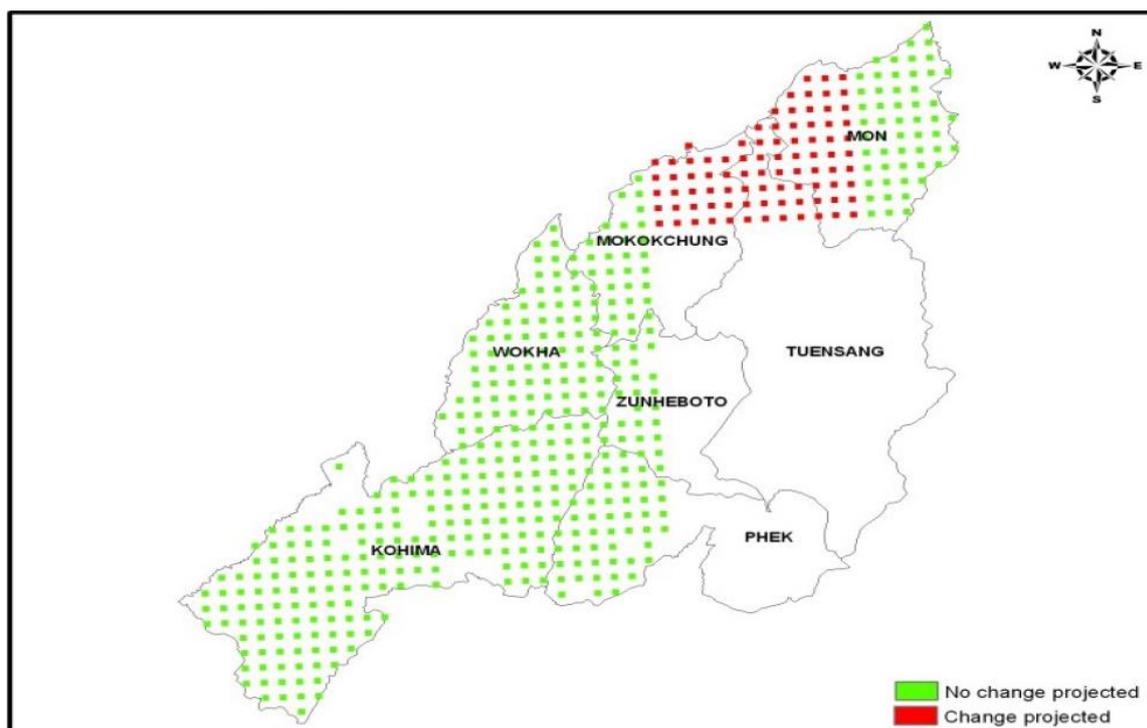
Source: Nagaland State Action Plan on Climate Change (SAPCC), Govt. of Nagaland, 2012

Figure 8(b): **Agriculture Vulnerability Index (A1B scenario) of Nagaland**



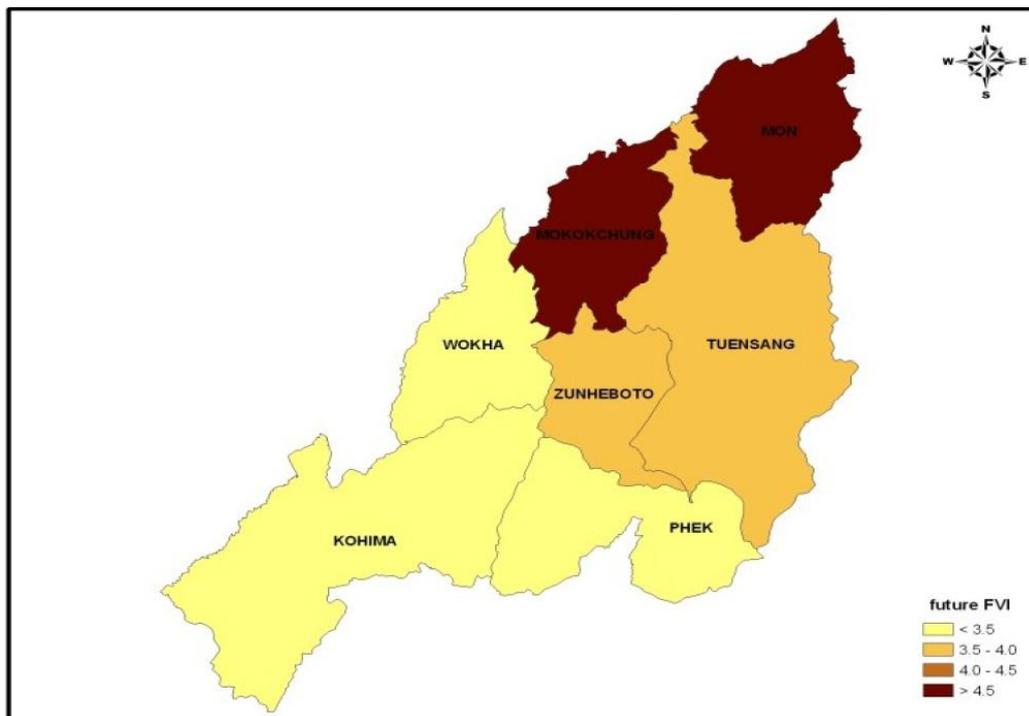
**Source:** Nagaland State Action Plan on Climate Change (SAPCC), Govt. of Nagaland, 2012  
\* The districts Dimapur, Longlegs, Kip hire and Preen have not been depicted in the map

Figure 9: **Forest vegetation change projected by 2035**



**Source:** Nagaland State Action Plan on Climate Change (SAPCC), Govt. of Nagaland, 2012

Figure 10: *District-wise representation of the area that is projected to undergo change in vegetation type by 2021-2050 in Nagaland*



**Source:** Nagaland State Action Plan on Climate Change (SAPCC), Govt. of Nagaland, 2012

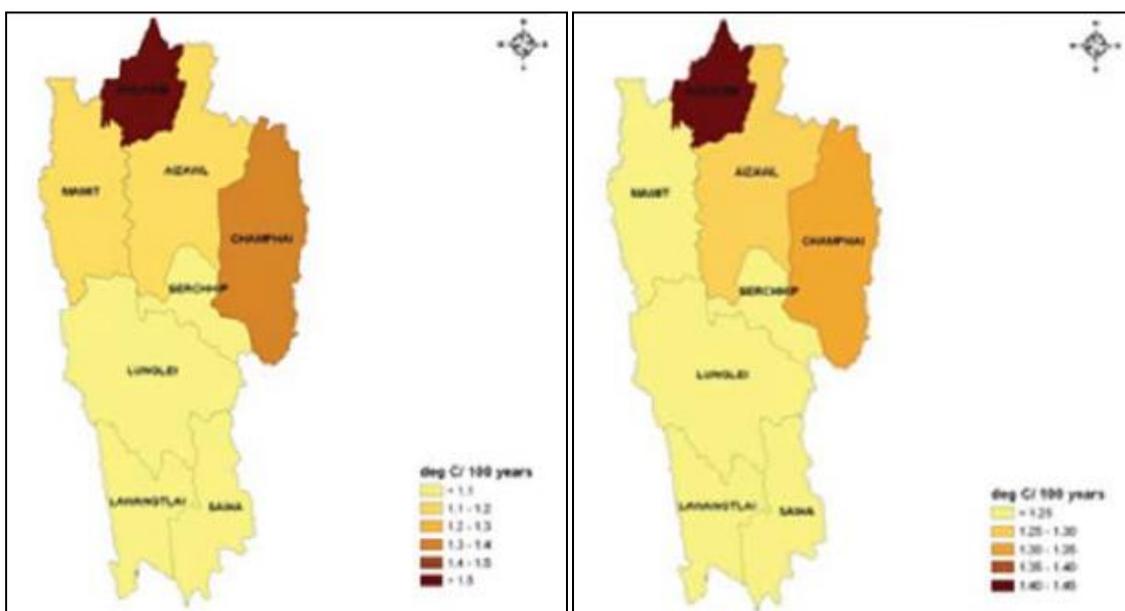
**Annex 3**

**Figure 11: District-wise precipitation trend (mm/day per 100 yr) of south-west monsoon (June-September) for the period 1971-2005**



**Source:** Mizoram State Action Plan on Climate Change (SAPCC) 2010-15, Govt. of Mizoram

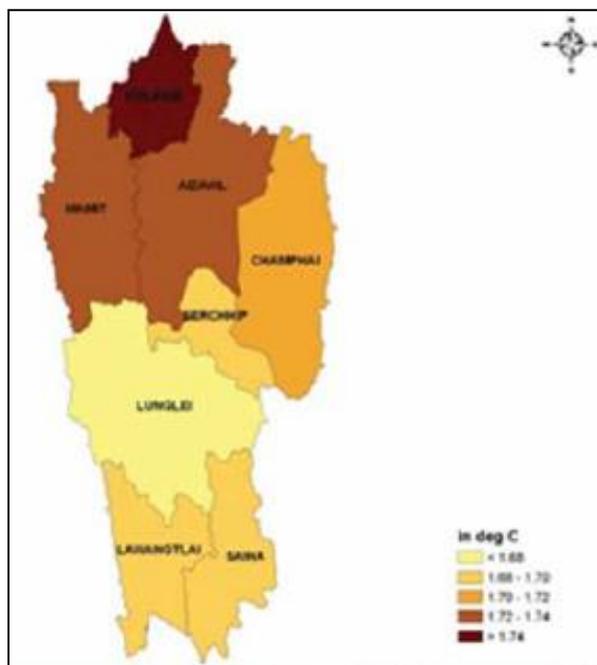
**Figure 12: Spatial pattern of temperature trends for JJAS ( $^{\circ}\text{C}$  per 100 yr) over Mizoram for the period 1901-2002\***



**(a) Spatial Pattern of Minimum Temperature Change for Mizoram**

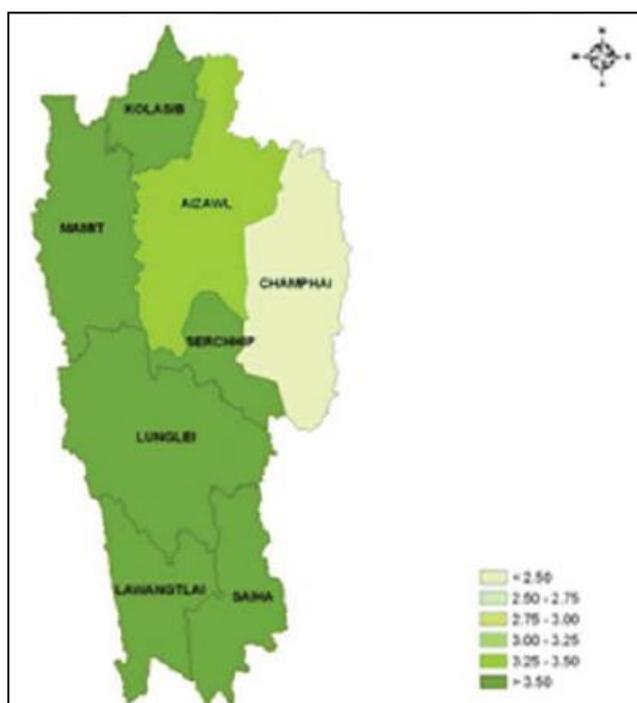
**(b) Spatial Pattern of Maximum Temperature Change for Mizoram**

**Source:**Mizoram State Action Plan on Climate Change (SAPCC) 2010-15, Govt. of Mizoram



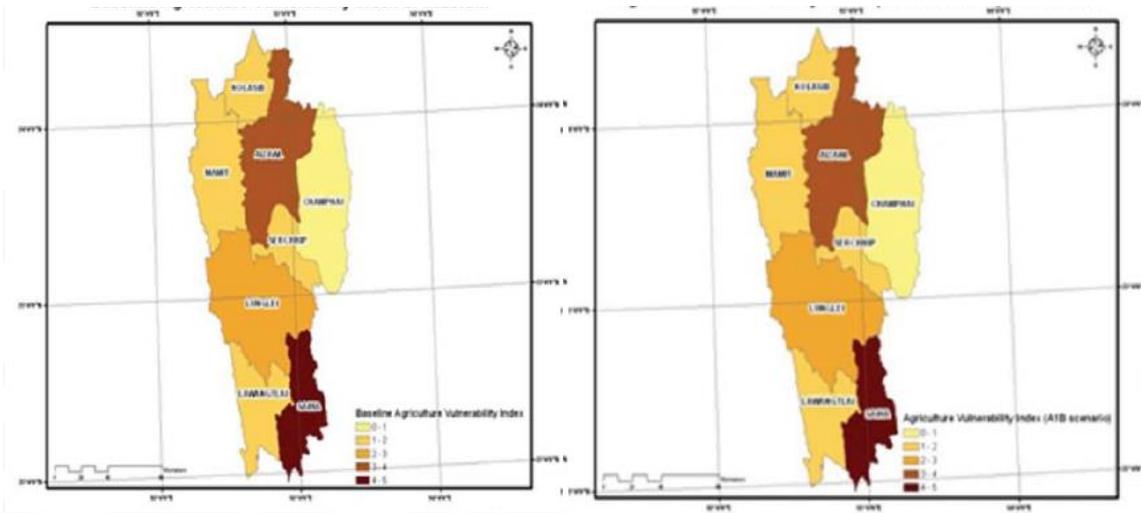
**Source:**Mizoram State Action Plan on Climate Change (SAPCC) 2010-15, Govt. of Mizoram

Figure 14: *District-wise projected increase in annual rainfall and JJAS rainfall for the period 2021-2050 (A1B SRES scenario) compared to baseline (1975), projected by the HadRM3 model*



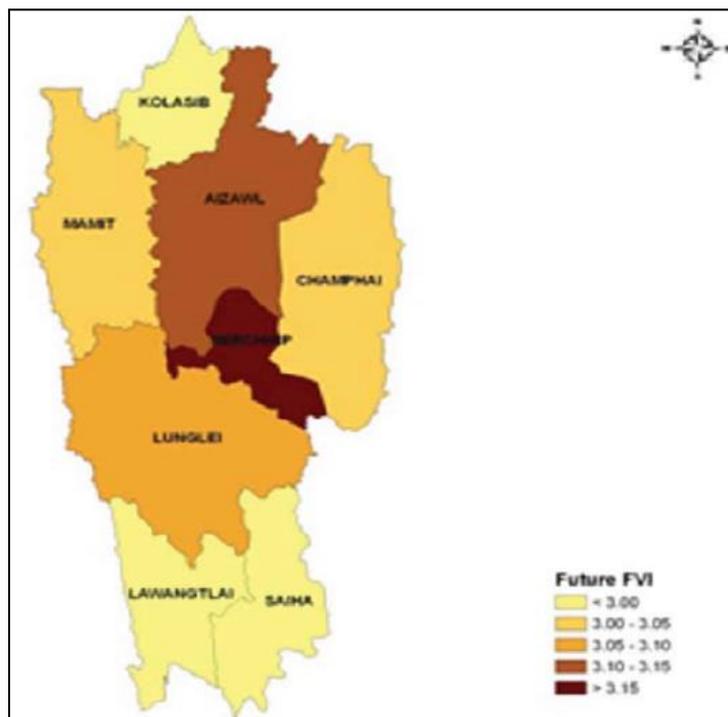
**Source:**Mizoram State Action Plan on Climate Change (SAPCC) 2010-15, Govt. of Mizoram

Figure 15: **District-wise agricultural vulnerability profile of Mizoram for baseline and A1B scenario (where 0-1 represents very low vulnerability, 1-2 represents low vulnerability, 2-3 represents moderate vulnerability, 3-4 represents high vulnerability and 4-5 represents very high vulnerability))**



**Source:**Mizoram State Action Plan on Climate Change (SAPCC) 2010-15, Govt. of Mizoram

Figure 16: **District-wise representation of the area that is projected to undergo change in vegetation type by 2021-2050 in Mizoram**



**Source:**Mizoram State Action Plan on Climate Change (SAPCC) 2010-15, Govt. of Mizoram



Investing in rural people

**India**

---

## **Fostering Climate Resilient Upland Farming Systems in the Northeast**

**Design completion report**

**Appendices - Nagaland**

Document Date: **Insert date**

Project No. **[Insert project number]**

Report No: **[Insert report number]**~~[if not final PDR delete line]~~

Asia and the Pacific Division  
Programme Management Department



## Contents

Currency equivalents	i
Weights and measures	i
Abbreviations and acronyms	ii
Appendix 1: Country and rural context	1
Appendix 2: Poverty targeting and gender	5
Appendix 3: Country performance and lessons learned	28
Appendix 4: Detailed Project Description	33
Appendix 5: Institutional aspects and implementation arrangements	54
Appendix 6: Planning, M&E, learning & knowledge management	76
Appendix 7: Financial Management and disbursement arrangements	95
Appendix 8: Procurement	110
Appendix 9: Project costs and financing	121
Appendix 10: Economic and financial analysis	142
Appendix 11: Compliance with IFAD policies	211
Appendix 12: SECAP Review Note	225



## Currency equivalents

Currency Unit	=	Indian Rupees (INR)
USD1.0	=	INR 68

## Weights and measures

1 kilogram	=	1000 g
1 000 kg	=	2.204 lb.
1 kilometre (km)	=	0.62 mile
1 metre	=	1.09 yards
1 square metre	=	10.76 square feet
1 acre	=	0.405 hectare
1 hectare	=	2.47 acres

## Abbreviations and acronyms

AFAs	Agricultural Field Assistants
AO	Accounts Officer
AOS	Annual Outcome Survey
APC's Office	Agriculture Production Commissioner's Office
APDMP	Andhra Pradesh Drought Mitigation Project
APMC	Agriculture Producers' Marketing Committee
ATARI	Agriculture Technology and Research Institute
ATMA	Agriculture Technology Management Agency
AWP&B	Annual Work plan and Budget
BPCC	Block Project Coordination Committee
BPL	Below Poverty line
CAG	Controller and Auditor General
CAHW	Community animal health worker
CAIM	Convergence of Agricultural Interventions Programme in Maharashtra
CI	Community Institution
COSOP	Country Strategic Opportunities Programme
CPE	Country Programme Evaluation
CRPs	Community Resource Persons
CSSs	Centrally Sponsored Schemes
DAHV	Department of Animal Husbandry and Veterinary Services
DAO	District Agriculture Officer
DEA	Department of Economic Affairs
DMU	District Project Management Unit
DoA	Department of Agriculture
DPCC	District Project Coordination Committee
DPM	District Project Manager
FAS	Finance and Accounts Specialist
F&AO	Finance and Accounts office
FAO	Food and Agriculture Organization
FIGs	Farmer Interest Groups
FOCUS	Fostering Climate Resilient Upland Farming Systems in the Northeast
FPO	Farmer Producer Organization
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Green House Gases
GIA	Grant in Aid
GoI	Government of India
GoM	Government of Mizoram
GoN	Government of Nagaland
HH	Household
ICAR	Indian Council of Agricultural Research
ICEF	India-Canada Environment Facility
ICRAF	International Centre for Research in Agroforestry
ILRI	International Livestock Research Institute

ILSP	Integrated Livelihoods Support Programme
IOE	Independent Office of Evaluation
JRMC	<i>Jhum</i> Resource Management Committee
JTDP	Jharkhand Tribal Development Programme
JTELP	Jharkhand Tribal Empowerment and Livelihoods Programme
KM	Knowledge Management
KVK	Krishi Vigyan Kendra
LAMP	Livelihood and Access to Markets Project
LPG	Liquefied Petroleum Gas
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
Ministry of DoNER	Ministry of Development of Northeast Region
MIS	Management Information System
MLIPH	Meghalaya Livelihoods Improvement Project for the Himalayas
MoU	Memorandum of Understanding
MOVCD	Mission on Organic Value Chain Development
MTR	Midterm Review
NAPCC	National Action Plan on Climate Change
NEPED	Nagaland Environment Protection and Economic Development through People's Action
NER	Northeast Region
NERCORMP	Northeast Region Community Resource Management Project for Upland Areas
NGO	Non-governmental Organization
NHM	National Horticultural Mission
NICRA	National Innovations in Climate Resilient Agriculture
NLUP	New Land Use Policy
NMOP	National Mission on Oil Palms
NTFP	Non-timber Forest Products
OPELIP	Orissa PTG Empowerment and Livelihoods Improvement Programme
OTELP	Orissa Tribal Empowerment and Livelihoods Programme
PCR	Project Completion Report
PDS	Public Distribution System
PEFA	Public Expenditure Financial Accountability Assessment
PESA	Panchayats (Extension to Scheduled Areas) Act
PFM	Public Finance Management
PFS	Project Financial Statements
PIM	Project Implementation Manual
PLUP	Participatory Land Use Planning
PMC	Project Management Committee
PMKSY	Pradha Mantri Krishi Sinchayi Yojana
PMU	State Project Management Unit
PRA	Participatory Rural Appraisal
PSC	Project Steering Committee
PTSLP	Post Tsunami Sustainable Livelihoods Project
PWD	Public Works Department
RIMs	Results and Impact Management System

RKVY	Rashtriya Krishi Vikas Yojana
SAABs	Site Allotment Advisory Boards
SARS	State Agricultural Research Stations
SCRAN	Society for Climate Resilient Agriculture in Nagaland
SHG	Self Help Group
SLEM	Sustainable Land and Ecosystem Management
SoE	Statement of Expenditure
SRI	Si=system of Rice Intensification
SSI	Sustainable Spice Initiative
SWCAs	Soil and water conservation Assistants
SWI	System of Wheat Intensification
SPD	State Project Director
TA	Technical Assistance
ToR	Terms of reference
ToT	Training of Trainers
TRC	Terrace Rice Cultivation
TRWEP	Tejaswini Rural Women's Empowerment Project
UC	Utilization certificate
UNDP	United Nations Development Programme
USD	United States Dollar
VC	Village Council
VDB	Village Development Board
VFAs	Veterinary Field Assistants
WRC	Wet Rice Cultivation

## Appendix 1: Country and rural context

### A. India country context

1. India is now the third largest economy in the world, having grown at a robust 7.5 per cent per year between 2004 and 2013, placing it in the top 10 of the world's fastest growing nations. India is a diverse country of 1.3 billion people from several ethnic groups, speaking several languages and more than 1,000 dialects, identifying themselves in more than 5,400 castes and tribes, following six major religions, and an area of 3.28 million km<sup>2</sup> covering 20 different agro-ecological zones. India has achieved the first Millennium Development Goal (MDG 1) by halving the proportion of people living on less than USD 1.25 a day. The country's economic and human development is one of the most significant global achievements of recent times (World Bank, 2013). During 2005 to 2010, 53 million Indians were lifted out of poverty.

2. Although rural poverty has decreased by 14 percentage points, India remains at the bottom of the group of middle-income countries where more than 400 million people still live in poverty, representing 33 % of the world's poor people. Hence, poverty remains a major issue, with 23.6% of the population living on less than USD1.25 per day and unacceptably low nutritional levels, where 29.4% of children are underweight. The economic growth has also increased the inequalities and segmentation between different socio-economic groups. Inequalities vis-à-vis disadvantaged groups such as, the scheduled castes, scheduled tribes, and women persist. Structural inequalities have kept entire groups trapped, unable to take advantage of opportunities that economic growth has offered. While much progress has been made in education, health, maternal mortality, and fertility, the gender inequality remains high.

3. The Green Revolution, expansion of irrigation and widespread adoption of mechanisation have transformed India from chronic dependence on grain imports into a net exporter of food. The country is now the world's largest producer of milk, pulses, cotton and spices, and second largest producer of rice, wheat, sugarcane, farmed fish, sheep & goat meat, fruit, vegetables and tea. The country has some 195 million hectares under cultivation, of which some 70 million hectares (over one third) are irrigated.

4. Despite this growth, the share of agriculture in India's economy has progressively declined to less than 17% with higher growth rates in the industrial and services sectors. The decreasing contribution of agriculture to GDP is a cause of concern because of its impact on the millions of livelihoods. Agriculture remains vital to India's economic and social cohesion because (i) nearly three-quarters of India's families depend on rural incomes, (ii) the majority of India's poor live in rural areas, and (iii) the country's food security depends on increasing the production of cereal crops, fruits, vegetables and milk to meet the demands of a growing population with rising incomes. Without structural adjustment to increase the productivity of farm labour and reduce the proportion of population that rely on farming from around 50 percent, there is a risk of labour shortages in the non-farm sector along with a rise in the cost of food. Sector-level constraints include small and fragmented land holdings, irrigation problems, dependence on unreliable monsoon rainfall, inadequate high quality seed systems, patchy support services and low yields.

### B. Nagaland context

5. The hill state of Nagaland is predominantly rural with over 71% of the population of two million living in rural villages (Census 2011). The population is almost entirely made up of 22 tribes with distinct cultures and languages. Total area of Nagaland is 16,579 sq. km, with a population density of 119 per sq km<sup>1</sup>. The poverty headcount rate was 18.9%<sup>2</sup> in 2011-12.

---

<sup>1</sup>The national average is 382 per sq km.

## Agriculture

6. Nagaland is a predominantly agricultural state, with agriculture (including livestock) accounting for 22% of State GDP (2016-17) and providing employment for over 60% of the population. Just over half of land area of the state is covered by forest, with the cropped area being only 23% - of which only 15% is irrigated. The state only has a small area of plain land, and *jhum* is the predominant farming system in the highlands across the State and the principal source of rural livelihoods with 70% of the villages and almost half of rural households practising *jhum*. In addition to *jhum*, wet terraced paddy is cultivated on hill terraces. Although upland rice is the principal *jhum* crop, the state is not self-sufficient in rice. Horticultural and plantation crops, along with spices are cultivated on a small scale as a source of cash, and livestock rearing (mainly backyard pigs and poultry) supplement rural livelihoods.

## Shifting cultivation

7. A total of about 940 km<sup>2</sup> is cleared for *jhum* each year. Cultivation of this land is usually continued for two years, before a fallow period of around seven years. With a typical *jhum* cycle of nine years, around 51% of the total land area of the state is covered by the *jhum* system, including much of the land classed as forest. Data from the 2015 *jhum* survey carried out by the Soil Conservation Department, show that *jhum* is practiced in 70% of all villages and by about 55% of households in those villages (and 48% of all rural households in the state)<sup>3</sup>. Comparison with data in the 2005 survey shows there has been very little change in the number of *jhum* households, with an overall decline of only 1%, but with considerable variation between districts<sup>4</sup>.

8. Upland paddy is the principal *jhum* crops usually accounting for 80% or more of total production. Other crops being maize, millet (in sharp decline in some districts), root crops such as colocasia, cassava and potatoes, spices such as ginger, chilli, onion and garlic, and vegetables such as pumpkins, gourds. Only a small amount of pulses and oilseeds are grown. In some locations where vegetables or spices are grown for sale, the proportion of paddy in the crop mix may fall to under 50%.

9. *Jhum* is highly labour intensive, but crop yields are low and vulnerable to variations in rainfall. However it is a system that enables poor quality soils on steep slopes to be farmed by utilising organic matter which has accumulated during the forest-fallow period.

## Wetland rice

10. Wetland paddy is limited to limited areas of plain bordering Assam – such as in Dimapur, and to terraced cultivation on some less steeply sloping hillsides. This terraced paddy uses the traditional *zabo*<sup>5</sup> systems of harnessing rainwater runoff, mainly in Phek district and to a lesser extent in Kohima and Wokha districts. Most wet rice is grown using traditional varieties with little use of mineral fertiliser and other inputs. Yields are low – averaging about 2.7 tons/ha, compared with 1.90 for *jhum* paddy. The proportion of total rice produced on wetland has increased and now accounts for just over half of the state's total paddy area and 60% of total production

---

<sup>2</sup> Reserve Bank of India, <https://www.rbi.org.in/scripts/PublicationsView.aspx?id=16603>

<sup>3</sup> There are fewer *jhum* villages in Dimapur, Kohima, Mokokchung and Wokha districts.

<sup>4</sup> Data on *jhum* needs to be used with caution. The 2015 *jhum* survey recorded number of households doing *jhum* and length of the *jhum* cycle. The area cleared for *jhum* was based on the average 0.7 ha per household from the 2005 survey. The 2005 *jhum* survey estimated area based on the volume of rice seed that households said they used (assuming a standard seed rate). However, assuming that *jhum* land is cultivated for two years, the area (from crop production statistics) recorded for *jhum* paddy is only about 50% of the *jhum* cultivation area. Some of the other 50% of *jhum* land can be accounted for by crops mixed with *jhum*.

<sup>5</sup> *Zabo* or *Ruza* literally means impounding water and is an indigenous system of harvesting rainwater in practice for centuries as an integral part of the farming system based on upland terraced rice cultivation. It includes maintaining a forest cover in the catchment upstream of the rice terraces, a water storage pit/pond, channels to guide the runoff from the forest and canals to transport the water from the *Zabo* to paddy terraces. It is practiced predominantly by the Chakhesang tribe, known for their highly developed terrace making skills.

### Other crops

11. Rice (*jhum* and wetland) accounts for over 80% of the gross cropped area. The main other cereal crop is maize, mostly grown as a mixed crop in *jhum* but also in settled agriculture. Most maize is produced in south-eastern districts of the state. Some millet is also grown alongside paddy in *jhum*. Pulses and oilseeds are mostly grown in *jhum*, but some soybean is produced in settled agriculture.

### Horticulture and plantation crops

12. Major horticultural, spice and plantation crops are shown in the table below. The leading district for sugarcane, tea, ginger and pineapple is the plain land district of Dimapur (not part of the project area).

**Table 1: Area and production of important horticultural crops**

Crop	Area (ha)	Production tons
Sugarcane	4350	189330
Tea	7550	33640
Ginger	3620	33020
All types of chilli	5539	42726
Naga chilli	1181	6197
Cardamom	3153	1378
Turmeric	674	8939
Orange	6425	56186
papaya	1388	16611
banana	7609	112617
pineapple	9917	147384

Source: 2014-15 data from Statistical Handbook, GoN

### Livestock

13. Livestock are an integral part of rural livelihoods and form an integral part of Naga culture and diet, with most village households keeping a few pigs and/or chickens. Cattle and goats are also kept, but are greatly outnumbered by pigs. However the population of livestock in the state appears to be declining, and around half the meat consumed comes from other states.

**Table 2: Livestock population (2012 livestock census)**

District	cattle	buffalo	Mithun	pig	sheep	goat	chicken
Kohima	22,214	1,847	2,826	53,928	137	8,598	189,569
Phek	15,252	3,393	5,732	45,315	3	6,529	296,496
Mokokchung	10,569	311	-	50,920	-	4,657	159,235
Wokha	16,536	432	530	48,592	224	5,399	238,285
Zunheboto	27,292	14	7,318	59,691	-	9,678	205,112
Kiphire	10,782	-	4,247	43,836	-	6,929	121,022
Longleng	9,256	40	544	10,891	-	1,442	36,157
Mon	25,518	6,935	3,646	47,155	3,274	9,148	127,785
Project area	137,419	12,972	24,843	360,328	3,638	52,380	1,373,661
Tuensang	27,973	1,272	7,355	57,567	-	7,440	191,635

Peren	12,059	6,375	2,625	16,232	114	6,412	104,302
Dimapur	57,523	12,029	435	69,561	63	33,118	325,887
State total	234,974	32,648	35,258	503,688	3,815	99,350	1,995,485

### Policy

14. The State Government strategy for agriculture is described in its Vision 2025 document of 2012. This sees agriculture as the priority development sector. To overcome the detrimental effects of *jhum*, effective measures are needed to improve the technology and management of *jhum* cultivation, as well as a gradual shift to settled cultivation. The Government also aims to achieve self-sufficiency in rice by 2025 (Nagaland is now 75% self-sufficient), which will require more production from the limited area of wet paddy land as well as a continuing contribution from *jhum*. The State's Vision 2030 document of 2016 maps out a development pathway for all sectors. For agriculture the focus is on developing Integrated Intensive Inclusive Agricultural Clusters to promote growth and market linkage for commercial crops as well as optimizing traditional crops.

### Climate change.

15. Nagaland has humid tropical climate with average annual rainfall of about 2,000 mm (ranging from 1,000 mm to over 3,000 mm according to location). Rainfall is concentrated in the months of May to September, and temperatures range from 21°C to 40°C. Projections of climate change for north-east India as a whole show increases in temperature and total precipitation, along with increases in extreme precipitation and temperature, and in the number of rainy days. The Nagaland State Action Plan on Climate Change (2012) forecasts that, by 2021-2050s compared with 1961-1990, temperatures will increase by 1.6 to 1.8°C, and precipitation will increase by 10% to 20%, with up to 2 more days per year of extreme rainfall. Based on this, the Action Plan estimates that rice yields could fall by 2% to 4% in some districts, while rising by 3% to 4% in other districts. Yields of maize are expected to increase. Based on data such as rainfall variability, area under rain-fed crops, rural population density, net sown area, area under high yielding crop varieties, use of fertilizers and manure, groundwater availability, and mean crop yields, the Action Plan's 2025-30 agricultural vulnerability rating for project districts varies from moderate to high.

### Food security

16. Nagaland does relatively well in terms of indicators on child malnutrition. The proportion of children aged under 5 years who are underweight is 19.5%, compare with 29.4% for India as a whole, while 11.8% of children are wasted and 29.1% stunted, compared with 15.1% and 38.7% at the national level. Interviews during the project design mission show that most households that cultivate *jhum* do not produce enough rice to meet their needs for an entire year, and need to purchase additional rice on the open market. Access to subsidised food grains has been rather patchy, but the government started implementing the National Food Security Act in July 2016 and is expanding and improving the distribution system to cover 80% of rural households.

## Appendix 2: Poverty targeting and gender

### A. Introduction

1. According to Census report of 2011, Nagaland has a total population of 1,978,502 (comprised of 51.8% of male and 48.2% female), with sex ratio of 931 female per thousand male. The State is predominantly rural, with 71.14% of its population residing in rural areas (1,407,536 people; Table 7). In the project districts 75.34% people live in rural areas.

**Table 1: Population in Nagaland (proposed projects districts)**

State/District	Population (2011)			% of rural population
	Total	Rural	Urban	
<b>Nagaland</b>	<b>1,978,505</b>	<b>1,407,536</b>	<b>570,966</b>	71.14
Mon	250,260	215,816	34,444	86.24
Mokokchung	194,622	138,897	55,725	71.37
Zunheboto	140,757	113,160	27,597	80.39
Wokha	166,343	131,339	35,004	78.96
Phek	163,418	138,843	24,575	84.96
Longleng	50,484	42,871	7,613	84.92
Kiphire	74,004	57,517	16,487	77.72
Kohima	267,988	146,900	121,088	54.82
Total 8 districts	1,307,876	985,343	322,533	75.34

Source: Census Report, 2011

2. The sex ratio of the population and the project districts is presented in the table below.

**Table 2: Population in percentage with literacy rate and sex ratio in the project districts**

State/District	Total Population	Sex ratio
<b>Nagaland</b>	<b>1,978,505</b>	<b>900</b>
Mon	250,260	879
Mokokchung	194,622	919
Zunheboto	140,757	947
Wokha	166,343	927
Phek	163,418	921
Longleng	50,484	889
Kiphire	74,004	900
Kohima	267,988	898

Source: Census Report, 2011

### B. Major poverty alleviation programmes in the State

3. Numerous rural development programmes have been initiated in the State, targeting poverty alleviation. The entire set of Central and the State rural development programmes are implemented and executed by the Village Development Boards (VDBs). The beneficiaries for the schemes are identified and selected by the respective VDBs with the technical support of the Block Development Officers (BDO). The most important schemes implemented by the department of Rural Development through the Village Development Boards are as follows:

- (a) **Grants-in-aid (GIA) to VDBs:** Grant-in-aid is the major programme that is implemented through the 1110 VDBs with 2,20,545 tax-paying rural households.<sup>6</sup> A State sponsored scheme introduced during 1980-81 for the purpose of creating minimum infrastructure at the grassroots level, providing special employment opportunities and uplifting the socio-economic conditions in every recognized village within Nagaland. The funds under this programme are allotted to the VDBs annually on the basis of the taxpaying households in the village at the

<sup>6</sup> A Manual of Rural Development Department, Rural Development, Nagaland, P.35

rate of INR800.00 per household. Sub-allocations are also made to ensure the involvement and participation of women by earmarking 25% of the Grant-in-aid for their development programmes. Another 20% and 55% of the fund are respectively earmarked for the youth and general welfare to the VDBs in all the villages. A minimum cut off ceiling @ 66 household for all small villages has been fixed.

- (b) **Additional Grant-in-Aid:** This scheme supplements the Grant-in-Aid programme mainly for the purpose of capacity building process in the departments. The activities under this scheme include trainings and conferences which are organized to improve the delivery system and performance of the grass root level functionaries and for publications of the department activities.
- (c) **Fixed Deposit (Matching Cash-Grant):** The state has been implementing 2 major resource mobilization schemes to create capital investments and provide financial credibility to the VDB's.
- **Matching Cash Grant Scheme** –For its recognition, it is required that every VDB opens Fixed Deposit Accounts initially for a period of five years and are renewed once it matures. The maximum ceiling limit for the VDB share was initially INR75,000/- but it has now been enhanced to an amount of INR 2.50 lakhs. It is also seen that several of the VDBs are now able to deposit more than the ceiling, each VDB is expected to mobilize an amount of INR 5.00 lakhs which includes a contribution of INR 2.50 lakhs from the State. The deposit is then utilized as a collateral security deposits for the availing of loans for implementing its developmental programmes and income generating schemes wherever funds are not sufficient.
  - **VDB welfare Fund/ Post Office Term Deposit Scheme (POTDS)** - The Village Development Boards are also required to maintain Term Deposit in Post Offices, which was introduced in 1996-97. The department has prescribed a minimum deposit of INR10,000.00/- for each VDB of 50 households or less and thereafter @ INR 200/- for every additional household. The deposit under the title of “VDB Welfare Fund” has a fixed locking period of 5 years.<sup>7</sup> It is also seen that after maturity, the matured amount is said to be transferred and deposited to the Matching Cash Grant/ Fixed Deposit.
- (d) **Underdeveloped Areas Programme (UDAP):** The Underdeveloped Areas Programme (UDAP) was initially launched in the year 2003-2004 with an approved outlay of INR 1000.00 lakhs for implementation in the Districts like Tuensang, Mon, Longleng, Kiphire and Peren and also in Meluri area of Phek District, Bhandari area of Wokha District, Aghunato and Satoi areas of Zunheboto District and Peren District.<sup>8</sup>
- (e) **Backward Regions Grant Fund (BRGF):** The Backward Region Grant Fund (BRGF) is designed to redress regional imbalances in development. The main objective of the programme is to bridge the critical gap in local infrastructure and other development requirements that are not being attained or sufficient with existing centrally sponsored schemes.<sup>9</sup> Every VDB is also required to open a BRGF account for the implementation of the programme in a commercial bank jointly operated by the Chairman and the VDB Secretary.
- (f) **Swarnjayanti Gram Swarozgar Yojana (SGSY) now rechristened as State Rural Livelihoods Mission (SRLM):** The main objective of this scheme was to bring the assisted poor families above the poverty line through the provision of income-generating assets through a mix of bank credit and Government subsidy. This centrally sponsored scheme is implemented in the State at 75:25 funding ratio between the Centre and the State. This scheme lays stress in organizing the rural poor women into Self Help Groups (SHGs). Under the programme, a cluster of SHGs is formed and given a subsidy of INR 1.25 Lakhs per SHG whereas an individual

---

<sup>7</sup> Guide Lines and Project Report, Directorate of Rural Development, GoN, Nagaland: Kohima, p.3.

<sup>8</sup> 5 Years of Peace, Progress and Development of the Government of Democratic Alliance of Nagaland, Department of Information & Public Relations, GoN, 2007, p. 75.

<sup>9</sup> A Manual of Rural Development Department, op. cit, p.45.

beneficiary is given a maximum subsidy of INR 10,000/- and the balance investment cost of the activities was provided as Bank loan.

- (g) **Indira Awaas Yojana (IAY):** About 80 percent of the IAY fund is earmarked for the construction of new dwelling units (exclusively for BPL families). The remaining 20 percent is earmarked for shelter upgradation and Credit-cum-Subsidy (for both BPL and APL families).<sup>10</sup>The objective is primarily to help the people living below poverty line by helping them in construction/upgradation of dwelling units. The Scheme is funded on a cost-sharing basis between the Centre and the State at the ratio of 75:25.
- (h) **Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS):** The scheme is funded on a ratio of 90:10 between the Centre and the State and it aims to: to provide at least 100 days of guaranteed wage employment in a financial year to every household in the rural areas notified by the Central government and to create durable assets in rural areas. The ratio of wage costs to material costs as stipulated in the Act should not be less than 60:40 which has to be applied preferably at the Gram Panchayat, Block and District levels. And every person working under the Scheme shall be entitled to wages at the minimum wage rate prevalent in the State under the 'Minimum Wages Act, 1948, unless the wages have been notified by the Central Government under Section 6(1) of the Act'.<sup>11</sup> Equal wages shall be paid to both men and women workers.
- (i) **National Social Assistance Programme (NSAP) :** It is a centrally sponsored programme with 100 % Central assistance. NSAP comprises of the National Old Age Pension Scheme (NOAPS), National Family Benefit Scheme (NFBS) and the National Maternity Benefit Scheme (NMBS). The scheme was mainly meant for the provision of social assistance and benefit for the aged or maternity and to those BPL households in the case of the death of the primary breadwinner.
- (j) **Promotion of Micro Financing through VDBs:** In order to promote Micro- Finance Activities, the State initiated a Pilot scheme whereby the VDBs took on the responsibility of obtaining loans from the Banks, dispense it to the beneficiaries, its recovery and repayment. Initially, 25 VDBs were selected and declared as Financial Intermediaries for Pilot Projects, where a corpus fund of INR 1.00 lakh was created through the contribution of VDBs, the State Government, Central Government and NABARD at the ratio of 40:20:20:20 respectively. This Corpus Fund worked as the capital of the VDBs for lending activities and kept as non-interest bearing Term Deposit account opened in the name of the VDB. The Corpus Fund was deposited in a Bank and the Bank in turn provided initially a matching share of INR 1.00 lakh to the deposit, the Corpus Fund and the matching share together forms the Revolving Fund Assistance (RFA) that will be available to the VDBs for loan. The Bank loans at 7.5% per annum interest to the VDBs, who in turn further on-lends at a maximum permissible interest of 18% per annum; the VDBs take on the responsibility of recovery and penalty for any default. Based on the experience and success of the initial loan provided 1:1 matching share, the Banks are provided to raise the ratio to 1:4. Hence the Corpus Fund of INR 1.00 lakh, the total fund available as loan would be INR 5.00 lakhs per Village.<sup>12</sup> With the successful implementation of the Pilot Project, the State Government decided to cover all the VDBs phase-wise under this umbrella.

## C. Specific programmes for women empowerment

4. Under the programme of **Financial Assistance of Destitute Women**, financial assistance at the rate of INR 200/- month is given to needy destitute women. Altogether 47786 beneficiaries in Nagaland have been covered under **Antyodaya Anna Yojana (AAY) Scheme**. Moreover, the centrally sponsored scheme of **Swayamsidha** is an integrated scheme for women empowerment

---

<sup>10</sup> A Manual of Rural Development, op. cit, p.42.

<sup>11</sup> Ministry of Rural Development, The National Rural Employment Guarantee Act 2005, Operational Guidelines 2008, 3rd edition, Department of Rural Development, Government of India, New Delhi, p.34.

<sup>12</sup> **Guidelines and Project Report**, op. cit, pp.2-3.

based on the formation of women into Self Help Groups (SHGs). To impart training to school dropout girls and rural women for their self-employment, the Training Cum Protection Centre was also established to impart training in knitting, weaving and tailoring trades.

5. The directorate also implements grant-in-aid programmes within the State through NGOs on recommendation of the state government. These includes STEP (Support to Training and Employment Programmes); Working Women Hostel; Swadhar, that extends temporary shelter and rehabilitate those women and girls who have no social support system etc., and Swawlamban that provides training and skills to women for employment or self-employment. Micro Entrepreneurial Development scheme and Women Entrepreneurial Development initiative schemes were implemented in all the districts through women NGOs.

6. The National Social Assistance Programme (NSAP) is a fully funded centrally sponsored pension scheme; widows above 40 years who are below poverty line are eligible for this. The pension amount is INR 300 per month which is increased to INR 500 per month after the age of 80 years. The scheme till 2014-15 has covered 4464 beneficiaries.

7. **National Maternity Benefit Scheme (NMBS):** Supports pregnant women of households below poverty. A sum of INR 500 is given to the mother of the child. The pregnant lady should be more than 19 years old and should be from a BPL family. The benefit can be availed only till the birth of two surviving children and the gap between the two children should be a minimum of 3 yrs and the women should be immunised for T.T.

8. **Janani Suraksha Yojana and Sukhibava:** These two schemes are implemented in a combined manner since November 2005. Under the two schemes put together, a total cash incentive amount of INR1000/- (i.e. INR700/- from Janani Suraksha Yojana and INR300/- from Sukhibava) is paid to rural BPL pregnant women who fulfil the eligibility guidelines under the two schemes.

9. In addition to the Central Government programmes implemented by the State in the projected Districts, the innovations brought about through 'Nagaland Empowerment of People through Economic Development' (NEPED) and Communitisation has also had considerable impact. The various village committees constituted for Communitisation in the areas of health and education, which have positions for women, have further enabled their participation in the development process.

## D. General poverty situation in the state

### 1. Non-Income Dimensions of Rural Poverty

10. The district wise poverty and living condition can be gauged from the non-income dimensions of poverty, as analysed below using 5 non income dimensions, namely :

- a) **Literacy and Illiteracy:** These determine the capability or incapability of individual to attain their full potential to progress.
- b) **Capability to Escape Avoidable Diseases:** Availability of drinking water and sanitation that are related to health and living standard, and lack of which particularly affect women.
- c) **Capability to adequate Shelter:** Ownership, living space, materials used for the housing, these determine the living condition of the household.
- d) **Availability/deprivation of housing amenities** such as electricity, fuel for cooking indicates the living condition and capability.
- e) **Capabilities to Function:** Access to assets/resources that enables to function and enhance value in life includes, among many others, means of transport and communication.

### 2. Literacy and Illiteracy Rates

11. Illiteracy lowers the capability of an individual, holding him/her back to progress. The literacy levels are provided in the table below:

**Table 3: Literacy and Illiteracy rates in 2011 and decadal growth in percentages**

Districts/State	Literacy rate, 2011			Illiteracy, 2011		
	Total	Male	Female	Total	Male	Female
<b>Nagaland</b>	<b>80.11</b>	<b>83.29</b>	<b>76.69</b>	<b>19.89</b>	<b>16.71</b>	<b>23.31</b>
Mon	56.60	60.38	52.39	43.40	39.62	47.61
Mokokchung	92.68	93.55	91.74	7.32	6.45	8.26
Zunheboto	86.26	88.86	83.61	13.74	11.14	16.39
Wokha	87.60	90.53	84.58	12.40	9.47	15.42
Phek	79.13	84.53	73.50	20.87	15.47	26.5
Longleng	73.10	75.60	70.35	26.90	24.40	29.65
Kiphire	71.10	76.54	65.44	28.90	23.46	34.56
Kohima	85.58	89.28	81.56	14.42	10.72	18.44

Source: Provisional Population totals, paper 2, Volume 11 of 2011, Nagaland series 14, Census report, 2011. Note: rural-urban segregated data on the same is not available from the secondary source.

12. In 2011, Nagaland has 80.11% literate population, which is marginally higher among male than female as indicated in the table above. Among the districts, Mokokchung has the highest literacy rates of 92.68% (comprising of 93.55% of male and 91.74% female), while the lowest was in Mon with 56.6% (comprising of 60.38% male and 52.39% female).

### 3. Capability to Escape Avoidable Diseases

13. This is associated with availability of safe drinking water, sewage and adequate sanitation facilities etc. Water scarcity, poor water quality and inadequate sanitation negatively impact quality of life, food security, livelihood choices and educational opportunities for poor families.

**Table 4: Sources and Availability of Drinking Water in proposed project Districts of Nagaland. 2011**

Districts	Sources of Drinking Water			Availability of Drinking Water		
	Tap	well	others	within	Near	away
Mon	49.90	25.06	25.04	15.92	46.80	37.28
Mokokchung	61.03	13.68	25.28	21.47	53.07	25.47
Zunheboto	61.53	13.86	24.61	15.85	53.44	30.71
Wokha	21.94	40.17	37.89	9.72	39.87	50.41
Phek	85.17	4.76	10.07	14.39	66.74	18.87
Longleng	11.93	34.94	53.12	2.83	19.59	77.58
Kiphire	81.53	4.31	14.16	11.50	56.14	32.36
Kohima	56.12	18.22	25.67	10.65	57.17	32.18
Nagaland	51.79	24.57	23.64	20.09	48.49	31.42

Source: Census report, 2011, Nagaland

14. Accessibility to drinking water is one of the major challenges in Nagaland, especially in rural villages where only 20 % of the households have access to drinking water within their premises, while 48.49% have access near their premises and 31.42% have to walk a distance to collect drinking water according to census report- 2011. Moreover, out of the available sources, tap water is accessible for half of the rural households, but the serious concern is only 6% get treated water, while 24.57% collect drinking water from well and 23.60% get from sources like spring, tank, pond river, canal, lake etc..

15. **Sanitation Facilities:** Proper and adequate drainage and sanitation facilities such as access to toilets and latrines promote health of the households members because they allow people to dispose of their waste appropriately.<sup>13</sup>

<sup>13</sup> World Health Organization and UNICEF. Progress on Drinking Water and Sanitation: 2012 Update. United States: WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation; 2012.

**Table 5: Sanitation in proposed project districts of Nagaland, 2011.**

Districts	Drainage			Latrine Facilities		Types Of Latrine			
	Closed	No Drainage	Open Drainage	Within Premises	Not Within	Flush/Pour Tank	Pit and Others	Public	Open
Mon	2.33	70.04	27.63	62.69	37.31	17.69	45.00	10.26	27.05
Mokok.	5.24	26.27	68.48	96.31	3.69	54.33	41.98	2.31	1.39
Zunheboto	2.06	71.73	26.22	71.69	28.31	29.27	42.42	4.58	23.73
Wokha	3.74	72.92	23.34	59.48	40.52	35.97	23.51	6.83	33.69
Phek	3.27	53.03	43.70	75.43	24.57	36.56	38.87	8.22	16.35
Longleng	1.56	74.97	23.47	68.98	31.02	19.22	49.76	1.54	29.49
Kiphire	1.00	79.33	19.67	36.65	63.35	13.80	22.85	10.53	52.82
Kohima	2.62	42.88	54.49	52.15	47.85	38.88	13.27	29.45	18.40
Nagaland	3.26	60.48	36.27	69.22	30.78	35.04	34.18	8.47	22.31

Source: Census report, 2011

16. More than half of the rural household (60.48%) have no drainage, while only 3.26% have closed drainage, and 36.27% has open drainage. As for latrine facility, 69.22% of rural households in Nagaland has latrine within the premises. Yet, 22.31% of households continue to use open defecation system, leading to serious health implications.

#### 4. Capability toadequate Shelter

17. Safe, decent and affordable shelter is critically important in helping families to lead a healthy life. The details of adequacy of shelter is provided in table below:

**Table 6: Capability to be adequately sheltered in proposed project area, Nagaland, 2011.**

Districts	% of h/h with owned house	majority with 2 rooms	types of houses by materials of roof			Sources of Lighting			no lighting
			Poor#	G.I, metal etc.	concrete	electricity	solar	k.oil	
Mon	92.51	37.83	75.51	23.96	0.53	25.90	0.35	66.57	4.89
Mokokchung	83.93	42.59	13.93	84.52	1.55	93.39	0.33	5.76	0.17
Zunheboto	90.73	40.60	4.00	95.38	0.63	94.71	0.48	3.94	0.64
Wokha	90.18	42.57	13.48	85.89	0.64	70.71	0.60	25.43	0.98
Phek	87.09	47.06	2.54	96.43	1.03	95.03	0.05	3.12	0.54
Longleng	96.03	31.94	36.35	62.70	0.95	50.46	0.37	46.40	1.67
Kiphire	94.28	46.67	11.73	88.06	0.21	82.66	0.77	11.56	2.16
Kohima	87.20	39.29	1.85	95.51	2.64	95.78	0.12	3.48	0.21
Nagaland	87.25	41.90	24.80	73.67	1.53	75.22	0.41	21.10	1.49

#Poor: roofing materials of grass, thatch, bamboo, wood mud, plastic, polythene etc.

Source: Census Report 2011

18. The proportion of rural households with ownership of house ranges from 83.93% in Mokokchung to 96% in Longleng. Mon district was the poorest in respect of housing condition in Nagaland.

19. **Energy for Cooking:** There is an explicit connection between energy access and poverty reduction. Aside from drudgery associated with collecting firewood there are health imperatives of the different types of energy used for cooking.

**Table 7: Types of energy use for cooking proposed project area**

Districts	Firewood	LPG	Electricity	Others	Total
Mon	97.87	0.35	0.03	1.75	100.00
Mokokchung	91.81	7.27	0.06	0.86	100.00
Zunheboto	95.88	2.51	0.05	1.56	100.00
Wokha	94.63	3.44	0.86	1.07	100.00

Phek	96.27	2.58	0.07	1.08	100.00
Longleng	97.91	0.41	0.07	1.61	100.00
Kiphire	98.80	0.04	0.04	1.13	100.00
Kohima	92.88	5.93	0.11	1.07	100.00
Nagaland	91.80	6.72	0.13	1.35	100.00

Sources: Census Report, 2011, Nagaland

20. More than 91% of rural households use fire wood for cooking. The use of LPG is less than 10 % in all the districts.

## 5. Capabilities to Function

21. Access to resources enables to function and enhance value in life. Among the assets the means of transport and communication are important components of the economy and common tools used for development.

**Table 8: Access to means of transport and communication among rural households in proposed project area Nagaland, 2011**

Districts	Transport				Information and communication			
	bicycle	two wheeler	vehicle	no asset owned	radio/ tv	computer	with internet	telephone/ mobile
Mon	4.68	2.56	1.37	91.39	23.79	6.32	0.21	23.17
Mokokchung	4.48	11.64	6.08	77.80	71.13	3.67	0.54	41.09
Zunheboto	2.15	3.00	5.78	89.07	54.18	6.03	0.53	42.74
Wokha	9.89	4.62	3.37	82.11	65.36	4.27	0.36	35.13
Phek	1.46	2.01	4.01	92.52	46.34	3.65	0.33	37.86
Longleng	2.30	2.94	1.35	93.40	24.23	4.60	0.12	26.01
Kiphire	0.45	0.73	0.84	97.98	22.60	2.54	0.13	20.45
Kohima	2.15	4.08	11.24	82.53	80.28	6.14	0.93	55.70
Nagaland	7.22	5.01	5.04	82.74	51.32	5.60	0.67	38.93

Source: Census Report, 2011

22. **Transport:** Only 17.27% of household had some means of transport of their own, whereas, nearly 83 percent depend on public or private (bus/taxi) means of transport. Supporting the fact, the District Human Development Survey Report (DHDSR), conducted in 2013, indicates that 56% of the respondents in rural area use public means of transport (bus), 32% taxi and only 12% have own means of transport. Besides, more than half of the respondents expressed the inefficiency of the means of public transport system in rural area. More than 90 percent expressed that the rural road condition becomes very poor during monsoon. Thus the poor transportation system combined with bad road condition stunts the progress of rural economy.

23. **Means of Communication/Information:** In the villages, for more than half of the households, Radio/Television continues to be the major means of information, and 39 percent use mobile/telephone for communication. Furthermore, almost 6 percent of household have computer but only 0.67 percent had access to internet connectivity in 2011. The DHDSR, 2013 found that this had risen to 18.92% of the rural respondents in 2 years. Among the districts, rural households at Kohima are better endowed with means of communication and information, followed by Mokokchung. The poorly endowed districts are Kiphire, Longleng, Tuensang, and Mon, respectively.

**Table 9: Most and Least deprived districts (indicators of standard of living)**

Deprivation Indicators		Most deprived Districts (Household in %)		Least deprived Districts (Household in %)		Nagaland rural Average (%)
Education	Illiterate proportion of rural population	Mon	43.40	Mokokchung	7.32	19.89
		Kiphire	28.90	Wokha	12.40	
Drinking	Source away from the premises	Longleng	77.58	Phek	18.87	31.42
		Wokha	50.41			

water	from sources other than tap and well	Longleng Wokha	53.12 37.89	Phek	10.07	23.64
Sanitations	No Drainage	Kiphire Longleng	79.33 74.97	Mokokchung Kohima	26.27 42.88	60.48
	Latrine not within the premises	Kiphire	63.35	Mokokchung	3.69	30.78
	Open defecation	Kiphire	52.82 38.60	Mokokchung	1.39	22.31
Housing and amenities	Poor housing material	Mon	75.51	Kohima Phek	1.85 2.54	24.80
	No lighting	Mon Longleng	4.89 1.67	Mokokchung Kohima	0.17 0.21	1.49
	K.oil for lighting	Mon Longleng	66.57 46.40	Phek Kohima	3.12 3.48	21.10
Cooking fuel	Fire wood	Except Dimapur, all districts use firewood (above 90% of household), a tradition and easily available.				
	Uses of LPG	Kiphire Mon	0.04 0.35	Mokokchung	7.27	6.72
Transport	No asset owned (bicycle, two wheeler, vehicle)	Kiphire Longleng Phek	97.98 93.40 92.52	Mokokchung	77.80	82.74
Communication	Usage of Phone	Kiphire Mon	20.45 23.17	Kohima	55.70	38.93
	Hh with internet	Longleng Kiphire	0.12 0.13	Kohima	0.93	0.67

Source: Based on Census Report, 2011

#### 24. In summary,

- In the rural areas of Nagaland, the most deprived district is Longleng, followed by Kiphire and Mon districts. On the other hand, the less deprived districts are Mokokchung, Kohima, and Phek, respectively.
- Longleng district is mainly deprived in terms of drinking water and drainage, lighting, transport and communication. Kiphire is deprived of transport and communication, uses of LPG, sanitation and drainage, and literacy. While Mon district is particularly poor in terms of literacy, housing conditions, uses of LPG and communication.
- Although Phek district is among the backward districts, yet the district is relatively better off than the others in terms of drinking water facility and housing, respectively. The district is deprived in availability of assets for transportation.

## 6. Income poverty

25. The poverty headcount rate reached 19.9% in 2012, according to the Tendulkar poverty line. As indicated in table 1, the rate of rural poverty in Nagaland nearly doubled from 2004 to 2012 and it is estimated that there are 280 000 poor households in the State.

**Table. 10: Poverty in Nagaland (Rural)**

Methodology	year	Rural poverty line in INR (MPCCE)		Rural Poverty ratio (%)		Number of rural poor in lakh) in Nagaland
		Nagaland	India	Nagaland	India	
D. Tendulkar	2011-12	1270	1000	19.9	25.7	2.8
	2009-10	1017	860	19.3	33.8	2.8
	2004-05	687	447	10.0	41.8	1.7

Source: Planning Commission, 2014, GOI. \* Poverty ratio of Assam is used for Nagaland.

26. A wealth ranking exercise was conducted during the field survey for this report and the results indicate that the levels of rural poverty are higher than the headcount poverty based on the Tendulkar poverty line.

**Table 11: Poverty analysis based on wealth ranking in project districts**

District	Total No of HHs surveyed	Wealth Ranking (% of HHs by wealth ranking)			
		Rich (More than INR 3,00,000) in %	Middle (INR1,50, 001 to INR3,00,000) in %	Poor (INR 75000 - INR1,50,000) in %	Poorest (below INR75,000) in %
Kiphire	60	0	33.33	60.00	6.67
Kohima	60	30.00	23.33	36.67	10.00
Mokokchung	60	23.33	23.33	33.33	20.00
Phek	60	6.67	36.67	33.33	23.33
Zunheboto	60	23.33	30.00	26.67	20.00
Average total	300	17.33	27.33	39.33	16.00

Source: Field Survey, April, 2017

27. The wealth ranking above is based on the District Human Development Report Survey, GoN and UNDP. There is an almost equal distribution of Households among the lowest and highest categories but the majority of the households fall within the two middle quintiles. There is great variation within the project area with Kiphire having the highest incidence of poor households and Zuneboto and Kohima comparatively less.

## 7. Household spending

28. Food expenditures do not exceed 50% of total household expenses. Education is an important expenditure item ranging between 13 to 38% of total household expenses. Expenditure on assets is conversely quite limited and does not exceed 17%.

**Table 12: % of household spending pattern**

Districts	Percentage of HH's spending				
	Education	Food	Miscl.	Asset	Total
Kiphire	14.97	44.58	27.96	12.49	100.00
Kohima	37.98	19.90	27.13	14.99	100.00
Mokokchung	13.57	38.84	37.38	10.20	100.00
Phek	19.76	32.96	38.05	9.22	100.00
Zunheboto	25.85	25.10	32.40	16.65	100.00

Source: Field Survey, April, 2017.

## 8. Correlation between poverty and key assets of rural households

29. Access to land and ownership of own house do not appear to be correlated with the incidence of poverty. In the project area, the large majority of households have access to land except in Kiphire and Zunheboto where this rate is less than 10%. Livestock ownership is variable across districts but more than 60% of all households own livestock.

**Table 13: Poverty status of rural households in project districts based on assets, income and expenditure**

Districts	% of HHs without			% of HH's having income from		
	Land	Livestock	Own house	Agri	Livestock	Wage
Kiphire	10.00	6.67	0	100	93.33	40.00
Kohima	0	0.00	0	100	100.00	63.33
Mokokchung	0	40.00	0	100	60.00	16.67
Phek	0	30.00	0	100	70.00	100.00
Zunheboto	6.67	0.00	0	100	96.67	30.00

Source: Field Survey, April, 2017.

## E. *Jhum* Cultivation in the proposed districts

### 1. Production system

30. The traditional *jhum* cultivation continues to be the dominant agricultural system in Nagaland. The three primary distinct agricultural systems in the State are Shifting (*jhum*) Cultivation, Terrace Rice Cultivation (TRC) and Wet Rice Cultivation (WRC).

31. **Shifting Cultivation (*Jhum*)** is the dominant farming system, which is practised mainly on the hilly regions. Chemical fertilizer and pesticides are rarely used. It involves a very complex land use system requiring knowledge of stability and fertility of the soil, types of crops to be grown, climatic variations and water regime. After selecting the plot for cultivation by the Village Council, plots are allocated to each household (village, clan, and individual land), they clear the forest cover and prepare the land manually using simple tools and by way of burning, then follows sowing and constant weeding, and harvesting, therefore it is labour intensive. Under the system, plot rotates following a yearly cycle. A plot is cultivated for 1 to 2 years in succession and abandoned it as fallow, so it regains fertility through natural process until the next cycle comes. The years of cycle thus determines the soil fertility and vegetative re-growth. This in turn, is determined by the number of households and the availability of land for cultivation. Paddy is the staple crop in general; other crops are green vegetables, maize, millet, chillies, spices, garlic, ginger, cucumber, pumpkin, beans, soya bean and other pulses, colocassia, tapioca etc.

32. *This traditional cropping pattern is gradually changing, wherein jhum agriculture is gradually giving way to a more sedentary and commercial type of cultivation and of late, orchards, plantation of cash crops, and vegetable farms have come up in the State although sporadic, ushering in the prospect of intensive integrated approach of farming system.*

### 2. Permanent agricultural Systems in project districts

33. **Terrace Rice Cultivation (TRC)**, an irrigated agricultural system which is traditionally practiced by the Angami and Chakhesang tribes of Nagaland on the hill slope with terrace benches. The location is determined by availability of water for irrigation, usually the source is streams, whereas the height and breadth of terrace bench is determined by the slope of the hill. Thus abundant rainfall is an important input for this farming system. Paddy, the main crop is grown during monsoon; also crops like ginger, yam, beans and cow pea are grown in the contour bunds, risers and embankment. It is found that growing legume crops such as soya bean result in higher yield of paddy than other crops<sup>14</sup>.

**Box no. 1: An integrated traditional farming system in Kikruma village, Phek district, Nagaland.**

- Integrated Terrace Rice Cultivation
- Runoff Water from nearby forest and road sides collected in dugout ponds
- Harvested Water used for irrigation
- Cultivate Paddy- Fishery during Kharif season
- Vegetables during rabi season
- **Replicable in the other hilly areas in the State.**

34. **Wet Rice Cultivation** is being practiced in the valleys and plain areas where shared cropping system prevails. The main crop is paddy, which is sown mostly during kharif season. Rabi crops are vegetables, oil seeds, and other cereal crops. The uses of fertilizer and pesticides are minimal. Generally, the cultivation is done with the help of farm animals but in recent years, farm machineries are also in use although negligible.

35. **Homestead garden** is a secondary agricultural system, practised especially by those farmers who own land closer to their villages. Traditionally, the crops were grown for family consumption, but in recent years, varieties of organic vegetables, fruits and other crops come to the urban market, generating additional income for the farmers.

<sup>14</sup> Nakro, Vengota (2011): Traditional Agricultural Practices and Sustainable Livelihood, A Thematic Report, Published by Department of Planning and Coordination, GoN.

### 3. Productivity in *Jhum* and Terrace cultivations

36. Rice is the staple food in Nagaland, and thus the major cropped area is allocated to paddy in both *jhum* and Terrace/wet cultivation. The yield was higher with Terrace/Wet rice cultivation (**2.69 M.T per hectare**) than *jhum*(**1.94 M.T per hectare**) in 2014-15. There has been minor improvement in the yields during the last two years (Table 9). In 2014-15, out of total cropped area under paddy, TRC/WRC was larger than *jhum* area (52 % and 48% respectively), which was reversed from 2012-13 onwards. The proportion of production from TRC/WRC was therefore higher as compared to *jhum* fields (60% and 40%, respectively) during the period. In districts like Zunheboto and Kohima, where households practice both systems of farming, paddy is produced in terraces fields and *jhum* is used for vegetable production.

**Table 14. District wise % area, production and yield in *Jhum* and Terrace/Wet Rice Cultivation in Nagaland, 2012-13 and 2014-15**

District	2012-13						2014-15					
	% of area under paddy		% of production		Yield/hectare		% of area under paddy		% of production		Yield/hectare	
	<i>jhum</i>	TRC/WRC	<i>Jhum</i>	TRC/WRC	<i>Jhum</i>	TRC/WRC	<i>Jhum</i>	TRC/WRC	<i>Jhum</i>	TRC/WRC	<i>Jhum</i>	TRC/WRC
Kohima	40	60	33	67	1.92	2.54	36	64	29	71	1.93	2.70
Phek	13	87	10	90	1.85	2.54	12	88	9	91	1.92	2.71
Mokokchung	66	34	59	41	1.91	2.53	62	38	54	46	1.94	2.69
Mon	81	19	76	24	1.92	2.52	77	23	71	29	1.94	2.67
Wokha	62	38	55	45	1.91	2.53	58	42	49	51	1.94	2.71
Zunheboto	78	22	73	27	1.91	2.50	72	28	68	32	1.94	2.41
Kiphire	90	10	88	12	1.88	2.50	84	16	80	20	1.93	2.66
Longleng	96	4	94	6	1.90	2.50	83	17	78	22	1.94	2.67
<b>Nagaland</b>	<b>52</b>	<b>48</b>	<b>45</b>	<b>55</b>	<b>1.90</b>	<b>2.54</b>	<b>48</b>	<b>52</b>	<b>40</b>	<b>60</b>	<b>1.94</b>	<b>2.69</b>

Source: Statistical Hand Book of Nagaland, 2015, Directorate of Economics and Statistics, Kohima.

### 4. Land holding in the project districts

37. **By Gender:** In Nagaland 91% of the holdings were male operated with operated area of 91%, leaving only 9 % of holdings and area respectively under women.

**Table 15: % of Operational holdings and area by gender, 2010-11**

District	Operational holdings (%)		Area operated (in %)		Average size of holding in hectare	
	Male	female	Male	female	male	female
Kohima	83.84	16.16	89.09	10.91	5.76	3.66
Phek	89.30	10.70	93.34	6.66	3.81	2.27
Wokha	85.06	14.94	82.40	17.60	10.24	12.45
Zunheboto	83.21	16.79	86.58	13.42	7.05	5.42
Mokokchung	89.02	10.98	90.65	9.35	8.72	7.29
Mon	90.59	9.41	92.14	7.86	5.50	4.52
Longleng	95.22	4.78	96.16	3.84	8.22	6.55
Kiphire	92.20	7.80	93.70	6.30	4.94	3.92
Nagaland	90.67	9.33	91.31	8.69	6.89	6.37

Source: Based on Agricultural Census 2010-11 of Nagaland, Directorate of Agriculture, GoN, Kohima

38. Longleng, Kiphire, and Mon have more than 90% of the holdings under men. The holding and operated areas for female were equally low in all the districts. The Nagaland average size of holding

for men was little larger (6.89 hectare) than that of women (6.37 hectare). This is true for all districts, except in Wokha where operational holding for women was larger than that of men.

39. **By Districts:** The number of holdings increased by 5.41% from 2005-06 to 2010-11, while the operated area was reduced by 8.41% in Nagaland according to Agricultural census report, 2010-11.

**Table 16: Holdings and cultivated area by district wise, 2010-11**

District	Number Of Holdings			Area Operated (In Hectare)			
	2010-11	% Change (2005-06 to 2010-11)	% of Holdings (in total), 2010-11	2010-11	Average size of holding 2010-11 (hectare)	% Change (2005-06 to 2010-11)	% of operated area in total, 2010-11
Kohima	21,145	0.9	11.85	114,570	5.42	0.86	10.67
Phek	18,825	-16.53	10.55	68,714	3.65	-1.88	6.40
Wokha	10,584	14.33	5.93	111,784	10.56	14.52	10.41
Zunheboto	16,709	-4.44	9.37	113,273	6.78	19.91	10.54
Mokokchung	14,979	-13.33	8.40	128,174	8.56	-51.45	11.93
Mon	24,066	28.63	13.49	129,814	5.39	16.06	12.08
Longleng	6,689	76.12	3.75	54,360	8.13	30.95	5.06
Kiphire	8,739	-2.89	4.90	42,160	4.82	-8.24	3.92
Nagaland	178,411	5.41	100	1,074,228	6.02	-8.41	100

Source: Agricultural Census 2010-11 of Nagaland, Directorate of Agriculture, GoN, Kohima

40. During 2005-06 to 2010-11, the number of land holdings was reduced in Phek, Mokokchung, Zunheboto and Kiphire (by 16.53%, 13.33%, 4.44% and 2.89%, respectively). During the same period, Longleng experienced the highest increase in holdings (76.12%), followed by Mon (28.63%), Wokha (14.33%), and Kohima (0.9%). During the reference period, Mokokchung experienced the largest percentage decline in operated area (-51.45%). Sample Data on Land Holdings (*Jhum* and Terrace) is given below (Table 12).

**Table 17: District-wise, category-wise Land holdings in the Project districts (*Jhum*)**

District	Marginal Farmer (below 2.47 acre)	Small (2.47 to 4.93 acres)	Medium (4.94 to 9.87 acres)	Large (9.88 acres & above)
Kiphire	93.33	6.67	0	0
Kohima	96.67	3.33	0	0
Mokokchung	70.00	26.67	3.33	0
Phek	57.89	36.84	5.26	0
Zunheboto	70.00	26.67	3.33	0
District-wise, category-wise Land holdings in the Project districts (terrace)				
Kiphire	0	100	0	0
Kohima	73.33	26.67		0
Mokokchung	0.00	0.00	0.00	0
Phek	81.82	13.64	4.55	0
Zunheboto	57.14	42.86	0.00	0

Source: Field Survey, April, 2017

41. Majority of *jhum* cultivators are marginal farmers in the proposed districts that range from 96.67% in Kohima to 57.89% in Phek. There are no large farmers. The reason for selection of acreage of the farm is determined by the land availability and the family needs. Likewise, in general, the terrace farms are mostly comprised of marginal and small sized farms.

## F. Targeting and Target groups

42. The project districts are predominantly populated by Scheduled Tribes. There are 13 major tribes in the project area and their distribution is presented in the table below.

**Table 18: The targeted population and tribes in the proposed project area.**

Districts	Density (Persons per sq.km.)	Major Tribes	% share in State's total (2011)		
			Total	Rural	Urban
Mon	140	Konyak	12.65	15.33	6.03
Mokokchung	121	Ao	9.84	9.87	9.76
Zunheboto	112	Sema	7.11	8.04	4.83
Wokha	102	Lotha	8.41	9.33	6.13
Phek	81	Chakesang, Pochury, & Sangtam	8.26	9.86	4.30
Longleng	90	Phom	2.55	3.05	1.33
Kiphire	65	Sangtam, Yimchuru, Tikhir & Sema	3.74	4.09	2.89
Kohima	183	Angami, Rengma	13.54	10.44	21.21

Source: Census Report, 2011

### 1. Target groups by shifting cultivation (*jhum*) and permanent cultivation

43. The districts present different production systems with varying proportion of *jhum* and TRC/WRC. Field survey revealed that for those families having both *jhum* and terrace, paddy is mainly cultivated in terrace field while *jhum* is used for vegetable and other cereal crops like maize etc.

**Table 19: Percentage of Household by Cultivation**

Districts	Only <i>Jhum</i> (Shifting)	Only Permanent	Both ( <i>Jhum</i> + Terrace)
Kiphire	96.67	0.00	3.00
Kohima	0.00	0.00	100.00
Mokokchung	100.00	0.00	4.00
Phek	36.67	66.67	43.33
Zunheboto	66.67	0.00	33.33

Source: Field Survey, April, 2017.

### 2. Target groups by gender & youth.

44. **Gender-wise Work Participation in Agriculture:** Whereas both men and women have almost equal participation as agriculture labourers, it is notable that more women are cultivators than men.

**Table 20: District wise percentage of agricultural workers in proposed districts of Nagaland, 2011**

Districts	% of cultivators in respective total workers			% of agricultural labourers		
	Total	Rural		Total	Rural	
		M	F		M	F
1.Mon	76.9	78.9	86.1	7.3	7.2	7.9
2.Mokokchung	48.9	56.4	66.1	9.2	10.5	9.0
3.Zunheboto	56.3	58.5	66.6	15.0	14.7	17.2
4.Wokha	60.1	64.0	77.1	8.2	9.4	9.6
5. Phek	68.6	66.3	81.8	3.9	4.0	4.6
6.Longleng	73.6	75.7	84.0	4.3	3.2	3.1
7.Kiphire	67.1	64.9	82.4	3.9	3.4	4.0
8.Kohima	38.9	47.0	74.8	1.9	2.3	2.7
<b>Nagaland</b>	<b>55.2</b>	<b>62.0</b>	<b>74.7</b>	<b>6.5</b>	<b>7.0</b>	<b>7.7</b>

Source: Primary Census Abstract, Data Highlights, Nagaland Series 14

45. **Target groups by youth:** Youth unemployment in Nagaland is one of the highest in the country. According to NSS report of 2011-12, by Usual Status in rural area, it was 40%. The unemployment rates are summarized in the table below and the data is disaggregated by gender.

**Table 21: Usual Principal Status (UPS) and Usual Status (adjusted) unemployment rate among the youth (15-29 years)**

	Age	Rural (%) UPS			Rural (%), Usual Status		
		male	female	persons	male	female	persons
Nagaland	15-19	7.1	83.5	57.8	4.5	41.0	29.7
	20-24	72.0	70.5	71.3	45.1	33.7	40.4
	25-29	54.8	67.0	58.6	43.9	40.4	42.7
	<b>15-29</b>	<b>61.3</b>	<b>70.9</b>	<b>64.7</b>	<b>42.2</b>	<b>37.2</b>	<b>40.3</b>
All India	15-19	11.4	8.0	10.5	9.0	4.9	7.8
	20-24	6.9	9.9	7.6	5.8	6.4	5.9
	25-29	2.8	5.8	3.4	2.2	3.3	2.4
	<b>15-29</b>	<b>6.1</b>	<b>7.8</b>	<b>6.5</b>	<b>5.0</b>	<b>4.8</b>	<b>4.9</b>

Source: Based on NSS Report No. 554: Employment and Unemployment Situation in India, 2011-12

46. The problem is more pronounced among the youth of higher age groups than the younger ones. The problem is also more acute among male than the female (42.2% and 37%, respectively) in the state.

47. Youth engagement in *jhum* farming is higher with women more active than men in the districts of Kiphire, Kohima, and Zunheboto. There is a very strong preference for government service among the youth but it is heavily skewed in favour of men, with the exception of Kiphire.

**Table 22: Employment pattern among youth in the sample districts**

Districts	Jhum Engaged		Total	Govt.Service		Total	VegetableVendors		total
	M	F		M	F		M	F	
Kiphire	47.54	52.46	73.49	33.33	66.67	3.61	0	100	14.46
Kohima	27.27	72.73	61.11	100	0	16.67	0	100	11.11
Mokokchung	75.00	25.00	66.67	80	20	16.67	66.67	33.33	10.00
Phek	80.00	20.00	83.33	100	0	16.67			0.00
Zunheboto	42.55	57.45	73.44	100	0	14.06	0	100	12.50

Source: Field Survey, April, 2017.

## G. Women and Gender Issues in Project Areas

### 1. General status of women in the project districts including education

48. **Education attainment and gender:** Among female population of age 6 years and above who have attended school constituted 81% in Nagaland, while the same in rural area was lower with 75.6% in 2015-16 (Table 23). Among the targeted districts, the highest in total and rural area was Mokokchung (90% in total and 87.3% in rural area).

**Table 23. Education attainment in Nagaland, 2015-16**

Districts	Population (female) age 6 years and above who ever attended school (%)		Women who are literate (%) age 15-49		Men who are literate (%) age 15-49		Women with 10 or more years of schooling (%) age 15-49	
	rural	total	rural	total	Rural	total	rural	total
Nagaland	75.6	81.0	75.1	81.0	80.6	85.6	21.7	33.3
Mon	64.6	70.1	59.9	67.0	60.3	68.5	8.3	17.8
Mokokchung	87.3	90.0	94.9	96.4	92.4	94.9	40.6	49.1
Zunheboto	83.4	86.5	83.1	87.1	88.4	90.1	22.3	28.6
Wokha	76.7	83.8	82.2	89.2	90.8	93.1	26.5	39.9

Phek	72.6	74.8	72.3	75.0	84.4	86.4	18.5	21.9
Longleng	77.9	80.6	73.9	77.1	82.8	85.9	13.8	18.4
Kiphire	72.2	78.3	69.1	75.2	80.7	83.8	13.8	20.7
Kohima	78.2	86.2	83.7	89.4	86.0	89.0	25.3	48.6

Source: National Family Health Survey – 4, 2015-16, State & District Fact Sheet, Nagaland, Ministry of Health and Family Welfare, Government of India

## 2. Nutritional Status

49. The rural health status by gender in the proposed districts reveals that more women than men have a body mass index which is below normal and have anemia (2015-16). However, the nutrition status of both men and women in the state are notably higher than the national average.

**Table 24: Nutritional Status of Ever-Married Adults (age 15-49)**

		Whose Body Mass Index is below normal (%)		Overweight or obese (%)		Anaemia	
		male	female	Male	Female	male	female
NFHS-3 (2005-06)	total	10.8	15.9	8.4	8.9	NA	NA
	urban	9.6	13.1	16.8	17.5	NA	NA
	rural	11.3	16.9	5.0	5.6	NA	NA
NFHS-4 (2015-16)	total	11.5	12.2	14.0	16.2	10.1	23.9
	urban	12.8	12.9	16.6	20.7	9.6	21.4
	rural	10.6	11.8	12.3	13.2	10.5	25.5
Mon	Rural	15.1	6.3	19.5	3.8	8.5	37.9
Mokokchung	Rural	7.2	14.4	16.2	19.9	16.5	22.2
Zunheboto	Rural	27.3	30.8	7.8	16.8	7.7	27.3
Wokha	Rural	2.6	12.4	11.8	8.1	30.4	37.0
Phek	Rural	8.0	7.7	9.6	12.4	3.4	9.3
Longleng	Rural	12.6	14.6	5.8	6.1	4.4	19.6
Kiphire	Rural	9.4	11.3	7.8	8.4	2.3	22.0
Kohima	Rural	4.7	10.8	19.5	18.9	14.5	21.4

Source: National Family Health Survey – 3, 2005-06 and National Family Health Survey – 4, 2015-16, State & District Fact Sheet, Nagaland, Ministry of Health and Family Welfare, Government of India.

## 3. Household's decision making

50. **Decision on Agriculture:** Farm site for *jhum* cultivation is generally decided by the husband in Zunheboto, Mokokchung, and Kiphire, while in Kohima and Phek it is decided by both (jointly). While for selection of seeds, wife has a greater role than the husband, but in majority of the districts it is decided jointly. For marketing wife usually decides except for Kohima and Phek, where it is decided jointly.

51. **Domestic affairs:** Purchases of food, children education, and health care in the family are all decided by husband and wife jointly.

52. For sale and purchase of **assets** like buildings, land, movable assets it is usually decided by husband than by wife in all the districts, except for Mokokchung and Kiphire where such matters are decided jointly.

53. **Financial** matters such as taking or giving loan too is generally decided jointly in the families except in Zunheboto district, where it is mostly done by the husband. As for keeping cash and management is generally done by the wife in Zunheboto, Mokokchung and Kiphire. Kohima and Phek are taken jointly.

54. It appears that gender relation at the family level is more or less balanced, where most of the decisions are shared between the husband and wife.

**Table 24: Household Decision (%)**

	Zunheboto			Kohima			Mokokchung			Kiphire			Phek		
	H	W	B	H	W	B	H	W	B	H	W	B	H	W	B
Farming Site	57	7	37	0	14	87	53	23	23	53	23	23	40	17	43
Selection of Seeds	3	37	60	0	33	67	28	31	41	31	28	41	16	50	34
Marketing	4	54	42	0	20	80	0	70	30	0	70	30	13	37	50
Food and Child Care	0	27	73	0	7	93	0	13	87	0	13	87	0	13	87
Health Care	3	43	53	0	7	93	10	17	73	10	17	73	13	10	77
Assets (Buy And Sell)	60	20	20	60	7	33	10	10	80	10	10	80	60	7	33
Loans	50	5	45	40	7	53	13	20	67	13	20	67	40	3	57
Keeping Cash	23	40	37	43	7	50	0	57	43	0	57	43	37	30	33
Management of Cash	30	37	33	43	7	50	3	60	37	3	60	37	40	20	40

**Source:** Field Survey, April, 2017. H: husband; W: wife; B: both.

#### 4. General role and contribution of women (including livestock).

55. Women make major contributions to the agricultural and rural economy (Table 25). Their roles are changing fast, where economic and social forces are transforming the agricultural sector. Rural women often manage complex households and pursue multiple livelihood strategies. Their activities typically include producing agricultural crops, tending animals, processing and preparing food, working for wages in agricultural or other rural enterprises, collecting fuel and water, engaging in trade and marketing, caring for family members and maintaining their homes.

**Table 25 : Gender role in Household activities (%)**

Activities	Kohima			Zunheboto			Mokokchung			Phek			Kiphire		
	male	female	both	male	female	both	male	female	both	male	female	both	male	female	both
Collection of firewood	0	3	97	10	10	80	13	27	60	3	13	83	13	27	60
Collection of drinking water	0	87	13	7	17	77	3	30	67	0	47	53	3	30	67
Collection of forest product	0	3	97	20	10	70	0	40	60	23	13	63	0	40	60
Marketing	0	23	77	8	58	35	15	65	19	10	33	57	15	65	19
Cooking & washing	0	87	13	0	83	17	0	100	0	0	83	17	0	100	0
Child care	0	37	63	7	67	27	0	24	76	0	53	47	0	24	76
Live stock	0	7	93	0	12	88	0	10	90	7	7	87	0	10	90

**Source:** Field Survey, April, 2017.

56. It is the women who generally go for Marketing of agricultural produce in most of the districts (Zunheboto, Mokokchung, and Kiphire), whereas, in Kohima and Phek, it is generally done by both. Household chores like cooking, washing etc. are almost entirely the responsibility of women in the family in all the districts, while for child care, the responsibility is being shared commonly except for Zunheboto and Phek. In most of the rural households, tending livestock is done by both male and female. Female specific role in tending livestock are to go into the forest in search of fodder, prepare food and feeds for the animals daily (pig, cattle and chicken). Also, women grow crops like maize, yam and tapioca for the livestock. The collection of firewood is predominantly done by both male and female in all the sample districts.

#### 5. Specific role of women in *jhum* and agriculture

57. Agriculture is a way of life for the Nagas, where 75 per cent of the women workforces are engaged. In *jhum* cultivation, while men usually undertake the task of slashing of the forests, burning of the fields, paving the pathways leading to the new fields, construction of huts and transportation of wood from the field, the remaining activities of the crop production activities, right from seed selection

and sowing, weeding to the harvest of the crops are carried out mostly by the women. In addition to paddy, women plant a variety of crops like chillies, tomatoes, brinjal, maize and millets, yams, etc., to meet the household requirements and to generate additional income. Besides being engaged in the cultivation of crops, it is primarily the women who engage in livestock rearing and foraging activities from the forests for edible plants, fuel, fodder for their consumption as well as for their domestic animals etc., among other things. It is women who go to the urban and road side markets to sell their farm produce and Non timber forest produce (NTFP) for family sustenance.

**Table 26: % of Labour inputs in *Jhum* cultivation-gender wise**

Districts	Family labour (%)			Hired labour (%)			Total labour (%)	
	male	female	Total*	male	female	Total*	male	female
Kohima	39	61	<b>97</b>	44	56	<b>3</b>	39	61
Zunheboto	40	60	<b>92</b>	47	53	<b>8</b>	40	60
Mokokchung	42	58	<b>93</b>	68	32	<b>7</b>	44	56
Phek	44	56	<b>91</b>	56	44	<b>9</b>	45	55
Kiphire	42	58	<b>95</b>	59	41	<b>5</b>	42	58
Average	41	59	94	55	45	6	42	58

**Source:** Field Survey, April, 2017. \*% in overall total (family+ hired)

58. Data reveals that 58% of the labour inputs in *Jhum* cultivation and 59% of family labour come from women. The family labour comprise of 94% of the total labour input while hired labour comprise of only 6% (Table 26). In hired labour, contribution of male is higher than the female but the component of hired labour is minimal as work is mostly done by family labour. Male constituted 54% of hired labour while female proportion is 45%. Although female do not go to work in other's field for wages, but they form **working groups** (circle of friends) comprising of 5 to 15 members and work in each of the members' field in rotation, mostly during weeding season (May to July) when they need maximum labour inputs as each field requires weeding for 3 to 5 times in a crop season. Among the districts, Kohima show higher proportion of female workers (61%) and Phek with the lowest (55%).

## 6. Gender and resource management in rural Nagaland

59. Women in Nagaland have a very deep understanding of the value of land, forests and biodiversity. Although men are over all in-charge of the land and its resources, it is primarily the women who have been taking care of the production base and the household economy. As long as the common property resources such as land, forest, water, etc., are intact and accessible, it could sustain them.

60. The District Human Development Survey Report (DHDSR, 2013), further indicates the respondents' perception on role of gender in resource management (Table 27).

**Table 27. Rural respondents' perceptions on the resource management**

1	Who is responsible for control & management of agricultural and forest land?		%
		community	60.42
		women	1.82
		male	37.69
			100.00
2	Who is responsible for seed selection, weeding and marketing?	both	77.72
		men	6.41
		women	15.87
			100.00
3	Who is responsible for resource management water, firewood, NTFP for household use?	both	76.00
		men	20.00

		women	4.00
			100.00
4	Who is responsible for management over income from agriculture?	both	81.00
		men	9.00
		women	10.00
			100.00
5	Do Women member in your family attended Trainings for agriculture and natural resource management	yes	19.00
		no	81.00
			100.00

Source: District Human Development Survey Report (DHDSR), 2013, Department of Economic and Statistics, Government of Nagaland

61. The manifestation of socio-cultural belief and practices is apparent from the responses that only 1.82% of the respondent expressed that woman have the responsibility to control over and manage agricultural and forest land in the household. Whereas, 60% and 38% opined that the village community and male, respectively have the responsibility for the same. In fact, it is women who do most of the jobs in the field, except for clearing of forest cover.

62. Further, for the other activities like selection of seeds, weeding, marketing, resource management, income, etc., majority of the respondents opined that both male and female jointly managed with equal responsibilities. Women attendance of training on agricultural and resource management practices was found to be equally low, where 81% have no training.

## 7. Women in village governance and decision making processes

63. The 73<sup>rd</sup> Constitutional Amendment aimed at providing an equal status and participation to all in the working of the political process at the grass-roots level. It has not only provided for democratic decentralization and strengthening of rural governing institutions; but it has also offered an opportunity to the women of the Scheduled Caste and Scheduled Tribes to take part in the administration and decision making of the society. Yet in the Naga society, with the exemption from the purview of the Amendment due to the existence of traditional local self-government bodies like the village councils and VDB's,<sup>15</sup> women in general are poorly represented at all levels of community/ political decision making.

64. The VDB reserves **one fourth** of the total number of members of the Management Committee to be filled by women, also, 25 percent of its fund is reserved for women development programme<sup>16</sup>. However, many of the women groups in different villages under the projected districts are either ignorant or do not have any knowledge about this provision. This could either be the result of low literacy rate at the village level or negligence on the part of women. However, based on sample survey it has been found that women participation in the working of the VDB is high in some districts like Kohima, Mokokchung and Zunheboto.

## 8. Women and access to resources: findings from field survey

65. **Assets and Land holding by women:** It was found that in the entire district under consideration, none of the rural women own four wheeler; not even having a joint ownership. Mobile phone is owned by a considerable proportion of women as well as men in the sample districts. Bank account is mostly in the name of male member of the household. For immovable assets, land and buildings are commonly owned by male member of the household in all the districts. Relatively, women in Zunheboto have more assets (13% have land and 7% of building) than the other states; yet it is negligible as compared to male proportions (Table 28).

<sup>15</sup> VDB Nagaland, Souvenir 1998-2005, Department of Rural Development, GoN, 2005.

<sup>16</sup> Village Development Boards Model Rules, 1980 (revised) Govt. of Nagaland

**Table 28. Assets and ownership (%)**

District	Movable				Immovable	
	Sex	four wheeler	mobile phone	bank account	land	building
Kohima	male	100	7	36	93	97
	female	0	3	4	3	3
	both	0	90	61	3	0
Mokokchung	male	100	36	17	90	93
	female	0	4	3	7	3
	both	0	61	79	3	3
Phek	male	100	40	63	97	97
	female	0	7	4	3	3
	both	0	53	33	0	0
Kiphire	male	100	41	77	100	100
	female	0	25	7	0	0
	both	0	34	17	0	0
Zunheboto	male	100	48	20	83	87
	female	0	7	7	13	7
	both	0	45	73	3	7

Source: Field Survey, April, 2017.

## 9. Access to agricultural and livestock inputs and services

66. The major inputs requirement of the *jhum* farmers are quality seeds and simple tools. The farmers do not use chemical fertilizer except common salt and usually do not trust the quality of seeds provided by the government as germination rate is low. For traditional crops, they preserve seeds which suffice their needs, but for new crops like tomato, cabbage etc. they depend on outside market which are difficult to get on time and also very expensive. Thus they need dependable dealers who will meet their needs. For livestock, pig and commercial poultry, feed is being procured from outside market at a high price.

67. Timely vaccination and health care services is needed more now than ever before due to climate change and outbreak of diseases and also extension support for agriculture needs to be strengthened.

## 10. Access to credit

68. The majority of the households who received credit are male headed households. The reasons provided by some of the household, that the procedure of bank credit is too complicated and many others do not get any information of such facilities. The problem with private money lenders are, the rate of interest of 5% to 10% per month, which is too costly, yet during the time of needs they usually turn to the private money lenders. Due to their lack of ownership rights over the land and resources, individual women are not in a position to avail credit/loan for lack of collateral facilities, with which they could otherwise use to improve their livelihood.

**Table 29. Access to credit**

Districts	Male	Female	Too complicated	Denial	Never get information
Kiphire	100				
Kohima			70	0	30
Mokokchung	80	20	23	0	40
Phek			27	0	53
Zunheboto	0	0	67	3	30

**Source:** Field Survey, April, 2017.

### 11. Access to training, knowledge and information

69. During the field survey, the farmers in the rural villages emphasised that they need training to adopt better technology and practices in farming, so that they would be better prepared to withstand shocks due to climate change in the form of crop infestation, birth flu, swine flu, other diseases and problems. It is observed that among the farmers who received training, it is more of men who attended such trainings in all the districts.

**Table 30: Access to Training**

Districts	Male	Female	Never get information
Kiphire	64	36	20
Kohima	67	33	20
Mokokchung	58	42	10
Phek	33	67	33
Zunheboto	60	40	20

**Source:** Field Survey, April, 2017.

### 12. Women and other socio-economic situations

70. **Female-headed households in project areas:** In Nagaland, the proportion of female headed household is lower than all India average in general (Table 31). Among the project districts, Mokokchung has higher proportion of female headed household and the lowest is in Phek.

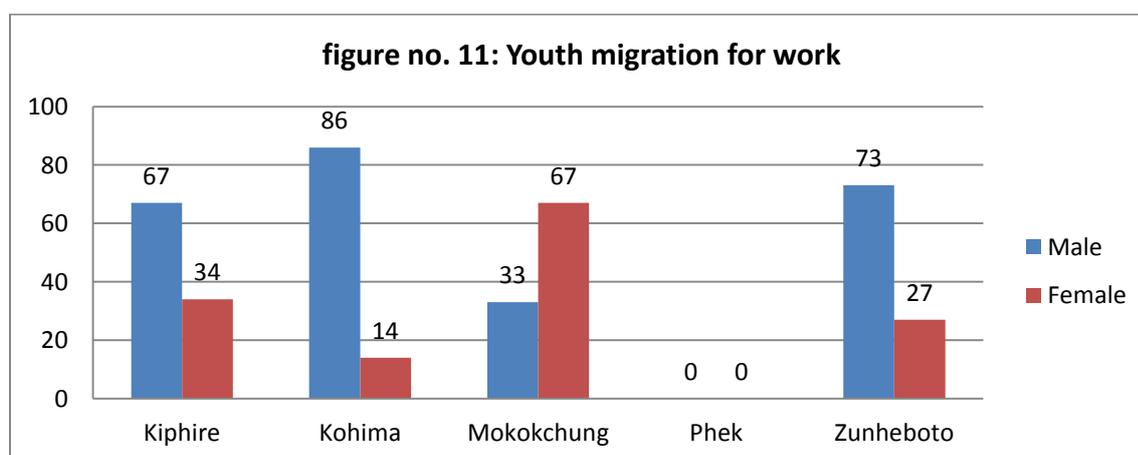
**Table 31: Number of female headed (fh.) households per 1000 household, sex ratio and average household size by sex of the head of the households**

Rural					
State	no. of fh hhs. per 1000 hh.	average hh.size		sex ratio no.	
		fh hhs	all hhs	fh hh s	all... hhs
Nagaland	29	5.4	5.0	2250	955
All India	115	3.3	4.5	1819	957

**Source:** NSS Report No. 554: Employment and Unemployment Situation in India, 2011-12

### 13. Women in households having migrated members

71. In all the districts, male youths are more mobile than female, except in Mokokchung where female proportion is larger than male.



**Source:** Field Survey, April, 2017.

## 14. Overall women empowerment situations in Nagaland

72. Women’s role and participation in decision-making in the spheres of social and political affairs has been observed to be limited in the proposed project districts. Their domain is only limited at the household level, and their participation in decision-making at the community level, is totally or nearly non-existent. On close observation of the sample districts, it was found that women played a major role in earning incomes based on agriculture, livestock, forests and common land, yet they are often ignored when it comes to developing policies for forest management.

- (i) In terms of health and nutritional status women are marginally lower than men, though overall the overall situation of Nagaland is much better than the national average.
- (ii) Overall men and women play an equal role in decision making both within the house and with regards to agriculture.
- (iii) Land ownership is one of the key indicators where women do not fare as well as men though they possess other assets like mobile phones.
- (iv) Women’s representation and active participation in community/ political institutions is very limited.

**Table 32: Women Empowerment in Nagaland**

	Who usually participate in household decisions (%)	Who worked in the last 12 months who were paid in cash (%)	Who have ever experienced spousal violence (%)	Owning a house and/or land (alone or jointly with others) (%)	Having a bank or savings account that they themselves use (%)	Having a mobile phone that they themselves use (%)
<b>Rural</b>	97.2	21.2	13.6	41.1	27.3	61.6
<b>Urban</b>	97.7	23.8	11.3	25.9	54.8	82.7
<b>Total</b>	97.4	22.3	12.7	34.7	38.9	70.5

Source: National Family Health Survey – 4, 2015-16, State & District Fact Sheet, Nagaland, Ministry of Health and Family Welfare, Government of India.

## H. Poverty Targeting and gender mainstreaming strategies

### 1. Poverty targeting strategy

73. The analysis above shows that poverty has multiple dimensions in the rural areas of Nagaland namely in terms of access to basic services, connectivity and low incomes. It is also closely associated with the agriculture and natural resources based livelihoods of the rural households. Indeed, the low productivity of production system, the high inputs of family labour for agriculture and the limited options to diversify livelihoods, and the high cost of living in the State, trap households in poverty and render them vulnerable to price shocks on the one hand and to climate change on the other. The FOCUS project will thus address the low productivity and climate vulnerability of the *jhum* and TRC/WRC systems, and diversify the farming system by integrating crops/trees/livestock. The poverty strategy of the project is guided by the following principles :

- a. Selection of villages is done on the basis of geographical and environmental considerations. Approximately 70-90 villages will be selected in each of the 8 districts depending on the size of the districts, thus totalling about 650 villages. The key criteria for selection of these villages are (i) more than 60% of the households undertaking *jhum* cultivation; (ii) more than 50% of the *jhum* cultivating villages have a *jhum* cycle of eight years and less; (iii) cluster per district covering the blocks falling in the cluster in its entirety to ensure that the cluster boundary is in consonance with the administrative boundaries for ease of management; (iv) at least 75% of the villages falling in the cluster have high levels of *jhum* cultivation. The project design considered other village selection criteria to ensure synergy between the two components of the project are existence of access roads and potential for cultivating high value crops on *jhum* land.

- b. The project will cover all villages in a given cluster and the full village population in a given village. The activities that will be all inclusive are the land use planning and the market infrastructure. While the project will adopt a saturation approach ensuring that all households within a village are covered, specific activities/ strategies will be used, where needed, to ensure that the poorest, vulnerable and remote households are included.
- c. As regards poverty targeting, for the 56% of the rural population who perceive themselves as poor, their households will be identified through aPRA exercise that will be conducted with the land use planning. They will be targeted for the agriculture and livestock activities, especially the training of producers, the access to inputs and the participation in the FIG. The poverty targeting will be monitored as the M&E will target the BPL status of the beneficiaries.

## **2. Gender mainstreaming strategy**

74. Women play a key role in agriculture in Nagaland contributing about 75 percent of labour in *jhum*<sup>17</sup>, and livestock activities. The project would ensure full participation of women in capacity building, project planning and implementation. Representation of women is already mandated by State policy and laws in the Village Council (VC), the principal local governance institution at the village level, and the Village Development Board, the sub-committee of the VC responsible for implementation of government programmes. The project would ensure full participation of women in capacity building of producers, participation in FIG, land use planning and market access activities. Representation of women is already mandated by State policy and laws in the Village Council (VC), the principal local governance institution at the village level, and the Village Development Board, the sub-committee of the VC responsible for implementation of government programmes. The project will be creating *Jhum* Resource Management Committee (JRMCs) under the Village Council and the representation of women and women's organizations in this committee will be ensured. The project will invest in capacity building of the women to enhance their active participation in these village level bodies. The participatory planning process and inclusion of women in the community institutions including credit groups will draw women into the public life of the village and give them a voice in matters related to natural resources management. The project will also build capacity of project staff to effectively address issues of gender mainstreaming and social inclusion.

75. The project will replicate the successful experiences of gender mainstreaming in NEPED, SLEM and NERCORMP such as : 1) participation of all adults in the village, women and men, in the formation of the *Jhum* Resource Management Committee; 2) facilitate women's participation through setting a quota for women as office bearers; 3) target the poorest women with backyard poultry and piggery and other home based agricultural activity; 4) support to marketing as much of the marketing is undertaken by women and (v) Farmer Interest Groups (FIGs) will be formed around high value commodities and these can be organized as women only or mixed groups. The project M&E will be disaggregated by gender.

## **3. Youth mainstreaming**

76. Special measures will be implemented to ensure that rural youth (young women and men in the 18 to 29 year age group) are fully involved in taking up off-farm activities. Some of the civil society organizations and other agencies will be involved to train youth in off farm activities and handholding to start enterprises with financial support. Empowerment of youth will also be pursued by prioritizing youth engagement in the following: 1) employment as village resource persons such as Agriculture Field Assistants (AFAs), Soil and Water Conservation Assistants (SWCAs), Veterinary Field Assistants (VFAs), Community Animal Health Workers (CAHWs); 2) involvement in the production and processing of high value commodities, spices and pig breeding and fattening, 3) involvement in the operation of forestry nurseries, small pig breeding units and hatcheries, operating of processing equipment like the feed chaffer. The project Monitoring and Evaluation (M&E) will also capture the

---

<sup>17</sup>NEPED (2007). Adding Value to Shifting Cultivation in Nagaland, India. Kohima, Nagaland p.14.

disaggregation of the data by age group. Based on consultation with the communities and key informants, youth fall in the 18-29 years age group.

#### 4. Summary of poverty targeting and gender/ youth mainstreaming

77. The project will have two investment components: (i) Improved *jhum* Management; (ii) Market Access and Value chain.

Component & sub-component	Key activities	Gender and inclusion targeting strategy in FOCUS (Nagaland)
<b>Component 1. Improved <i>Jhum</i> Management</b>		
<b>Sub-component 1.1 Better <i>jhum</i> and conservation</b>	Land use planning	All adults in the village, both women and men, from all wealth group, participate in the PRA and land use planning
	Better <i>jhum</i>	All <i>jhum</i> producers in a given village are eligible and priority will be given to the poorer groups, taking into consideration gender balance as women are responsible for 75% of the agricultural labour in <i>jhum</i> .
	Conservation	All producers and community leadership are involved in the planning, implementation and supervision of the soil and water conservation works.
<b>Sub-component 1.2 Settled agriculture promotion</b>	<i>Jhum</i> conversion	Interested <i>jhum</i> producers; there is likely to be high demand from youth and adult women.
	Terrace rice cultivation	All producers of the TRC and priority to be given to the poorer groups, taking into consideration gender balance given women involvement in the agricultural activities.
<b>Component 2. Value chain &amp; market access</b>		
<b>Sub-component 2.1 Value chain development</b>	Production support	Production support is oriented on spices and is likely to attract youth and women given their involvement in marketing and better off HH
	Marketing support	This is related to aggregation of farm produce and would attract the youth and adult women given their role in marketing
	Livestock support services	This activity is geared towards women in particular as the piggery and backyard poultry are done close to the homestead. Mithun rearing is likely to be undertaken by men from poor as well as better off households.
	Innovations	This covers pilot activities around export oriented commodities (outside of the state). This will be of interest to poor and better off farmers, as well as youth and adult women
<b>Sub-component 2.1 Market access infrastructures</b>		This activity is all inclusive of the rural population, however as women tend to be more actively engaged in local marketing they may benefit more from this activity.

## Appendix 3: Country performance and lessons learned

### A. Country Programme overview

1. IFAD's cooperation with the Government of India (GoI) spans 28 projects with approx. USD 1 billion in IFAD financing. Of the nine ongoing projects with a total cost of USD1 billion, IFAD financing is USD 431 million, thus making India IFAD's largest country programme.
2. In terms of outreach, 1.6 million households have been reached from 2011 to 2015 corresponding to 8.2 million people who received projects services. Impact surveys show that IFAD funded projects are reducing poverty, with increased income and ownership of assets, increased food security, improved housing, better access to water and hygienic sanitation, and women's empowerment. The allocation of IFAD lending funds for India significantly increased during the period of this COSOP period (2011-16), with the result that recent IFAD loans range in size from USD 50-100 million. The efficiency of the programme has also improved. Recent projects have adopted a saturation approach to targeting to reduce transaction costs in service delivery. Larger loan sizes combined with this saturation approach has also increased efficiency. Efficiency in loan administration has also improved significantly with increase in loan disbursements compared to previous years, and reduced time in processing withdrawal applications. Opportunities to further improve the implementation of IFAD projects include regular follow-up training on M&E and financial management.

### B. Country programme Evaluation and lessons for the design

3. In 2015 the IFAD Independent Office of Evaluation (IOE) carried out the second country programme evaluation (CPE) of the IFAD India portfolio. The CPE found that there is still significant scope for IFAD interventions in addressing rain-fed agriculture in India especially in the context of climate change. IFAD's intervention paradigm continues to be relevant and has positive impact in terms of household assets and income, human and social capital, innovation/ scaling up and moderately satisfactory in other domains. Consistent with present and past COSOPs, projects targeted the lagging states and geographic areas characterised by lower rainfall patterns, low fertility of soils or degraded natural resources base and poor infrastructure (e.g. poor quality of roads, lack of electricity, potable water).
4. The proposed project is aligned with the first recommendation of the CPE i.e. *focusing on disadvantaged areas, particularly in states with large rain-fed areas where effective and innovative approaches can be tested for further replication and scaling up of results*. With *jhum* being practiced in almost the whole of the North Eastern Region, successful models on effective *jhum* management in the project area could be adopted by other states in the region.
5. IFAD has accumulated considerable experience in India with a host of lessons emerging from its implementation experience as well as those identified by the CPE. These lessons cover a range of issues regarding the best approach to deal with social and economic inclusion, empowerment, partnerships, targeting, sustainability and impact. Some of the key lessons learned by the overall IFAD programme in India which have specific relevance to the project being designed, include the following:
  - a. **Targeting:** Overall, the intervention paradigm with disadvantaged groups is valid as IFAD-funded projects focus on particularly disadvantaged groups among the rural poor, and include the scheduled tribes, scheduled castes, women and the landless as their target group. The targeting of disadvantaged groups in remote areas combined with a "saturation approach" is relevant to the design of the project which focusses on the remote tribal population of the hill districts in the two North Eastern states of Mizoram and Nagaland. The project adopts a saturation approach covering all households in the cluster of villages in 8 districts of Nagaland and all households in the identified 4 districts in Mizoram. Also the identified districts and cluster of villages are contiguous to ensure that management and oversight is less time and cost intensive. The saturation approach also helps avoid portfolio dispersion at the sub-state level which will help in greater management efficiencies too.

- b. Leveraging government resources through Parallel financing and Convergence. Strengthening the linkages with public programmes and collaboration with sub-state and local government entities (also known as “convergence”) with public programmes is particularly relevant in a Middle Income Country like India where government investments for developmental activities are big and where IFAD finances play a catalytic role. All projects approved since the 2010 CPE have embedded this aspect in the design (ILSP, JTELP, LAMP, OPELIP, APDMP). The convergence approach has enhanced the policy engagement opportunities at different level from central to state government and boosted the scaling-up landscape.
- c. The North Eastern states in India have a special status whereby significant investments in the state are made through Centrally Sponsored schemes where the liability on the state is just 10% as compared to other states in the country which have to invest up to 50% from the state resources. FOCUS envisages major co-financing from Government programmes which includes parallel financing from key Centrally Sponsored Schemes under the Agriculture and Allied Sector as well as convergence funds from Rural Development Department. The project will mobilise parallel financing from the following CSSs- Rashtriya Krishi Vikas Yojana (RKVY), Agriculture Technology Management Agency (ATMA), Pradhan Mantri Krishi Synchayi Yojana (PMKSY), Mission on Organic value chain development (MOVCD), National Horticulture Mission and National Mission on Oil Palm (in case of Mizoram). Additionally MGNREGS funds will also be earmarked by the Rural Development Department for convergence with the project in the identified areas. In Nagaland an amount of nearly USD 21 million for parallel financing from these schemes as well as USD 13.08 as convergence from MGNREGS is planned. In Mizoram it is USD 19 million through CSS and USD 12.75 million from MGNREGS.
- d. Focus on Rain-fed agriculture: The country programme helped raise agricultural productivity and viability of rain-fed agriculture. This is important even beyond the IFAD-funded portfolio, given national constraints of low rain-fed agricultural productivity, water resource management and transition to low-carbon economy. A particularly relevant example is of private sector partnership between cotton farmers of Vidarbha (in CAIM project) with Better Cotton Initiative; promotion of SRI and SWI techniques for enhancing production of rice and wheat; large scale adoption of the Broad Bed and Furrow technique for soil and water conservation etc. Additionally IFAD projects have focussed both on diversifying crops by promoting high value , short duration crops as well as broad-basing the livelihoods opportunities through on and off farm activities to help farmers deal with the weather shocks. In the case of Nagaland and Mizoram the project will focus on improving current *jhum* and improved management of *jhum* fallows through promotion of cover crops, especially the fertility building and leguminous plants during the pre-crop and fallow periods, planting and growing of high value leguminous, timber and fuel wood plants / trees on contour bunds, and better planting material and agronomy for the cultivated crops, and introduction of new and high value low volume crops in the system. The project will also invest in soil and water conservation activities especially suited to hill areas.
- e. Market access: The emphasis on market access and value chains implies: (i) better market access and value chain diagnostics upfront to identify the barriers that smallholder farmers face; (ii) clearer identification of the envisaged role of a project (e.g., enhancing access to market information; facilitating access to wholesale markets; investing on improved processing capacity); and (iii) exploring the interest of private sector operators at the design stage. The FOCUS design lays significant stress on market access and value chain development addressing all the 3 issues identified by the CPE. A detailed value chain analysis study was done prior to the main design and the interest of key private sector players in the region have been explored.

### C. Lessons from Similar projects in the NER and opportunities for scaling up

6. IFAD financing for the development of the NER began in 1999 and so far amounts to USD 102.626 million, spanning four projects, namely NERCORMP-I&II, MLIPH and LAMP<sup>18</sup>. These projects focused on improving management of natural resources, bio-diversity conservation and value chain development to enhance livelihoods of poor rural highland communities in the NER. These initiatives have established IFAD's expertise in reaching underserved and remote areas, working with marginalized socio-economic groups and promoting natural resource management and market linkages for more productive rain-fed agriculture, including in the upland areas inhabited predominantly by tribal communities. This experience continues to be relevant for agricultural and rural development, and rural poverty reduction in India.

7. In addition to NERCORMP, lessons from Odisha Tribal Empowerment and Livelihoods Project (OTELP), a project which was implemented with the tribal communities of Odisha also demonstrates effectively that projects being implemented in remote areas can achieve ambitious targets. The analysis from the Project Completion Report of both these projects lend credibility to the proposed targets of FOCUS. The NERCORMP PCR was carried out in Jan 2017 and the project covered 20,826 households. The Financial analysis yielded FIRR of about 40% for cash-flow before financing. Net incremental income of the households increased several fold from food crops, which increased by 100%. The OTELP PCR was carried out in 2016 and the project covered an estimated 56,180 households. The Financial analysis yielded FIRR of about 26% for cash-flow before financing. Net incremental income of the households increased several fold from food crops, which increased by 140% for these household. These estimates were based only on the interventions that the Project supported

8. Additionally, the NERCORMP, a project supported by IFAD in two phases and implemented in Manipur, Meghalaya and the hill districts of Assam has demonstrated the effectiveness of community based planning and implementation to usher in more sustainable land use systems. NERCORMP results indicate that unproductive *jhum* fallows have been converted to commercial plantations, including agro-horticultural systems, resulting in productive use of land, higher incomes, reversal of resource degradation and improved local environment. Consequently, income from non-*jhum* activities has increased significantly and *jhum* cultivation per HH decreased to an average of 1.2 acre in 2016 from the baseline (2011) of nearly 2.1 ha. End line survey (2016) showed that the area under *jhum* decreased from 61 percent at baseline in 2011 to about 33 percent in 2016 due to *jhum* land development interventions of the project.<sup>19</sup> FOCUS has been built on this lesson.

9. Aside from IFAD projects, there are significant lessons emerging from the implementation of at least three projects in the two states which demonstrate the effectiveness of a twin approach of promoting better management of *jhum* on the one hand and gradually shifting towards sedentary agriculture on the other. The projects are NEPED<sup>20</sup>, funded by the India-Canada Environmental Facility (ICEF) during 1995-2006, the Sustainable Land and Ecosystem Management in shifting cultivation areas of Nagaland for ecological and livelihood security (SLEM) funded under UNDP-GEF in Nagaland to introduce modest changes in *jhum* management practices and the New Land Use Policy (NLUP) Initiative in Mizoram funded by Government of Mizoram which promotes sedentary agriculture.

10. The project (FOCUS) aims to scale up emerging lessons from these projects, namely, SLEM and NEPED in Nagaland and NLUP in Mizoram. Whereas the former has demonstrated the effectiveness of investing in improved *jhum* management, the latter has focussed on finding a viable alternative to *jhum* by promoting settled agriculture. Both approaches have been found to be useful in

---

<sup>18</sup> NERCORMP I&II (North Eastern Region Community Resource Management Project for Upland Areas) was implemented in the States of Assam, Manipur and Meghalaya whereas MLIPH (Meghalaya Livelihoods Improvement Project for the Himalayas) and LAMP (Livelihoods and Access to Markets Project) are focused on Meghalaya.

<sup>19</sup> Project Completion Report, NERCORMP-II, para 87, page 19

<sup>20</sup> Implemented in two phases, the first phase (1995-2001) was called Nagaland Environment Protection and Economic Development through People's Action and the second phase (2001-06) was called Nagaland Empowerment of People through Economic Development. [https://www.nagaland.gov.in/Nagaland/GovernmentAndPrivateBodies/Department\\_of\\_NEPED.html](https://www.nagaland.gov.in/Nagaland/GovernmentAndPrivateBodies/Department_of_NEPED.html)

addressing issues such as low productivity, forest /soil degradation and poor incomes of farmers. The project will scale up the lessons of these projects in their respective states while also facilitating cross learning and adoption of key lessons across the two states. In addition, the project will also introduce innovative strategies (especially for local processing, storage and market access). As the practice of *jhum* is common across the entire North Eastern region, the project will also serve as a learning site for all NER states who can explore adoption/ scaling up of one or both of these models.

#### **D. Past and current scaling up opportunities in the country programme**

11. A major cross-cutting theme in the COSOP was the importance of scaling-up successful rural development interventions. Some of the most recent examples of scaling-up in the country programme are highlighted below:

- ILSP: In December 2011, the IFAD Executive Board approved a loan of USD 90 million to scale up successful rural development initiatives in the State of Uttarakhand;
- JTELP: In September 2012, the IFAD Executive Board approved a new project designed to scale-up successful tribal development initiatives in the State of Jharkhand;
- OTELP: In 2011, and as a result of the success of the IFAD programme in Odisha, the State Government agreed to allocate significant additional national funding to scale up OTELP across larger areas of the State. This has added a further 70,000 HHs to the OTELP programme, and brings the total OTELP coverage to 126180 HHs. A supplementary IFAD loan of USD 15 million was approved in December 2013 to support this process.
- OPELIP: In 2013, the State Government of Odisha requested IFAD to assist them with the scaling-up of OTELP activities to the PVTG districts of Odisha. A new project – OPELIP – will be approved by IFAD’s Board in 2015 for this purpose.
- LAMP: In 2012, the State Government of Meghalaya requested IFAD to assist with the scaling-up of successful elements of NERCORMP and MLIPH across the State of Meghalaya. A new project – LAMP – has been approved in April 2014 for this purpose.
- TRWEP: The 2018 State Vision Document for Madhya Pradesh foresees scaling-up of TRWEP across the entire State. IFAD has been requested to assist the State Government through the provision of an additional loan of USD 15 million.
- TRWEP: On 19th February 2014, the Chief Minister of Madhya Pradesh organised a major meeting where he announced the scale-up of the Shaurya initiative (undertaken in the Tejaswini project), for the entire state. The government also signed a MoU on the occasion, with UNWOMEN who would be providing technical assistance to the state government in the scale up process. Over 3000 Shaurya members had gathered. In addition to the Chief Minister the State Minister for Women and Child and Minister for Higher Education were also present along with very senior bureaucrats.
- NERCORMP: In January 2014, NERCORMP III was launched, as a six year project funded exclusively by FIG, to expand NERCORMP activities to two new states (Arunachal Pradesh and Manipur), to benefit over 58,850 households in 1177 villages with an investment of USD 90 million.

## Annex 1: India Country Programme – Key Statistics and Achievements

### Active Country Programme as of 30 June 2016

On-going IFAD financed projects	Approval Date	IFAD Loan USD	Effective Date	Disbursement rate
Orissa Tribal Empowerment and Livelihoods Programme (2 loans)	23 Apr 2002	19,996,000 15,000,000	15 Jul 2003	
Tejaswini Rural Women's Empowerment Programme (2 loans)	13 Dec 2005	39,448,000 15,000,000	23 Jul 2007	85%
Post-Tsunami Sustainable Livelihoods Programme for the Coastal Communities of Tamil Nadu (2 loans)	19 Apr 2005	14,958,000 15,000,000	09 Jul 2007	78%
Women's Empowerment and Livelihoods Programme in the Mid-Gangetic Plains	14 Dec 2006	30,169,000	04 Dec 2009	
Mitigating Poverty in Western Rajasthan Project	24 Apr 2008	30,361,000	11 Dec 2008	55%
Convergence of Agricultural Interventions in Maharashtra's Distressed Districts Programme	30 Apr 2009	40,101,000	04 Dec 2009	39%
North-Eastern Region Community – phase II	17 Dec 2009	20,000,000	12 Jul 2010	97%
Integrated Livelihood Support Project	December 2011	90,000,000	1 Feb 2012	23%
Jharkhand Tribal Empowerment and Livelihood Project	September 2012	51,000,000	4 Oct 2013	8%
Livelihood and Access to Markets Project	April 2014	50,000,000	9 Dec 2014	3%

### 2016 results on overall outreach

Name	Beneficiary HHs (SAR target)	Total persons (SAR target),	actual beneficiary HHs reached 2015	Individuals receiving project services	Source
NE Region	23,000	131,000	20,826	124,956	RIMS 2015
Orissa Tribal	75,000	338,000	203,981	954,396	RIMS 2015
Tejaswini MH	1,120,000	6,160,000	938,336	4,694,980	RIMS 2015
Tejaswini MP			190,441	1,047,426	RIMS 2015
PT - Tamil Nadu	230,000	1,150,000	131,587	103,692	RIMS 2015
WELP MGP	108,000	540,000	52,786	149,887	RIMS 2014
MPOWER	86,880	474,670	80,030	470,432	RIMS 2015
CAIM	286,800	1,430,000	280,656	601,695	RIMS 2015
ILSP	143,400	717,000	147,756	153,312	RIMS 2015
LAMP	191,070	1,000,000	2,947		RIMS 2015
JTELP	136,000	510,000	18,526	92,631	RIMS 2015
OPELIP	62,356	311,780	1,604,173		GRIPS

## Appendix 4: Detailed Project Description

### A. Logic of Planned Interventions

1. The design of this project is in consonance with the following nine principles of engagement espoused in the IFAD Policy on Engagement with Indigenous People: (i) cultural heritage and identity; (ii) free, informed and prior consent; (iii) community driven development; (iv) equitable access to land and other resources; (v) building on indigenous knowledge; (vi) environmental issues and climate change; (vii) access to markets; (viii) empowerment; and (ix) gender equality.

2. *Jhum* cultivation and the traditional foods that it produces are one of the cornerstones of the tribal *cultural heritage and identity* in Nagaland, and the project is focused on making this system more productive and sustainable. Village livestock also have an important role in traditions and food - often being consumed at festivals. The participatory planning process through elected Village Councils (VCs) will ensure *free, informed and prior consent*, and a *community driven development* approach. There are no land tenure issues in Nagaland and households largely have *access* to land resources for *jhum* cultivation. However, there are families in each village who do not own land and take up *jhum* and other agriculture activities as sharecroppers. In Nagaland the land ownership is *de jure* as there are no land records and title documents. The mechanism for resolving disputes is vested with the village council *recognizing the cultural heritage and identity* of the indigenous people.

3. Three types of land ownership pattern exist in Nagaland. They include: (i) private lands which are used for both *jhuming* and also for terraced rice cultivation; (ii) clan lands which are owned by a clan collectively and used for fuel wood collection; and (iii) community lands owned collectively by the entire village which is largely used as conservation forests and for fuel wood collection. There are generally three ways of *jhuming* on private lands, excluding terraced rice fields: (i) *Jhum* land is in 8-15 blocks depending upon the *jhum* cycle and majority of the households own a parcel of land in each block and undertake *jhum* cultivation collectively; (ii) *jhum* land is in 8-15 blocks depending upon the *jhum* cycle and some (not majority) of the households own a parcel of land in each block and only those who own land undertake *jhum* cultivation in that *jhum* cycle while others do not take up *jhuming* or use land owned by others for *jhuming*; and (iii) *jhum* land are divided into blocks owned by individual households and the households practice *jhum* on their private land individually. The first scenario where *jhum* land is divided into 8-15 blocks in which majority of the members own land is the most common scenario.

4. *Building on indigenous knowledge* will be a key to improving both *jhum* cultivation and settled agriculture. There are a number of examples of traditional practices for more productive *jhum* management in Nagaland which provide the basis for the improved practices to be supported by FOCUS<sup>21</sup>. Settled agriculture on low land terraces (terrace rice cultivation) in Nagaland is based around the traditional *zabo* system of rainwater harvesting. Representation of women is already mandated by state policy and laws in the VC, the principal local governance institution at the village level. Women are already fully involved in production and marketing of farm produce. The project will build on this to ensure *empowerment and gender equality*, with full participation in project institutions, capacity building for women, and reduction in their often excessive workload.

#### Improving *jhum* cultivation

---

<sup>21</sup> For example "The Alder Managers, the cultural ecology of a village in Nagaland", Malcolm Cairns, PhD thesis, 2007. Also see Building upon Traditional Agriculture in Nagaland, IIRR, 1999. In Mizoram there is the indigenous Changkham technology - see [https://www.cinram.umn.edu/sites/cinram.umn.edu/files/purama\\_may\\_28\\_2015.pdf](https://www.cinram.umn.edu/sites/cinram.umn.edu/files/purama_may_28_2015.pdf).

5. The project will address the issues facing *jhum* cultivation through: (i) better *jhum* cultivation practices that will be both more productive and more sustainable, with an ecological balance being created; and (ii) gradually shifting *jhumia* households to sedentary farming. Both of these approaches, along with more productive wetland rice fields, better plantation crops, improved livestock systems and increased off-farm income, will enhance farmer's income and reduce pressure on land. As farmers seek to increase their income via more market-orientated production, they will need support for marketing, including orientation of production towards what the market needs in terms of volume, quality and price.

6. More productive and sustainable *jhuming* ("better *jhum*") requires a judicious combination of modern scientific knowledge, agricultural technologies and practices in natural resource management with the traditional wisdom and adaptive practices of the highland communities. For instance, farmers already practice certain measures to conserve soils, such as placing wood logs and stones across contours; and this can be augmented by a ground cover of nitrogen-fixing legumes to add to soil fertility, conserve moisture and suppress weeds. Such measures will enable communities to cultivate *jhum* fields for a longer period, thereby restoring the *jhum* cycles to the earlier, sustainable levels of 15 to 20 years. A virtuous cycle can thus be created. Similarly, planting of carefully selected indigenous species of trees and shrubs on *jhum* fallows can reduce soil degradation and increase the biomass for soil fertility restoration and as firewood and timber. This, together with better planting material for *jhum* crops, and judicious introduction of new crops and varieties, will increase household food production and also enable additional sales of surplus produce for cash.

7. The communitarian system of resource governance embedded in the cultural ethos and customs of the highland communities in Nagaland provide an ideal setting to introduce changes into the production systems. The project will support participatory land use planning in each village to enable communities to come up with a rational plan for equitable and sustainable use of natural resources, including reservation of steeper slopes for trees and the establishment of community conservation areas which will be reserved for traditional timber and non-timber forest produce. These efforts will result in accrual of ecological benefits, biodiversity conservation and mitigation of climate change impact.

#### More productive and sustainable settled agriculture

8. As farmers become able to cultivate more productive *jhum* plots for a longer period, and as they invest in planting trees and soil conservation methods, they will be less inclined to shift themselves for cultivation to other plots, and thus the *jhum* will evolve into sedentary farming. Since *jhum* farming is highly labour intensive in cultivation and transport of input and produce (and a real burden for women), improvements to enhance productivity and income generation from settled agricultural and livestock enterprises will mean that households will earn considerably more from non-*jhum* activities, and so would reduce the amount of *jhum* they cultivate<sup>22</sup>. The design mission saw examples of this in some Nagaland village that had given up *jhum* in favour of pig production and cardamom production. With only a limited available area of terraces for wetland paddy cultivation (because topographically it is difficult to create more terraces), settled agriculture on sloping lands, to a large extent would reflect a move to permanent tree and plantation crops, which are produced for sale rather than producing food for subsistence. The approach to support settled agriculture will be to improve soil fertility and crop productivity, and provide access to better planting material (from village level plant nurseries and local seed systems) and other inputs, along with training. Where possible, intercropping with annual crops will contribute to food security and also ensure the continued production of the traditional crops that were previously grown in *jhum*.

9. Particular attention will be paid to the poorest households who may lack resources to invest in settled agriculture. In Nagaland, where much less land has so far been converted,

---

<sup>22</sup> Not only does settled agriculture require less labour, but a higher share of this labour comes from men.

the project will support *jhum* conversion via physical and vegetative soil and water conservation methods (including narrow bench terraces for dry land crops and banded terraces for wetland rice cultivation) to make sloping land agriculture productive and sustainable.

10. The technologies and methods used in production of the relatively newer crops are often outdated and crops are nowhere near as productive as they should be. Up to now the emphasis for government support has been on getting these crops established rather than on improving their productivity. Standards of crop husbandry are often poor, and pests and diseases are not effectively controlled. In some cases farmers are using dangerous pesticides, such as Furadon and DDT, and it may well be possible to reduce production costs as well as increase productivity.

11. The household food security will not be overlooked. There is a major opportunity to increase the productivity of wetland rice through integrated soil fertility management, improved irrigation, better seed and improved varieties, and care will be taken to preserve traditional varieties, many of which fetch premium prices in local markets. Pulses, oilseeds, garlic and maize can be grown after paddy harvest to utilise residual soil moisture and increase cropping intensity. There are also opportunities to grow food crops, especially the local vegetables and grains found in traditional *jhum*, as intercrops in orchards.

12. A number of IFAD-supported and other projects in India have useful experiences in the development of cash and food crops. These include SRI in Andhra Pradesh, Jharkhand, Maharashtra and Madhya Pradesh, cotton, soya beans, pulses and oranges in Maharashtra, and maize, millets and oilseeds along with vegetables in Rajasthan and Uttarakhand. A number of these initiatives have shown the value of practical in-field training along with demonstrations of new technologies (including rainwater harvesting and micro-irrigation), backed up by community provision of services for input supply, hire of small equipment and marketing.

#### Access to value chains

13. This shift from subsistence to commercial production can result in a major increase in household income and improvement in living standards. However, it needs to be accompanied by improved access to markets and better value chain management. If this does not happen, households may revert to *jhum* cultivation. FOCUS-value chain support will aim to address bottlenecks in the production and marketing system, to ensure that farmers are able to produce for specific market opportunities. It will complement and support better *jhum* and the expansion of settled agriculture. With the diverse agro-ecological conditions at different altitudes in the state, there are cash crops that have high potential. However, for many commercial crops the main market is outside of the state (and also outside of India), and in the absence of well-developed value chains, farmers are unable to realise the full potential of these crops.

14. There is potential to capitalise on *jhum* products, as they being traditional varieties produced under natural conditions (they are effectively organic by default). Markets for such products exist within the state<sup>23</sup>, however to access larger and the distant markets may need some form of certification - such as organic. FOCUS will enable partnerships with external agribusiness and trade organisations to enable access to such markets<sup>24</sup>. Processing of products adds value and can reduce bulk and increase shelf life to make access to external markets easier. There are opportunities to produce ground and packaged spices for local markets and semi-processed (cleaned, sliced and dried) spices for markets outside of the state (providing new opportunities for local youth). Drying is not so easy due to the rainfall

---

<sup>23</sup>[http://www.in.undp.org/content/india/en/home/library/environment\\_energy/market-development-assessment-for-organic-agri-horticulture-prod/](http://www.in.undp.org/content/india/en/home/library/environment_energy/market-development-assessment-for-organic-agri-horticulture-prod/)

<sup>24</sup> Contact has already been made with this spices initiative: <https://www.idhsustainabletrade.com/sectors/spices/>

pattern, which many a times falls at the time of harvesting some crops. Nevertheless, there is potential to support the development of new approaches and drying technologies - which would also be useful for paddy and maize as well as spices.

15. FOCUS will develop value chains for selected products. A value chain study<sup>25</sup> carried out as part of the project design process has identified a number of sub-sectors with potential for value chain interventions. These are spices (large cardamom, ginger and chilli), oranges, bamboo, vegetables, and pineapple. Based on the potential benefits from improving market linkages, the project will initially focus on cardamom, ginger and chilli in Nagaland, - once dried these are non-perishable, low volume and high value products that can stand the cost of transport to more distant markets. At the same time the project will provide marketing support for widely grown cash crops, such as oranges, turmeric and bamboo, and support for aggregation and producer organisations, and establishing links with the private sector. With closer proximity to markets (both inside and outside of the state) and a more developed horticultural sector, the potential for value chain and market development is greater in Nagaland, and here the project will also support the establishment of a small marketing unit in the Agriculture Marketing Board to provide support on policy, market intelligence and planning issues.

16. Market access is also hindered by poor road infrastructure. In Nagaland the road network is not well developed, although around 80% of villages are connected by a road, only about 20% have an all-weather bitumen road. Many villages are connected by little more than a farm track, which gets very muddy and may be prone to landslides, making it impassable during the rains.

17. In Nagaland funds will be provided to support innovative sub-projects to be implemented by selected government agencies, universities and NGOs. Including value chains, these may focus on *jhum* development, settled agriculture and livestock, and provide opportunity for youth and women. Some funds may also be allocated for - generating knowledge on the evolution and sustainability of upland farming systems and their capacity to respond to climate change. IFAD has extensive experience of value chain development through the projects it supports in India. These include projects in Uttarakhand (off season vegetables, pulses and millets), and Maharashtra (a wide range of farm products, along with value addition).

#### Supporting village livestock development

18. The project will also support livestock production in project villages. Livestock are an integral part of rural livelihoods and traditions, and most village households keep a few pigs and/or chickens. Cattle and goat rearing are also significant in some locations, and in some areas mithun (*gayal - Bos frontalis*) are kept, which has a special place in the culture of north-east India. Pigs are fed on domestic food waste and crop by-products, however, manufactured feeds are also used. Support for pig rearing will enable project interventions to reach most of the households in project villages.

19. The rationale to include livestock in the project is to increase household income, complement directly or indirectly nutrition, reduce dependence on *jhum* cultivation, utilize crop by-products, and to realize new opportunities through improved production technologies, both for livestock and feed production. Villages do not allow pigs to scavenge, and all pigs are housed in pens, generating a significant volume of manure. However almost no use is made of pig manure and there is an opportunity to demonstrate improved composting system, including bio-gas, which households can be demonstrated to make and use in homestead vegetable gardens and on areas of permanent cropping.

---

<sup>25</sup>Value Chain Analysis Report for Mizoram and Nagaland, Sanjay Kumar Gupta (Value Chain Consultant)

20. The approach for livestock development will be based on the successful “Pashu Sakhi” model.<sup>26</sup> This involves having a trained CAHW in each village, who will provide preventive health services and first aid, as well as advice and information on improved husbandry practices including feeding and housing. The CAHW will act as a link between livestock producers and the Department of Animal Husbandry and Veterinary Services – with the project also providing support to DAHVS. CAHW is expected to charge for their services and become self-sustaining during the project period. In each village the CAHW would be selected from the village community and it is expected that a great majority of them would be women, particularly younger women.

## **B. Components**

21. The project will have three components: (i) Improved *jhum* management; (ii) Value chain and market access; and (iii) Project management and knowledge services.

### **1. Component 1: *Jhum* Improvement**

22. Agriculture in Nagaland is practiced on hill slopes and valley lands. Normally farmers have been farming on the slopes of the hills by clearing forests and preparing the cleared land for rain-fed mixed cropping systems for few years, generally for 1-2 years. They leave the land as fallows and return after 8-10 years to cultivate it the same way for another 1-2 years. However, they continue to cultivate wet land rice on the terraced lowlands, called terraced rice cultivation (TRC) year after year. The *jhum* cycle in Nagaland has been decreasing and in some places it has come down to just 5-6 years, e.g. Chikitong village in Wokha district and Kigwema village in Kohima District. The forest cover has reduced over a period of time and there has been serious deterioration of ecological conditions and soil fertility due to practice of shifting cultivation in its current form with reduced *jhum* cycles or reduced fallow period and reduction in cultivation period.

23. The main objective of ensuring sustainable agriculture without resorting to *jhum* will be to intensify efforts on: (i) soil and water conservation through mechanical and vegetative methods; (ii) promoting settled agriculture on sloping lands; and (iii) increased rice production from low lands. The project intends to implement agriculture related interventions on *jhum* land taking into account climate change and its impact on food production, livelihoods and environment. The project will take into account emerging climate resilient best practices, which include demonstration of technological practices to adapt to current climate risks such as suitable plant genotypes, in situ moisture conservation, run off water management, disease and insect-pest management, and matching cropping systems to current precipitation levels.<sup>27</sup>

24. The project intends to implement agriculture related interventions on *jhum* land taking into account climate change and its impact on food production and livelihoods. The project will take into account climate resilient best practices that are emerging from various research institutions such as, the NICRA programme of ICAR and NAPCC of the Ministry of Environment and Forests. Some of these best practices and innovations that will be introduced include: (i) use of remote sensing capacities to facilitate Village Councils to identify lands appropriate for cultivation and to avoid using steeply sloping lands for *jhum* cultivation, as is prevalent currently; (ii) introduction of fertility management practices using both biological measures and also possibly through the introduction of “nano-nutrient delivery systems”; (iii) use of traditional knowledge in erosion control for ensuring extension of cultivation period from currently one year to at least three years; and (iv) use of better agronomic practices, introduction of agro-forestry, linear planting, cereal and pulse

---

<sup>26</sup> The Pashu Sakhi model has been successfully used by IFAD-supported project in India (MPOWER, Tejaswini MP) as well as other development programmes. See [www.goattrust.org](http://www.goattrust.org) for further details.

<sup>27</sup> National Innovations in Climate Resilient Agriculture, Indian Council for Agricultural Research

cultivation to build synergy between crops to maintain soil health on one hand and improved farmer income on the other.

25. The project intends to promote cover crops for soil fertility improvement, fruit trees, fodder crops and timber trees. All the species intended for use are indigenous to Nagaland and have not been reported to have any allelopathic effect on the bio-diversity. The project does not support monoculture and will support only existing crops with better seedlings and package of practices and introduction of high value tree crops for erosion control which in reality will enhance biodiversity. Village forests and community level seed banks will be promoted for preservation and promotion of local varieties. However, the slash and burn practice (*jhum* cultivation) has significant negative effect on the local bio-diversity and the environment.

### **Sub-component 1.1 – Better *jhum* and conservation**

26. **Capacity building:** State Project Management Unit (PMU) will conduct a training programme to all the district level staff to explain the project concept, project components and step-wise implementation modalities including the process of village level micro-plan preparation. Subsequently, the district staff, under the supervision of PMU staff will train the Block/Circle level and village level staff of all the Agriculture, Animal Husbandry and Soil and Water Conservation departments.

27. The project will initially conduct a day long stakeholders' workshop at the district level by inviting all the Chairpersons of Village Councils and Secretaries of *Jhum* Resource Management Committees in the project area to orient them on project goal and project activities with deliberations on the impact of the project. Thereafter, these persons will conduct a meeting of the Village Assembly and deliberate on whether the village wants to take up project implementation. The Village Councils will be requested to submit minutes of the meeting with records of their willingness, or otherwise for participation in the project. Based on the willingness of the community, the project implementation will proceed.

28. The project will use the services of existing Agriculture Field Assistants (AFAs) / Soil and Water Conservation Assistants (SWCAs) / Veterinary Field Assistants (VFAs) after providing them adequate training. The project will identify a Lead Farmer from each village and train them in various aspects of *jhum* improvement covering soil and water conservation measures, fertility enhancing cover crops, improved traditional varieties of seed, fodder crops, tree crops and in managing nursery. The project will support these Lead Farmers to establish an intervention of their choice in the form of demonstration to establishing nursery and livestock units. These Lead Farmers will be the focal points for implementing village level activities and will be supported by Block/Circle level line department officers and the project staff. The project will support Lead Farmers to engage themselves in the establishment of plant nurseries and supply of planting material to the interested farmers. These efforts will create a cadre of village level workers linked to the Departments of Agriculture, Horticulture, Animal Husbandry and Land Resources and Soil and Water Conservation.

29. **Land use planning:** The project will engage Nagaland GIS and Remote Sensing Application Centre (NaRSAC) to assist in the preparation of land use maps and land suitability maps for the eight project districts. The project will support procurement of GPS for each village and will also build the capacity of NaRSAC in the use of new technology for preparing the land use maps. The project will facilitate the community to prepare a Participatory Land Use Plan (PLUP). This will be based on a 3D digital elevation model and a map produced by NaRSAC. A PLUP for each village will be finalised after validation from the Village Council. Based on the PLUP and also land suitability classification maps, Village Councils will be trained to: (i) identify lands suitable for growing various crops based on the slope, altitude and soil texture, and to allocate land based on this scientific information for *jhum*, settled agriculture and community forest conservation areas; (ii) fix boundaries for land

allocated for settled agriculture; and (iii) decide on the crops to be cultivated to ensure development of economies of scale required for accessing markets. The project will support identification of Village Resource Areas and preparation of Village Resource Maps in districts where these initiatives are yet to be implemented.

30. **Better *Jhum*:** *Jhum* cultivation system has two phases: (i) crop production phase; and (ii) fallow phase. The fallow phase is also known as *jhum* cycle in Nagaland. The duration of both, cultivated and *jhum* fallow varies according to the fertility and productivity status of the land. Usually in *jhum* system, many crops of different duration, such as rice, chillies, ginger, vegetables, etc. are grown in the same piece of land and in an inter-spread (non-linear) manner. The harvesting of crops is done based on their maturity. Usually the land is cultivated for 1-2 years and after that left fallow for few years. One of the major problems in the *jhum* system is the menace of the large volume of weedy and scrubby growth. Farmers burn this vegetation after slashing. Therefore, it is important to keep the weedy growth suppressed through cover crops. In order to achieve the improvements in *jhum*, it is important to address both the phases - cultivation and the fallow periods simultaneously.

31. The project will focus on improving current *jhum* and improved management of *jhum* fallows, which will give two-fold results. First, it will increase the productivity and second it will lengthen *jhum* cycle, resulting in increased fallows. Based on the land use planning maps prepared with support from NaRSAC, communities will be encouraged to earmark the ridge and steep slopes for permanent tree farming, and side slopes for crop farming along with trees, including fruit trees. The community will be encouraged to create fire lines to prevent the spread of fire outside the land allocated for *jhum*. The selection of tree species will be decided based on the altitude of the area. Better planting material and agronomy for the crops will be introduced coupled with the introduction of new and high value low volume crops in the system. The project will either maintain or increase the crop diversity in *jhum* that is important for the dietary diversity of the *jhum* farmers. Fertility improvement measures will involve growing of cover crops, especially the fertility building and leguminous plants during the pre-crop and fallow periods, and planting and growing of high value leguminous, timber and fuel wood plants / trees on contour bunds.

32. The project will promote FIGs to take up activities related to current *jhum* improvement and fallow *jhum* management. Each FIG will comprise of 10-20 farmers and each member of the FIG will be connected to 20 *jhum* families and these 20 households will be the associates of FIG members. The project will train FIG members and provide project support for implementation of activities.

33. **Current *Jhum* Improvement:** The FIG comprising farmers will be encouraged to earmark the ridge and steep slopes for permanent tree farming, and side slopes for crop farming along with trees, including fruit trees. The selection of tree species would be decided based on the altitude of the area. The farmers will be encouraged to create fire lines to prevent the spread of fire outside the land allocated for *jhum*. Farm planning will be undertaken in such a way that high nutrient requiring crops are grown in the first year of *jhum* cultivation and lesser nutrient requiring crops in subsequent years due to the natural decline in soil fertility. Farmers will be trained in all these aspects.

34. All *jhum* farmers will be covered in current *jhum* improvement strategy. Each *jhum* farmer will get support for about 25% of their *jhum* plot (estimated at 0.13 ha per *jhum* farmer). This will enable provision of support for all *jhum* farmers and based on the experience the farmers will be able to scale up. The support will be spread over three years to ensure that the *jhum* farmers continue cultivation in the same area. During the first year, the project with support from Lead Farmers will form a FIG in each village.

35. The project will support the construction of water harvesting ponds, low cost bunds, and trenches that will improve the availability of moisture for the cultivated crops. This will be

complemented by planting of the leguminous crops on contour bunds (perpendicular to the incline), such as, *Leucaena* (*Leucaena leucocephala*), Alder (*Alnus nepalensis*), Neel (*Indigofer tinctoria*) and perennial pigeon pea. *Gliricidia* (*Gliricidia sepium*), *Tephrosia* and *Flemingia* will also be planted. In current *jhum* fields, wild sunflower (*Tithonia diversifolia*) and stylo (*Stylosanthes hamata*) may also be grown and chopped off before sowing of the main crops.<sup>28</sup> Crops/commodities such as, rice, maize, sesame, cowpea, vegetables and other pulses will also be promoted for consumption purposes to add to dietary diversity and to improve nutritional security in addition to fodder trees, tubers, etc, for use as animal fodder and feed. The project will purchase planting material from the Lead Farmers to facilitate progression of nursery activities of the Lead Farmers as business enterprise.

36. The project will support Arrowroot and Tikhur cultivation which are tuber crops and are in high demand. Arrow roots is used for making baby foods and can also be consumed as staple. The agronomic requirements of these crops are similar to any other tuber crop and do not need replanting year after year. Left over rhizomes from previous crop germinate and provide good crop. There are also improved nursery production techniques available for these two crops, which may be adopted by the community. The project will make allocations for training, seed and nursery establishment.

37. The project will promote linear manner (proper row and plant spacing), wherever possible to increase the possibility of using farm implements and to control weed growth. Mulching using local materials, use of nano-nutrients, planting leguminous plants on the upper edge of the bunds and cereals on the lower edge of the bund to improve farm productivity and income of the farmers in the short and medium term will be promoted. These intervention are climate resilient as there will be reduction in erosion and improved fertility reducing the need to slash and burn and shift to another *jhum* plot.

38. The project support will be spread over three years to ensure that the *jhum* farmers continue cultivation in the same area. During the first year, the project will provide all support related to *jhum* improvement such as soil and water conservation works, introduction of better varieties and improved package of practices. The project will purchase planting material from the Lead Farmers. During second year, the *jhum* households will be required to take up cultivation using their own resources on the same *jhum* plot.

39. During the third year, subject to the FIGs and their associates completing low cost in situ conservation works, taking up cultivation on the same plot using their own resources without shifting to the next *jhum* plot and starting purchase of planting materials from the Lead Farmers, the project will provide additional planting materials from the Lead Farmers. The project will support current *jhum* improvement in a total of 65,000 ha with direct support in 11,700 ha covering 91,000 households.

40. *Fallow Jhum Management*: Fallow *jhum* management gives benefits for both, in-situ and downstream areas. The emphasis is to grow the soil erosion controlling and nutrient building species rather than allowing the scrubby growth during the fallow periods. Fast growing leguminous plant species will suppress weedy growth, facilitate improving soil fertility and nutrient cycling, reduce soil erosion and improve the soil moisture holding capacity. The fallow *jhum* management activity will be implemented by the FIG formed for current *jhum* improvement and will be supported by the Lead Farmer.

41. The project will support low cost contour bunding, trenching, creating terraces using vegetative strips of fast growing plant/tree species and grasses, such as *Leucaena*, *Gliricidia*, Alder, *Indigo/ neel, perennial pigeon pea* and vetiver. The project will support seeding the fallows with both, annual and perennial legume cover crops, such as the *perennial pigeon*

---

<sup>28</sup>B. Jama, C. A. Palm, R.J. Buresh, A. Niang, C. Gachengo, G. Nziguheba, and B. Amadalo (2000). *Tithonia diversifolia* as a green manure for soil fertility improvement in western Kenya: A review. *Agroforestry Systems*, 49: 201-221.

pea, wild sunflower (*Tithonia diversifolia*), *Sesbania species (speciosa and aculeate)*, *Trifolium alexandrinum*, *Indigofer tinctoria*, stylo (*Stylosanthes hamata*), etc. These plants will be self-sustaining over the fallow periods and are expected to stabilize the land and improve soil fertility as well as soil moisture holding capacity. Some of these leguminous crops also have significant fodder and food value.

42. The project will support fallow *jhum* management in all project villages covering a total of 65,000 ha, out of which direct project support will be for 16,250 ha covering some 91,000 households. Each household will get support for about 0.18 ha.

43. **Community Conservation Area:** The community forests remain the vital community asset for protecting water sources, supply of non-timber forest produce (NTFP), and controlling forest fires. Only the dry wood is allowed to be removed from the village forests and no commercialization is allowed for the NTFPs. However, over a period of time, these forests have not been maintained. It is therefore, essential to restore the community forests to meet the above objectives.

44. The project will fund contour bunding, contour trenching and water harvesting structures and biological measures, including seeding the area with leguminous plants, such as the wild sunflower, glyricidia and stylo, and perennial pigeon pea. Protection of water sources, raising nurseries and supplying planting material of locally preferred species such as, Tree bean (*Parkia Timoriana*, *Parkia speciosa*, Badrang / Indian Pepper (*Xanthozylum rhetsa*, *Champa (Michella champaka)*, Gamar (*Gmelina arborea*), Cotton tree (*Bombax ceiba*), etc. Non-structural vegetative measures will also be promoted to recharge springs in the village conservation areas / village forests after mapping of the geology, vegetation and data on water availability.<sup>29</sup> The VCs and the JRMCS, will play a major role in this effort, including the protection and conservation part and in allocating village forest resources for use by the community. The project would support this activity in 20 ha of community forest per village. In total 13,000 ha of community forest conservation areas will be supported.

### **Sub-component 1.2 – Support to Settled Agriculture**

45. The project does not directly promote settled agriculture though many farmers have made the transition from *jhum* only production system to *jhum* and settled agriculture mixed system mainly on account of high levels of labour requirement and hard labour on a day-to-day basis throughout the year, and also the disinterest of younger generation in *jhum* cultivation. The project will support two aspects related to settled agriculture: (i) the existing terrace rice cultivation; and (ii) orchards and plantations in sloping uplands.

46. **Support to existing terrace rice cultivation:** The project will support farmers undertaking terraced rice cultivation. The main aim of this will be to increase soil fertility, productivity and cropping intensity, and stabilize productivity. 1-2 FIGs in each village, comprising of about 10-20 members will be established and supported by the selected Lead Farmer and by the project in each village. FIG members will be provided training on improved farming systems and better agro-techniques for the chosen crops and production of improved seeds.

47. Farmers will also be encouraged to grow *Sesbania rostrata*, and *azolla* as green manure before transplanting of paddy in the lowland rice fields.<sup>30</sup> The project will select short duration improved local paddy varieties in consultation with KVKs/ATARI. The possibility of two crops of decent productivity with first crop of low land short duration rice and a second crop of pulses/ginger/ onion after rice cultivation will be explored through proper crop planning using water balance analysis and improved agronomic practices.<sup>31</sup> The project will also

---

<sup>29</sup> ICIMOD -2016- Spring recharge interventions in Nepal

<sup>30</sup> S.Kannaiyan and K. Kumar (2005). Azolla Biofertilizer for Sustainable Rice Production.

<https://books.google.co.in/books?isbn=8170353564>

<sup>31</sup> Singh V P, Singh RK, Sastri ASRAS, Baghel SS, Chaudhary JL. 1999. Rice growing environments in Eastern India: An agro-climatic analysis. Indira Gandhi Agril. Univ. and the International Rice Research Institute. Pub. Pp 76.

support sustained low cost water supply, better seeds and better practices (seed selection, management and replacement, row planting, and crop rotation) in terraced lands. It is planned to support paddy seed selection and replacement to improve the yields with technical support from the State Agricultural Research Station (SARS).

48. Introduction of ducks or fish into the rice cultivation areas to improve fertility of soils and additional income will also be implemented.<sup>32</sup> The project will support development of supplementary irrigation system such as lift irrigation, and water harvesting ponds for rice cultivation and also micro-irrigation. The project will support 39,000 households covering 9,750 ha. Each household with terrace rice cultivation will get support for 0.25 Ha.

49. *Support for upland settled agriculture:* In Nagaland, transition from *jhum* to settled agriculture has started. This is taking place in *jhum* lands of medium slopes situated close to the village. These *jhum* plots are being converted into vegetable gardening, fruit orchards and spice cultivation. In addition, the identified plot for settled agriculture should have slopes that are easy to convert to terraces, water source, and easy accessibility to the village. In such villages the project will establish a FIG in each village, comprising of about 10-20 members with support from the Lead Farmer. Each FIG member will be linked to 20 associate members. The FIG members will be provided training on soil and water conservation, improved farming systems and better agro-techniques.

50. The project will undertake soil and water conservation works in these *jhum* areas. Measures, such as contour bunding and contour trenching will be taken up as demonstrations. Construction of water harvesting ponds will be taken up, wherever feasible to provide for protective irrigation. The contour trenches will be either staggered or continuous depending on the slopes, and designed using appropriate equipment like “A” frame and water level for marking contours.

51. The project will support construction of terraces wherever feasible.<sup>33</sup> Low cost terrace formation techniques will be demonstrated. Better agronomic practices will be supported which includes compost pits, *azolla* pits, and legume, fodder trees and multi-purpose tree planting, such as *Butea monosperma*, *Albizia lebbec*, and *Gliricidia* on bunds. The treated area will be utilized for planting high value trees like *Melia composita*, *Alnus nepalensis*, and other locally available tree crops.<sup>34</sup> Commercially important trees like walnut (*Juglans regia*), chestnut (*Castanea dentata*), bay leaf (*Laurus Nobilis*), cinnamon (*Cinnamomum tamala*), large cardamom (*Amomum subulatum*) and chillies (*Capsicum chinense* and *Capsicum frutescens*) and other species will be supported.<sup>35</sup> Depending upon the feasibility to grow vegetables, spices and other cash crops by taking into account the soil fertility, altitude, slope and other viability factors related to scale, cluster formation, road access and lower transaction cost to reach the market, the project will promote these crops.

52. In addition, where feasible, the project will support cultivation of “sericulture feed plants” such as castor (*Ricinus communis Linn.*), tapioca (*Manihot esculanta*), payam (*Evodia fraxinifolia*) and kessuru (*Heteropanax fragrans Seem*) by taking into account suitability of the area and also ease in establishing market linkages. Planting material production and growing techniques will also be developed and promoted for other high value plants such as *Texus baccata*, Agar (*Aquilarea agallocha*), Ginseng (*Panax ginseng*) and Rudraaksha

---

<sup>32</sup> Singh VP, Early AC, Wickham TH. 1979. Rice agronomy in relation to rice-cum-fish culture. Pp.15-36. In Proc. International conference on integrated systems. ICLARM / SEARCA, Manila, Philippines.

<sup>33</sup> Early AC, Singh VP, Tabbal DF, Wickham TH. 1979. Land evaluation criteria for irrigated lowland rice. Report of an expert consultation. In Land Evaluation Criteria for Irrigation. World Soil Resources. Food and Agriculture Organization of the United Nations, Rome, Italy, 50:114-144.

<sup>34</sup> V.P. Singh, (2007). Agro- horti- silviculture in hill slopes for enhanced and sustained production and hill conservation. Pp 70-73 In: Islam, Z., Hossain, M., Paris, T., Hardy, B., and Gorsuch, J. (Eds) Technologies for Improving Rural Livelihoods in Rainfed Systems in South Asia. IRRI, Los Banos, Laguna, Philippines. Pp 124.

<sup>35</sup> A.K. Singh, G.C. Munda, S.V. Ngachan, A.S. Panwar, P.K. Ghosh, Anup Das, D.P. Patel, B.U. Choudhury, A.K. Tripathi and K.P. Mohapatra. 2012.

(*Aelaecarpus ganitrus*). The project intends to support for *jhum* in transition to settled agriculture covering 9,750 ha covering 39,000 households. Each household with upland settled agriculture will get support for 0.25 Ha.

## **2. Component 2: Value Chain and Market Access**

53. *Jhum* improvement, settled agriculture and value chain and market access are clearly interlinked. Many farmers have both *jhum* and settled agriculture (mainly plantations, spice cultivation, and lowland rice). The shift to settled agriculture is mainly on account of inadequate labour availability for taking up labour intensive *jhum* cultivation; disinterest of youth to take up *jhum* cultivation and also the need to cultivate high value marketable crops to generate cash income. The project supports improved productivity of *jhum* to achieve production beyond in both of these two production systems to generate marketable volume. The beneficiaries under Value Chain and Market access will be a subset of beneficiaries under *jhum* improvement and settled agriculture. Production support under Value Chain component is to further increase marketable volume and the marketing support will facilitate aggregation, value addition and linkage to outside markets. Livestock support will also target a subset farmers undertaking *jhum* to increase their income so as to reduce their dependence on *jhum* in its current form which has negative impact on the environment.

54. The horticulture crops are the key cash crops in the state in terms of providing employment generation and cash income to the farmers in the rural areas. The area under horticulture has increased over time and is presently around 1.10 lakh ha with a production of around 11.71 lakh metric tons in 2015-16 which includes fruit crops, spices (ginger, Naga-chilli and large cardamom) and vegetables. The important cash crops from the value chain perspective at present are Naga-chilli and large cardamom. Both these are not perishable, low volume/weight, and high value products. However, proper drying is necessary for achieving good quality produce of both the crops. Most of the cash crops including spices and vegetables are organic by default, as farmers do not apply any fertilizers. The value chain constraints include, inadequate availability of quality planting material/seed, inappropriate /unscientific package of practices, lack of aggregation to determine the marketable quantity to feed into supply chain, lack of testing and certification to access premium organic market and limited access to market players from outside the state.

55. The value chain study<sup>36</sup> conducted as a part of the project design has identified five key sub sectors/crops and areas of support required, which include production system improvement, marketing and value addition support in respect of ginger, cardamom, orange, vegetables and chilli.<sup>37</sup> The fragmented production and availability of limited marketable surplus makes it difficult to start aggregation and market linkages.

56. *Cluster approach*: A cluster approach for promotion of select value chain commodities will be adopted wherein on an average four villages form a cluster, which ensures economies of scale in terms availability of a minimum of a truck load of produce for selling, attractive enough for marketing players to get into business partnership with value chain farmers. Cluster ensures collective procurement of agriculture inputs and business development services i.e. transportation and logistics services to make these service economical for the value chain farmers. Clusters also develop around strategically located villages with comparative advantages in terms of presence of motorable road and transportation access, banking services, collection centres and processing units. The project will support existing and new value chain farmers to become part of clusters selected under the project

### **Sub-component 2.1 – Value chain development:**

---

<sup>36</sup> Value Chain Analysis Report for Mizoram and Nagaland, Sanjay Kumar Gupta (Value Chain Consultant)

<sup>37</sup> Value chain analysis of select crops in the north-eastern region by the Small Farmer Agribusiness Consortium

57. Production Support: Naga-chillies have high levels of oleoresins and capsaicinoids which are used in the food and pharmaceutical industries. The market demands top quality and consistent product. Drying and grading operations needs to be maintained at high standards. Large cardamom is another important spice crop of India and grows in the forest ecosystem and has been domesticated. Nagaland is one of the states in north-eastern India where large cardamom are cultivated. Both these crops are not perishable, low volume and high value produce. The average productivity in the state has been around 2-2.5 tons/ ha for Naga chilli and 0.47 tons/ ha for large Cardamom. Productivity of cardamom has declined on account of nematode infestation resulting in root rot. The productivity of both Naga-chilli and cardamom is expected to increase by 30 to 50% by provision of improved planting materials and appropriate package of practices including treatment regime for nematode infestation.<sup>38</sup> A significant volume of ginger is produced, but production is fragmented and competition from other states and countries has severely depressed the market price. Quality seed for ginger remain an issue. Based on the above factors, the project will focus on promoting and increasing area under Naga-chilli, ginger and cardamom cultivation.

58. The project will use a cluster approach for selection of villages for promoting Naga-chilli, ginger and cardamom production. The clusters / villages will be selected based on the suitability (soil, climate, water, etc.) of soils, slopes and participating farmers' interest and ability to invest in labour to ensure establishment of the selected crops. Interested farmers in these clusters will have to allocate a separate plot of about 0.5 ha either in current *jhum* or in fallow *jhum* to grow only the selected crops.

59. Once the clusters are identified, the project will identify and train two Community Resource Persons (CRPs) for each cluster in various aspects of nursery management, planting material selection and in micro-propagation techniques for rapid multiplication of quality planting material and package of practices. The project will support the CRPs to establish nurseries of Naga-chilli, Ginger and Cardamom for production of quality planting materials. This effort can be expanded to other crop varieties, such as pineapple and other fruit crops. The project will identify and support 100 CRPs in the project districts with about 2 CRPs per cluster.

60. The project will promote FIGs comprising 20 farmers per group in respect of three spice crops namely Naga-chill, ginger and cardamom in 50 clusters covering about 4 villages per cluster. The FIG members will be provided access to improved planting material of Naga-chilli, ginger and cardamom, and bio-fungicide such as *Trichoderma* for cardamom. FIG members will be trained in better package of practices in collaboration with local KVKs and the Horticulture Department. Training of farmers will help in increasing survival of plants and better application of nutrients (organic) and management of pests and diseases.<sup>39</sup> In total about 400 FIGs will be supported.

61. CRPs will support FIGs by providing quality planting materials. The project will be flexible to accommodate other crops also, depending upon emerging priorities and opportunities. The project in total intends to support 8,000 households and expand production in 1,000 ha for Naga-chilli, 1,000 ha for ginger and 2,000 ha for cardamom.

62. The project plans to introduce an innovative modality for digital delivery of extension and monitoring of production practices, input use and expected production. This can be accessed by market players across the world to support their procurement decisions by identifying number of farmers cultivating a particular crop, quantity of produce expected, and package of practices used. This would reduce the need for face to face interaction required to access market players and increase the reliability quotient. Introduction of this system would also enable the farmers to make a quick progression into organic certification.

---

<sup>38</sup> Central Institute of Horticulture, Dimapur- [www.cihner.org.in](http://www.cihner.org.in)

<sup>39</sup> ATMA and Horticulture Mission for NE states and Himalayas- <http://tmnehs.gov.in>

63. Marketing Support: The major constraints to value chain development of traditional spice, and agricultural and horticultural crops are mainly issues related to marketing. They include: (i) limited aggregation for achieving economies of scale required for cost effective collection, transportation and storage; (ii) insufficient investment in post-harvest management practices, including primary processing to add value and also to reduce volume for transportation; (iii) inadequate data on marketable quantity to feed into supply chain; (iv) inadequate linkage with premium markets on account of issues related compliance to certification and quality standards; and (v) limited access to market players from outside the state.<sup>40</sup>

64. The project's marketing efforts will be directed towards both the project promoted commodities (Naga-chilli, ginger and Cardamom) and also other commodities and crops promoted under *jhum* improvement and settled agriculture, including commodities such as turmeric, orange, passion fruit and pineapple, which are grown in sufficient quantities for market entry to be viable. The project will support Societies/FPOs/FIGs/agencies/firms interested in taking up aggregation and primary processing. The project will also establish linkages of these aggregators/primary processors with agencies interested in procuring commodities produced in Nagaland for sale in the mainland and for export. The project will support engagement of short term consultants as commodity specialists to work on establishing marketing linkages. In addition, the project will also support next level of processing of spices such as extraction of oleoresins, capsanoids, natural plant based dyes, etc.

65. In respect of bamboo, the project will support value addition to bamboo in terms of manufacture of handicrafts and incense sticks and partial processing such as flattening. The project will make funds available for engaging agencies like National Institute of Design to make contemporary designs, train local artisans and also to procure machinery required for bamboo value addition.

66. In order to facilitate production based on market needs, the project will support establishment of a Marketing Unit within the State Agriculture Marketing Board. This unit will produce market intelligence reports, conduct (or commission) market studies, and policy reforms required marketing of agriculture and horticultural produce. This will enable the line departments plan production based on market intelligence and inputs from the marketing unit. In addition, this unit will act as focal point to for identify market linkage partners and to facilitate market support activities of the project.

67. The marketing unit will establish contacts with agencies, such as Sresta Organics, Patanjali, and other agencies to develop contract farming modalities for the FIGs promoted under the project. Patanjali has shown interest to buy dried turmeric, tulsi, aloe vera, etc. The marketing unit will analyse all market interests and explore the possibility of entering into contract farming arrangements. Collaboration with IDH India (a trade initiative supported by the governments of Netherlands and Sweden) has been firmed up. Once the project implementation starts, IDH India will: (i) conduct a study to validate the business case for organic spice production to the local spice farmer and explore the market demand; (ii) validate the market size for Cardamom both for the domestic and the international markets from India; (iii) explore the model and the business case for a local (near to farm gate) processing plant in Nagaland and the statutory and local requirements to start up such an enterprise; (iv) work with the local partners of Sustainable Spice Initiative (SSI) to identify the parties who would be interested in providing technical support and enter into a long term MoU; and (v) define market requirement parameters for sourcing products from the North East.

---

<sup>40</sup> Livelihood based Agri-business and Market studies for North East Rural Livelihoods Project, MART, 2011

68. The project will support participation of agencies, both government and non-government including private sector, in trade fairs and exhibitions within the country, and will also organize buyer-seller meets. The project will also prepare plans to attract private sector and other agencies from outside the state to establish processing and value addition of select crops. In addition, the project will support construction of collection centres, which can also be used for other commodities as well.

69. Livestock support services: Livestock is an integral part of rural livelihoods and way of life in Naga culture and diet, with most village households keeping one/two pigs and/or a few chickens. Cattle and goats are also kept, but are greatly outnumbered by pigs. The population of livestock in the state is marginally declining over a period of time and around half the meat consumed comes from other states.

70. The key person in supporting livestock development will be a CAHW, in all the 650 villages (one in each village) in the 8 identified districts of Nagaland. With women having a major role in livestock, about 50% CAHWs will be women and remaining will be men folk committed to serve the community and stay in the village during the project period and beyond. Capacity building of farmers and CAHWs has been emphasized in the project. Towards this, customized training manuals for pig farmers, poultry farmers and CAHWs will be developed based on the existing training manuals/ available literature and will be translated in to local language. Based on those, the ToT training material for the VFAs will be developed, who will be the master trainers for imparting training to the target group of farmers. The CAHW will be trained to provide health /husbandry services, immunization and first aid, as well as providing advice to farmers on improved husbandry practices. The CAHW activities will be technically supervised by the Veterinary Field Assistants (VFAs) and their activities monitored by the respective village councils. There will be about 74 VFAs, at least one in two clusters (one VFA supporting about 10 villages).

71. *Pigs:* The project will focus mainly on the pig sub-sector by developing support services related to breed improvement, feed improvement, and animal health. The biggest constraint in pig production is inadequate availability of quality feed. To address the problem, the project will demonstrate and promote feed crops cultivation (e.g. sweet potato, tapioca, colocasia, cow-pea, maize, azolla, etc.) in the backyard and generate awareness among the farmers about the nutrient requirement of pigs. There is a requirement of feed supplements/ingredients to increase productivity. In this direction, the project will encourage existing retail outlets to sell fish meal, soya bean meal and oil cakes in addition to wheat bran and rice polish that they commonly sell. Besides, mineral and vitamin mixture will be promoted by distributing it to the pig producers through CAHWs on pilot basis. Small feed grinding units will be established to utilise locally produced maize, dried cassava etc.

72. To improve the genetic quality of pigs, the project will support establishment of 148 small pig breeding units (6:1 unit) to be operated by progressive/ experienced farmers. In addition, the project envisages distribution of about 30,000 improved piglets for individual households on 50% cost basis. The project will also demonstrate/promote improved pig housing and compost production from pig manure. Existing artificial insemination services for pigs will be expanded by strengthening the existing boar stations under DAHV and or setting up new stations one in each project district and introducing cold chain facilities at least up to village clusters level. VFAs will carry out inseminations of pigs.

73. *Animal Health:* Preventive animal healthcare is an important component in any animal husbandry activity and the basic necessity. The project envisages immunizing the pigs and poultry in the project area therefore; vaccination against prevalent diseases will be undertaken on a large scale. The vaccination will be done by the CAHW/VFA under the supervision of the Veterinary Officer. Necessary support in terms of making timely availability of vaccine etc. from the DAHV will be provided by the concerned VFAs. The pigs will also be de-wormed on a limited scale during the first three years of the project.

74. *Meat Quality Improvement:* Mostly pigs are slaughtered and sold under conditions of very poor hygiene in villages and small towns. This has a great implication on human health. The project would aim to raise awareness of the quality threats among the pig slaughterers, retailers and transporters through information campaign and imparting training on hygienic slaughtering, handling, displaying and selling of pork. The project will provide a few equipment for hygienic business operation. In cooperation with village councils, slaughter slabs would be provided to allow more hygienic slaughtering and reduce wastage of by-products.

75. Innovation Fund: FOCUS will fund the testing and dissemination of innovative technologies and approaches to improving settled agriculture, livestock and marketing. A small number of institutions are emerging in Nagaland who have started several innovative activities that can be scaled up. Several organizations, such as Entrepreneurs Associates have started training youth and providing them with credit for starting enterprise and Mithun rearing as a biodiversity initiative.<sup>41</sup> Similarly, The Green Caravan has started aggregation of local produce and marketing these products outside the state and also value addition of local pork through smoking to market outside the state.<sup>42</sup> These, and other similar efforts need a funding mechanism for expansion. In order to address this, FOCUS will set up an innovation fund that will provide flexibility to fund any emerging innovation.

76. Marketing and processing innovations remain the core element in incentivising production that meets the requirement of markets. In order to realise the potential of the agricultural sector to cater to demand from consumers outside the state requires a scale of operations that can enter external markets on competitive terms and/or a premium price for products / produce of Nagaland. Both these situations currently do not exist on account of fragmented pockets of production, high cost of production, limited value addition efforts and limited efforts for aggregation to ascertain volume and transaction costs to test viability of outside market linkages. FOCUS will support in marketing related activities in order to demonstrate the possibility of accessing premium markets outside the state in a consistent and sustainable manner. The project will support aggregation of produce such as Chilli, Turmeric, Cardamom, Kidney bean, Rice bean, Brown Rice and other cereals to link up to markets outside the state. In addition, higher level investment is required to establish extraction of oleoresins, capsanoids and tumerons. These need to be funded in a sub-project mode.

77. Development of entrepreneurial skills of youth remains a challenge. Skill development and financing challenges mainly constrain young entrepreneurs.<sup>43</sup> This issue needs to be addressed in a systematic manner, which requires careful identification of youth interested in taking up a small business, providing them technical as well as managerial training, provision of financial assistance and handholding to overcome initial business problems. FOCUS will provide support for institutions who have a track record of promoting entrepreneurship amongst youth. Another area requiring innovation is the provision of livestock services. The public system of veterinary hospitals and dispensaries, and animal breeding facilities are not able to provide the coverage needed by livestock producers – not only do they have inherent management weaknesses and inadequate investment, the scattered population in the hills are difficult to reach. FOCUS will provide funds for innovations in livestock services and related technologies. They include innovations in feed development, breeding of local livestock and also meat processing.

---

<sup>41</sup> <https://www.eanagaland.com/>

<sup>42</sup> <https://www.facebook.com/TheGreenCaravanNagaland/>

<sup>43</sup> Rural Entrepreneurship in India: Challenge and Problems; Brijesh Patel, Kirit Chavda, G. H. Patel Institute of Business Management, Vallabh Vidhyanagar Sardar Patel University, Gujarat, India

78. FOCUS will also support innovations in value addition at the village level that include primary processing of spices and pulses. Bamboo being a common available natural resource in Nagaland requires innovative interventions for value addition which includes pre-processing at the village level. Some of such interventions will be scaled up with project support.

79. In order to support these interventions, the project will establish a fund and seek proposals from interested agencies and provide funding based on a detailed business plan and agreed outcomes. This support will be available to legally registered and tax compliant local agencies that have already implemented innovative interventions requiring scale up support with demonstrated ability to bring their own funds to part finance the proposal. Some funds may also be allocated to generating knowledge on the evolution and sustainability of upland farming systems and their capacity to respond to climate change. Draft operational guidelines for implementing this activity will be prepared during appraisal.

80. The project will prioritize the needs of youth while approving sub-projects funded by the Innovation Fund. Sub-projects of youth taking up enterprise related to aggregation and value addition will be funded on a priority and capacity building aspects will be built into this. In addition, the project will actively identify agencies that have capacity to submit sub-projects that train youth in specific vocations and provide funding for enterprise establishment coupled with technical backstopping. Such agencies will be funded using Innovation Fund.

### **Sub-component 2.2 - Market access infrastructure**

81. A major constraint for the development of market-orientated agriculture is poor road access to production areas. Although almost all villages are now connected by all-weather roads, these tend to run along the ridges where settlements are located. Much of the land with good potential for the development of plantation and other permanent crops are in valley bottoms and on the lesser steep-slopes. However, such areas often have no road access, making it difficult to supply inputs and extract crops. Farm link roads are therefore a major priority of the government. However, many of the roads that have been built, either by DoA or using village labour funded via MGNREGS. These have been constructed without proper survey and design resulting in poor quality, high gradient and largely unpaved; they are not resilient to intense monsoon seasons or extreme events exacerbated by climate change. Rural roads, therefore, often get washed away, buried, or become impassable depending on conditions.

82. IFAD loan funds will be only allocated for construction of critical gaps in the existing road infrastructure such as bridges, culverts and other cross drainage structure. The main reasons for making this change are: (i) availability of substantial allocations under various government programmes for road construction; (ii) increase in number of villages from 600 to 650 requiring additional investments into *jhum* improvement; (iii) inadequate investment in critical cross drainage structure in many of the roads already built. The revised plan is to construct a total of around 200 km of earth road (with proper side slopes and cross drainage and base course) using the funding facilities available under convergence (MGNREGS). In addition, the project will build 600 cross drainage structure using IFAD funds which will result in improvements to 200 km of existing gravel roads.

## **C. Project Management and Knowledge Services**

83. A new society has been established and this society will be the lead implementing agency. The society is headed by the Chief Secretary of the State who will also chair the Project Steering Committee. The Agriculture Production Commissioner (APC) will Chair the Project Management Committee and has been nominated as the Mission Director. An Indian Administrative Services officer has been appointed as the Chief Executive Officer, who will be the Secretary of the society. The details regarding project management, implementation arrangements are described in Appendix 5.

84. **Knowledge Management:** The project will develop a Knowledge Management strategy and action plan for knowledge generation and dissemination. This will include internal learning through regular progress review meetings, and participatory M&E at the community level. Information will be shared at the village level via a village notice board, posters and leaflets. Knowledge will also be shared with external stakeholders and the wider development community through generation of knowledge products, such as newsletters, briefs, training materials, technical manuals, booklets, posters, videos, etc. The project will also aim to be a platform for learning for the other states in NER wherever *jhum* is being practiced. A project website will be established as a knowledge sharing tool, with information on good practices and innovations shared with NITI Ayog, DEA and Ministry of Development of Northeast Region (Ministry of DoNER), and also displayed on the IFAD Asia website.

85. **Capacity building and knowledge generation:** The project will be working on both *jhum* improvement and settled agriculture. In order to generate concurrent impact data and to demonstrate the effectiveness of these approaches, the project will engage with a Specialist Organisation which has expertise in upland farming systems as well as good knowledge of the region. This exercise will also generate knowledge that may be useful for informing the policies and practices of other states in the NER. The project has allocated USD 260,000 to generate knowledge on the evolution and sustainability of upland farming systems and their capacity to respond to climate change. The ICAR Regional Centre in Barapani with specialisation in Research and the Regional ATARI which co-ordinates the work of all KVKs in the NER have been identified by the project as the most suitable agency to be engaged for this purpose. Both these institutions come under the Deputy Director General (Extension), ICAR, GoI. It is, therefore, proposed that the GoN will sign an agreement with ICAR detailing the terms of engagement. The responsibilities will be divided between the ICAR Regional Centre, Barapani and the ATARI as follows:

- a. Regional Centre of ICAR which has a sub-centre in Medziaphema will be responsible for: (i) demonstration of settled agriculture models on a micro-watershed basis in about 50 ha per district; (ii) technical backstopping for project activities in the field related to *jhum* and settled agriculture and livestock production; (iii) evaluating impact of project's settled agriculture activities; (iv) knowledge sharing by way of regional workshops to disseminate the results impact assessment studies and preparation of leaflets and pamphlets in local languages; and (v) knowledge sharing by way of regional workshops to disseminate the results of action research conducted by KVKs under the supervision of ATARIs.
- b. Agriculture Technology Application Research Institute (ATARI) through the KVKs in all the district will be responsible for (i) action research on settled agriculture on *jhum* land in various microclimates of Nagaland in collaboration with local research agencies; (ii) supply of quality planting materials; (iii) development of improved varieties of seeds (paddy) using local seeds; (iv) technical backstopping and training of village level workers; and (v) establishment of demonstrations of pig breeding units, stall fed goat units and backyard poultry hatchery units.

86. **Technical Assistance:** IFAD will provide a grant of about USD 550,000 to GoN for capacity building. Capacity building will cover *jhum* improvement, settled agriculture, value chain development and monitoring and evaluation. The major activities envisaged under technical assistance includes; (i) preparation of training materials and conducting training of all Veterinary Doctors in animal production related issues covering pigs, cattle, goats and poultry; (ii) preparation of training materials for establishment of nurseries for nut trees, timber trees, and fuel wood trees and conducting TOT for Agriculture Research Station staff on nursery management; (iii) preparation of training materials for spice production and training of trainers; (iv) engagement of specialist consultants in Highland farming systems, Agroforestry and Soil and Water Conservation, and for ongoing technical support to the PMU; (v) prepare

a long term weather data based agro-climatic atlas for Nagaland; (vi) development of a computerised MIS and training of MIS staff in its management; and (vii) support for project monitoring and evaluation including assessment of outcomes and impact. GoN will engage Food and Agriculture Organization of the United Nations (FAO) to implement these activities. FAO will also be requested to contribute from its own resources into this technical assistance sub-project. A technical assistance agreement will be signed between GoN and FAO detailing the terms of this engagement.

## D. Interaction and Linkages between project components

87. The linkages among the four key sub-components are of components 1 and 2 are shown in Table 1 below.

88. The Better *Jhum* and conservation subcomponent focuses on improved productivity of current *jhum* on account of fertility improvement measures, soil and water conservation works including both physical and biological measures. The project will support tree crops and the traditional crops in order to increase the period of cultivation on a *jhum* plot and thereby reduce *jhum* cycle. This intervention will enable the farmers to sustain their activity and take up settled agriculture as a means of improving income levels and reduce dependence on *jhum*. The value chain component will facilitate aggregation of the traditional produce for marketing outside the state and the marketing access will facilitate improved marketing of traditional produce.

89. The settled agriculture sub-component will promote conversion of *jhum* into settled agriculture, thereby increasing the *jhum* cycle and reduction in *jhum* practice. Settled agriculture will not only promote traditional varieties but also crops that have markets outside the state. Improved package of practices and improved seeds of traditional varieties will improve productivity. Value chain related efforts will synchronize settled agriculture with markets, so that produce that have marketing potential are cultivated to target the premium organic market. This will increase farmers' income and further reduce dependence on *jhum*.

90. The value chain activities will not only focus on improving market access of traditional crops in *jhum* but will also provide production support for select crops with market potential. These crops will be cultivated in clusters so as to achieve economies of scale required for aggregation, primary processing and transport. This will further add value to the produce increasing farm gate prices of agricultural commodities. The project supported livestock sector activities will also increase meat production and increase non-farm income of the households.

91. Market access plays an important role in the overall drive of the project to reduce dependence on *jhum* by improving access to productive areas with water source and better soils for settled agriculture, apart improving connectivity between farms and markets. This will reduce the transaction costs and improve the possibilities of aggregation to cater to the markets outside the state.

**Table 1: Linkages between project sub-components**

Component /Sub-Component		1.1	1.2	2.1	2.2
		Better <i>Jhum</i> and Conservation	Settled Agriculture Promotion	Value Chain Development	Market Access Infrastructure
1.1	Better <i>Jhum</i> and Conservation		Improved productivity – fertility improvement and SWC measures	Aggregation and marketing of traditional crops	Improved traditional crop marketing
1.2	Settled Agriculture Promotion	<i>Jhum</i> converted to settled agriculture		Improved package of practices and increased production volume of selected marketable produce	Increased volume for transport of agriculture produce
2.1	Value Chain Development	Reduced dependence on <i>Jhum</i>	Premium marketable crop production		Increased farm gate price
2.2	Market Access Infrastructure	Improved access <i>Jhum</i> areas.	Improved access for settled agriculture	Transaction cost reduction for input, and output aggregation	

## E. Expected outcomes and outputs

### 1. Outreach

92. The project is expected to reach 137,000 households covering 685,000 persons. The details of the assumptions made are provided in the table below.

Component/Sub-Component	Target HHs	Area (Ha)/Length (km)/No.	Overlap assumption		Net target HHs	Assumption
			%	HHs		
<b>Component 1</b>						
<i>Jhum</i> - Improvement	91,000	11,750	0%	0	91,000	650 villages, 140 households per village and 0.13 Ha per household
Fallow management	91,000	16,250	100%	91,000	0	650 villages, 140 households per village and 0.18 Ha per household
Community Conservation Area	91,000	13,000	100%	91,000	0	650 villages and 20 Ha per village
Terrace Rice Cultivation support	39,000	9,750	60%	23,400	15,600	650 villages, 60 households per village and 0.25 Ha per household
Existing settled agriculture support	39,000	9,750	60%	23,400	15,600	650 villages, 60 households per village, 60 Ha per village and 0.25 Ha household
<b>Component 2</b>						
Spice Value chain support	8,000	4,000	65%	4,800	2,800	Large Cardamom -2,000 Ha, Naga Chilli - 1,000 Ha and Ginger - 1,000 Ha, 50 clusters, 200 villages (1 cluster=4 villages), and 0.5Ha per household
Livestock support	30,000		60%	18,000	12,000	650 villages, about 46 households per village and 1 piglet per household
Cross drain structures	91,000	600	100%	91,000	0	
Common Facility Centre/Collection Centres	45,000	50	100%	45,000	0	
<b>Total</b>					<b>137,000</b>	
<b>Final outreach (households)</b>					<b>137,000</b>	
<b>Final outreach (persons)</b>					<b>685,000</b>	

### 2. Outcome

93. The overall goal of the project is to increase household agricultural income of 137,000 rural highland households in Nagaland to enhance their resilience to climate change. This goal would be achieved through the development objective of increasing the environmental sustainability and profitability of farming systems practiced by highland farmers. The major outcomes of this project will include:

- i. 70% of the *jhum* households farming for three or more years on the single plot.
- ii. 75% of the households reporting increase in more than 100% in household income.
- iii. Soil carbon percentage of at least 4% on *jhum* land.
- iv. Real increase in net annual farm income (in 2017 prices) to INR 3,480.1 million.
- v. Number of trees increased to at least 20 per ha on *jhum* land.
- vi. 137,000 households reporting adoption of environment friendly sustainable and climate resilient technologies (use of agro-forestry, soil and water conservation, improved planting material and integration with livestock).
- vii. Gross returns from spices increased to INR 669.1 million.
- viii. Gross returns from livestock increased to INR316.5 million.

### 3. Outputs

94. The specific outputs of this project will include:

- i. 100% of the villages (650) with completed participatory land use plans.

- ii. 182,000 farmers trained on better *jhum and fallow management*.
- iii. 78,000 farmers trained on settled agriculture.
- iv. 47,450 ha under SWC by *jhum*, fallow and settled agriculture.
- v. 13,000 ha under community conservation areas.
- vi. 8,000 households participating in organized spice value chain.
- vii. 30,000 households benefitting from pig rearing.
- viii. 75,000 households reporting improved access to markets.
- ix. 400 km of farm link road improved.

## Appendix 5: Institutional aspects and implementation arrangements

### A. Introduction

1. IFAD projects in India use three models of project management: (i) project management structure built into the existing corporations; (ii) a separate PMU built into the line department; and (iii) a separate society established for implementation. The advantages of working with the corporations and societies include the ability to retain unspent funds at the end of the fiscal year enabling these institutions to start project activities without waiting for budget release. For various programmes, the Government of Nagaland (GoN) has opted for the Society model in view of its stated advantages. For example, Nagaland State Rural Livelihoods Mission which is registered as a society implements the National Rural Livelihoods Programme and this society is attached to the Rural Development Department. Similarly, societies have been formed under the Health Department, Education Department and e-governance departments for implementing projects/programmes.

### B. Project Management

2. At the central level, the Department of Economic Affairs (DEA) would be the nodal agency for the project. Two broad principles would govern the management structure for this project. They include: (i) alignment to the existing government structure; and (ii) flexibility to make changes based on the requirements that may arise during the implementation phase. The project would be aligned to the existing government structure by making the APC's Office of the GoN as the state level lead implementing and nodal agency. Two options for alignment with the APC's Office were considered. These include: (i) establishing a project management unit within the APC's Office; and (ii) establishing a new society under the APC's Office. In view of the flexibility, the society structure provides in terms of carrying over the unspent balance of the previous year to the next year, and in terms of human resource engagement, the option of establishing a society under the APC's Office was considered appropriate.

3. **State level Project Management:** In order to implement this project, GoN has established a society named Society for Climate Resilient Agriculture in Nagaland (SoCRAN) under the APC's Office, GoN. This strategy of establishing a separate society keeps it outside the government line agency structure to bring in persons of repute as members of the Governing Council. This society would be registered under the Societies Registration Act and would have its own bye laws and financial rules, aligned with best practices in management of public funds. SoCRAN would have adequate authority to enter into partnership agreements/contracts with agencies, FIGs, Village Councils, *Jhum* Resource Management Committees and other committees under the Village Councils.

4. The Chief Secretary of the State of Nagaland is the Chairperson and the APC is the Vice Chair of the Society. A Governing Council of the society has been constituted comprising the Secretary, Agriculture; Secretary, Horticulture; Secretary Planning and Programme Implementation; Secretary, Finance; Secretary, Animal Husbandry and Veterinary Services; Secretary, Soil and Water Conservation; Secretary, Rural Development, and the Principal Chief Conservator of Forests as the core members. The Governing Council may co-opt additional members based on the requirement. GoN has appointed an officer from the All India Services on a fulltime basis as the Chief Executive Officer who will also be an ex-officio Secretary of the society.

5. The Governing Council of the society would be responsible for: (i) ensuring legal compliance and preparing, reviewing and approving overall policies of the society including administrative, human resource and financial policies; (ii) providing direction and guidance for project implementation; (iii) facilitating coordination and convergence between the project and

other government programmes; (iv) reviewing and approving overall AWP&B of the project; and (v) reviewing implementation performance of the project.

6. The project management responsibility would be vested with a Project Management Unit within the society with the Chief Executive Officer/Secretary of the society as the State Project Director (SPD). S/he would report to the APC, who would be the Mission Director. State budget allocations for the project including parallel financing funds from Centrally Sponsored Schemes (CSSs), IFAD loan proceeds, IFAD grant, GoN counterpart funds for IFAD loan, GoN share for CSS funding would flow through the APC's Office by creating a separate line item in its annual budget.

7. Overall, PMU would be responsible for compliance to the stipulation of Financing Agreement signed between Gol and IFAD. More specifically the PMU will be responsible for (a) programme planning, implementation and monitoring; (b) financial management and procurement; (c) management and administration and (d) co-ordination with Gol and IFAD, as follows:

- a. Programme planning, implementation and monitoring/ reporting: organizing project coordination meeting; preparing and submitting AWP&B after consolidating AWP&Bs of districts and a procurement plan for review by IFAD; conceptualizing, supervising and monitoring project activities and their progress towards achieving physical, financial and outcome related targets; establishing an effective MIS and M&E system to track project progress; undertaking knowledge management activities;
- b. Financial management and Procurement: incorporating the budget requirements of the project into the overall budget of the GoN and ensuring flow of funds to the society; ensuring release of funds to the DMUs and line departments for implementing project activities; operating Project Accounts for timely release of funds to the districts, line departments and other partners; receiving statement of expenditure and supporting documents related to fund release and keeping an account of fund release and utilization; preparing overall project financial statements; evaluating bids, and finalizing and executing contracts with service providers and suppliers of goods and services for implementing various project activities.
- c. Management and Administration: liaising with the State administration and line agencies to ensure coordination and convergence to facilitate project implementation; establishing DMUs in each project district within the District Agriculture Office and recruiting staff for PMU and DMUs; preparing and submitting progress reports semi-annually and annually to IFAD; establishing an effective MIS and M&E system to track project progress.
- d. Reporting and co-ordinating with Gol and IFAD: preparing and submitting withdrawal applications to Gol/CAAA for onward transmission to IFAD; ensuring preparation and submission of annual audit reports and financial statements to IFAD and ensuring compliance to the audit observations; preparing RIMS data for submission to IFAD.

8. The society would be provided with senior technical staff of the rank of Deputy Directors. A Deputy Director-Agriculture, a Deputy Director-Horticulture, a Deputy Director-Animal Husbandry, and a Deputy Director – Soil and Water Conservation would be posted to the PMU on deputation. In addition, a Finance and Accounts Specialist, Manager- Planning and M&E, Manager Knowledge Management and Manager, Gender and Community Institutions and other support staff would be engaged on contract basis. Staff appointments, except those on deputation, would be fixed term contracts of at least three years and the candidates would be recruited from the open-market based on professional competence and

experience in various field such as agriculture, horticulture, value chain, livestock finance, planning and monitoring and evaluation etc. The proposed project management structure for this project on Nagaland is provided in Annex 1.

9. The society will adopt an Equal Opportunity Policy while recruiting staff. SoCRAN is yet to develop a set of personnel policies guiding engagement of staff. Important personnel policy related actions to be initiated by SoCRAN include: (i) categorization of posts and fixing a pay scale for each position; (ii) fixing leave structure and leave encashment benefits in line with societies established for managing development projects in the state/country; (iii) fixing travel and daily subsistence allowance structure; (iv) fixing deputation allowance to seek experienced staff from the government departments; (v) fixing provident fund and medical insurance benefits; and (vi) incorporating gender sensitive policies in recruitment.

10. **District Management Units:** The project would establish a DMU in each district within the District Agriculture Office. The District Agriculture Officer (DAO) would be the District Project Manager (DPM). A small team of professionals would be recruited to facilitate project implementation. DMUs would function as an outpost of SoCRAN in each project district. An Agriculture Officer of the rank of Asst. Director will be posted under the DAO by the state government on a full term basis to deal exclusively with the project activities who would be the Field Coordinator of the project. DMUs would be authorised to release funds based on the sanctioned AWP&B.

11. The DMU would be responsible for: (i) coordinating with the circle/block level officers and the farmer interest groups (FIGs) to prepare AWP&B for circle and incorporating the same into the district AWP&B; (ii) submitting in a timely manner, the AWP&B to the state PMU for incorporation into the project AWP&B (iii) obtaining required sanctions for implementing activities; (iv) releasing funds to the FIGs and other implementation partners and monitoring their work; (v) receiving utilization certificates from the FIGs and other implementation partners and reconciling their accounts; (vi) collecting, collating and analysing MIS and M&E data for the district for onward submission to PMU and for providing feedback to implementation partners; (vii) ensuring convergence between project activities and activities of other line departments in the project villages; (viii) conducting audit of books of accounts of FIGs and other implementation partners on a sample basis and submitting reports; (ix) maintaining books of accounts related to project expenditure of the district and prompt settlement of advances with PMU; and (x) ensuring compliance to audit observations.

12. DPM would be responsible for: (i) coordinating with the PMU with regard to implementation of project activities; (ii) coordinating with the District Administration for convergence and support; (iii) supervising field level activities of block/circle level officers, FIGs and other implementation partners; (iv) releasing funds to the FIGs and other implementation partners as per the approved AWP&B; (v) ensuring convergence between project activities and activities of other line departments; (vi) functioning as a focal point to resolve issues faced by implementing partners and block/circle level officers and village level workers; (vii) reviewing field level activities and submitting reports to the Deputy Commissioner/PMU on a regular basis; and (viii) overall management of the DMU as per the directions of SPD including personnel and administrative functions.

13. A technical team comprising officers of mid-level seniority drawn from the Departments of Agriculture, Horticulture, Animal Husbandry and Soil and Water Conservation would be attached full time for this project. In addition, the project would also engage professionals on a contract basis. The project would also engage a Planning and Monitoring Officer, an F&AO and the required junior professionals at the district level on a contract basis.

14. The project would fund capacity building of PMU and DMU staff, development of a computerised accounting system and a Management Information System. The project would allocate funds for engaging Specialist Organizations / Experts to help the project

management in conceptualising various project interventions and to provide expert technical advice. The project would also fund contracting of specialist agencies for conducting baseline survey, impact evaluation and other surveys and in preparation of a Project Completion Report at the end of the Project.

## **C. Project Coordination Mechanisms**

### **1. State Level Coordination**

15. The Governing Council of SoCRAN would also function as the state level Project Steering Committee (PSC) for this project. The Chief Secretary, GoN would be the Chairperson of the PSC. The PSC would meet once in six months to review progress, provide overall guidance and policy support and to facilitate inter-departmental coordination specifically with regard to convergence. All the members of the Governing Council would be the members of the PSC. In addition, the PSC would also include the Deputy Commissioners/District Collectors of the project districts. PSC would invite representatives from the National Bank for Agriculture and Rural Development (NABARD), civil society and technical experts of repute to participate in the PSC meetings as Special invitees on a needs basis. The SPD would be the member secretary of the PSC. Project coordination mechanism of this project in Nagaland is provided as Annex 2.

16. PSC would meet on a half yearly basis and its function would be to secure interdepartmental coordination and linkages for the project. It would: (i) review progress of the project on the basis of the reports submitted by SoCRAN; (ii) resolve any problems requiring interdepartmental coordination with the line agencies and banks which require higher level of intervention; (iii) resolve any policy bottlenecks that impact project implementation and (iv) review AWP&B as prepared by SoCRAN to ensure adequate budgetary provisions;

17. GoN would also establish a Project Management Committee (PMC) headed by the APC. Directors of the relevant technical departments such as Agriculture, Horticulture, Animal Husbandry and Veterinary Services, Soil and water conservation and Conservator of Forests as the members and the Chief Executive Officer of the society as the secretary. The PMC would meet quarterly and would be responsible for: (i) reviewing and resolving any problems in the project implementation relating to coordination with the line agencies and banks which require higher level of intervention; (ii) approving action plans for Central Sector Schemes and integrating these action plans into the AWP&B of the project; (iii) ensuring release of CSS funds into the society; (iv) ensuring release of GoN counterpart funding and IFAD loan proceeds to the society; (v) reviewing the labour budgets of MGNREGA activities to be implemented under the convergence activities and to build synergy between the project activities and MGNREGS activities; (vi) provide a forum for dialogue between the state level policy makers and the field level implementers; (vii) review issues arising out of the District level Coordinating Committee reports, monitoring reports, impact assessment studies and evaluation reports and give policy directions to resolve the issues; and (viii) ascertain ways and means of internalizing the lessons learned from the project delivery mode into the regular government programmes.

### **2. District Level Coordination**

18. The project would also establish a District Project Coordination Committee (DPCC) in each project district. The DPCC would meet quarterly to discuss the project implementation progress, constraints and remedies. The most important function of this committee is to ensure flow of MGNREGS funds to the Village Councils/Village Development Boards for implementing Land and Water related activities. The DPCC would be chaired by the Deputy Commissioner / District Collector of the respective project district and the DPM would be the Vice Chairperson. The members of the DPCC would include: (i) District Horticulture Officer; (ii) District Animal Husbandry Officer; (iii) Project Director-DRDA; (iv) District Forest Officer; (v) District Soil Conservation Officer; and (vi) Block Development officers of project blocks.

Planning, M&E and Convergence Officer would be the Secretary of this committee. Based on the need, representatives of NABARD and Lead Bank would also be invited to participate in the DPCC meetings. A representative from PMU may attend any of the DPCC meetings if and when required.

### 3. Block Level Coordination

19. A Block Project Coordination Committee (BPCC) would be established in each block of the project area. The BPCC would meet bimonthly to discuss approval and review of the MGNREGS activities and their convergence with project activities. This committee would be chaired by the Block Development Officer and the Circle/Block Agriculture Officer would be the Member-Secretary. The members of BPCC would include: (i) Chairpersons of all project Village Councils; and (ii) All block/circle level officers.

## D. Implementation Partners

20. **Village Councils:** Village Councils are the most important grassroots institutions. The Village Councils in Nagaland have the overall authority for the administration of justice within the village. Under the Nagaland Village and Area Council Act, 1978, every recognised village in the State has a Village Council. Amongst others, they are vested with the powers to carry out development works within the village and also to allocate area for *jhum* cultivation. These councils would be the focal point for implementation of the project activities mainly with regard to obtaining consent for implementing the activities. Village Council would be the main grassroots institution to coordinate MGNREGS activities. This project being a *jhum* improvement project would have to coordinate with the Village Council for taking up improvement on *jhum* land.

21. **Village Development Boards (VDBs):** In Nagaland, as per the Nagaland Village and Area Council Act, 1978, a VDB has been established in each of the villages vested with powers to take necessary steps regarding welfare and security of the households. These Boards implement MGNREGA activities and the project would coordinate with these Boards for convergence.

22. **Jhum Resource Management Committees (JRMCS):** The project would establish a six member JRMCS in each village. These JRMCS would be the focal point for project implementation. This committee would comprise equal number of male and female members with membership of lead farmers, SHG/society members and *jhum* farmers. The chairperson of Village Council and also Secretary of VDB would be the members. JRMCS would elect a Chairperson, a Secretary and a Treasurer who would manage the day-to-day activities of the JRMCS.

23. **Farmer Interest Groups:** The project will form FIGs for: (i) *jhum* and fallow management; (ii) wet rice cultivation; (iii) support to existing orchards; and (iv) value chain crops production. Farmer interest groups would comprise of rural households interested in taking up a common economic activity. These FIGs will comprise of 10-20 members and each FIG will open a bank account for receiving project benefits. The project would use the existing FIGs and also promote new FIGs for implementing project activities.

24. **Self Help Groups/Societies/Associations:** The project would also support SHGs that have been promoted under various government programmes. These SHGs are women groups that take up a common activity. These SHGs would be used to implement non-farm activities and livestock related activities. In addition, there are several associations such as Pig farmers association, and the services of these community institutions would be used depending upon the project need during the implementation.

## E. Implementation Arrangements

25. The project would use a multi-pronged approach to implement project activities using the grassroots level institutions and also the community level workers. The grassroots level

implementation partners include community based organizations operating in the villages and those that would be promoted under the project. These include the *Jhum* Resource Management Committees, Village Development Boards, FIGs, SHGs and Societies. These community based organizations would be supported by Lead Farmers, Community Resource Persons and CAHWs. The project intends to identify and support these community level workers through training and establishment of demonstrations. Block/Circle level officers of the line departments would be the main link between the Village level workers and the DMU for planning, implementation facilitation and supervision.

26. Capacity building: The project intends to build capacity of implementing agencies at three levels. The project would engage FAO to prepare training curriculum and training materials and to train the trainers using a ToT modality. Once the trainers are trained, the project would train all the technical staff at the district and sub-district level. Thereafter, the project would train the block/circle level officers and village level workers to build their capacity. These block/circle level officers and village level workers would be the focal points in the villages for implementing project activities using the Lead Farmers and Community Resources Persons.

27. Land use Planning: The first stage of this activity would be implemented by the PMU. The project would use the Remote Sensing Application Centre in the state to prepare land use maps and land suitability classification maps. These maps would be the basic documents for the community to plan *jhum* cultivation and other settled agriculture related activities taking into account the slope and other parameters. These maps would also facilitate the community to identify the boundaries of the community forest conservation areas and to take up conservation related activities. These maps would also be used to identify the soil and water conservation activities in the community forest areas. The project would train the Lead farmers and members of community based organizations to use the land use maps. Thereafter, Block/Circle level officers along with village level workers would facilitate the community to make plans for *jhum* and settled cultivation and also obtain consent of the community at large for project interventions.

28. *Jhum* Improvement and settled agriculture: Lead farmers would be the focal point for this intervention. Lead farmers would be trained and thereafter facilitated by the Block/Circle level officers and Village level workers to start the nurseries of horticultural and tree crops required for settled agriculture. Lead farmers would promote FIGs comprising members of *jhum* cultivating households. The FIGs would be the main vehicles for implementing this activity. These FIGs would be provided with project support for implementing activities related to soil fertility improvement, nursery establishment, soil and water conservation activities, and cultivation of plantation and tree crops.

29. Value chain Development- Production Support: The project would identify and train Community Resource Persons (CRPs) to act as focal points to start cultivation of identified value chain crops in a cluster. CRPs would be provided with project support for nursery establishment and to deliver extension messages related to Good Agriculture Practices to the community. The project would introduce digital delivery of extension and using this software, a data base would be developed to facilitate the procurers from outside the state to get information on area under cultivation, expected yield and package of practices used. CRPs would also be responsible for digital delivery of extension and also for entering data into the database.

30. Value chain development – Marketing Support: The project would support marketing support related activities such as buyer seller meets, trade fairs, exhibitions, etc. This activity would be implemented by PMU and DMU officials taking into account marketable crops. PMU and DMU officials would also invite entrepreneurs from outside the state and link them up with local persons to establish a system of aggregation of produce. The project would also support establishment of a marketing unit in the State Agriculture Marketing Board in order to ensure production that is linked to market demand.

31. Livestock Support: CAHWs would be the focal points for implementing this activity. The project would train the CAHWs and after training a system of vaccination of all livestock with a small payment for services of CAHWs would be put in place. These CAHWs would be the

village level workers of the project to implement livestock related activities. Block/Circle level officers and Village level workers with support from the officials of PMU and DMU would implement the livestock related activities including demonstration.

32. **Market Access:** The project would implement the market access activities (cross drainage structure) using contractors selected through competitive bidding. The community based organizations would be used to identify the infrastructure needs and the locations. Based on these initial assessments, PMU would engage contractors for construction of cross drainage structures under the supervision of qualified and experienced Consulting Engineers.

33. **Innovation Fund:** PMU would take the lead in implementing this activity by seeking proposals from experienced agencies that have implemented innovative activities. An open invitation calling for proposals would be issued to all interested parties. The proposals received would be appraised by the PMU and selected proposals would be funded by the project.

34. **Knowledge Generation and Sharing:** The project would engage ICAR in Nagaland to generate knowledge on various aspects of upland agriculture through action research using local institutions. The knowledge generated would be shared through documentation and regional level workshops.

35. **Technical Assistance:** The project would engage FAO to provide technical assistance in both the states. It would involve training of trainers in new technologies related to soil and water conservation and settled agriculture including value chain promotion. Technical assistance would also cover provision for handholding and also M&E related functions.

## **F. Implementation Plan**

95. The project implementation will comprise the preparatory and implementation phase. The major activities required for implementing the project are detailed below. The phasing plan is provided as Annex 3.

### **1. Preparatory Phase**

#### **a. Administrative**

##### Pre-Loan Negotiation Phase

- Finalize Personnel Policies of SoCRAN.
- Finalize Financial Regulations of SoCRAN.
- Call for meeting of the Governing Council of SoCRAN to approve the personnel policies and Financial Regulations.
- Obtain clearance from the Chief Secretary for engaging Food and Agriculture Organization to provide technical assistance using IFAD grant funds.
- Process a file through the Department of Finance for Chief Secretary to request DEA to release the initial advance to be released by IFAD to GoN, and GoN in turn to release this amount to the SoCRAN through APC's office.
- Place the project details before the Chief Secretary and request the Chief Secretary to constitute a State Delegation to negotiate the legal agreements.
- Comply with conditions of Project Readiness Checklist of DEA and submit the same to DEA and IFAD.
- Obtain permission from appropriate authorities and select persons to be engaged by SoCRAN on both deputation and contract basis for both PMU and DMUs.
- SoCRAN to obtain permission from appropriate authorities and fill in all vacant positions in Blocks/Circles and Village level workers.

##### Post Loan Negotiation Phase

- Initiate steps to include FOCUS budgetary requirements for 2018-19 into the state budget by creating a separate budget line under the APC's Office.
- Conduct an orientation programme for all PMU staff and DAOs with field visits to IFAD project sites.

- Prepare a Project Implementation Manual and get the same approved by the Governing Council of SoCRAN.
- Place the project details along with signed minutes of the loan negotiations before the State Cabinet and obtain approval.
- Coordinate with FAO and review the Technical Assistance agreement and obtain approval from the Governing Council /Project Steering Committee and sign an agreement with FAO.
- Coordinate with ICAR and jointly prepare a Technical Assistance Agreement and obtain approval of the Governing Council/Project Steering Committee and sign an agreement with ICAR.
- Establish District level Project Coordination Committee with the Deputy Commissioner as the Chairperson.
- Call for a meeting of Deputy Commissioners of project districts and brief them about the proposed project activities and their role in project implementation.
- SoCRAN to obtain approval from its Governing Council to issue a circular to all the Deputy Commissioners to facilitate convergence of MGNREGS and other government programmes with FOCUS.

#### Post Loan Effectiveness Phase

- Conduct a start-up workshop at state level to launch the project.
- GoN shall release an amount equivalent to the initial authorised allocation of received from IFAD through GoI to SoCRAN for pre-financing project activities. Thereafter, funds required for project implementation shall be released to SoCRAN as a part of the yearly budgetary exercise. Initial authorised allocation will be adjusted in instalments during the last 2-3 years of project implementation. This will enable SoCRAN to provide required advances to the implementing agencies and to ensure project implementation without disruption due to budgetary constraints.

### **b. Financial Management and Procurement**

#### Pre-Loan Negotiation Phase

- Open a bank account.
- Release INR 2 crore out of agreed INR15 crore of endowment grant to SoCRAN immediately after opening a bank account to undertake the start-up activities. GoN to make budgetary allocation in the budget of 2018-19 for the balance INR 13 crore which will have to be released in two instalments during 2018-19.
- Prepare AWP&B for the Financial Year 2018-19 and obtain concurrence from IFAD before obtaining approval from the Governing Council of SoCRAN. Include the same in the budget of the Department of Agriculture as grant-in-aid to SoCRAN. Refer to AWP&B of PY1 provided in PIM.
- SoCRAN to obtain approval of its Chairperson for procurement of vehicles and equipment as per the list approved for retroactive financing.
- SoCRAN to purchase furniture and equipment covered under the retroactive financing.

#### Post Loan Negotiation Phase

- SoCRAN to appoint a qualified and experienced Chartered Accountant/Cost Accountant as the Finance and Administration Specialist.
- Establish an accounting system using Tally.

#### Post Loan Effectiveness Phase

- SoCRAN shall delegate powers to the DPMs and the D&FAO to operate the bank accounts. District level procurement will be made in accordance with the financial powers vested with the respective DPM.
- Release funds to Districts as per AWP&B. Districts to release funds to FIGs and others as per approved AWP&B.



Total							

## 2. Implementation Phase

### a. Capacity building

- FAO to undertake Training of Trainers in various activities identified and priority to be given for nursery management.
- PMU to undertake training of all block and circle level staff using the trainers trained by FAO and training manual prepared by FAO.

### b. Land Use Planning

- Entrust the task of preparing land use maps for each village and also village resource maps (in case of villages without village resource maps) to the Remote Sensing Centre.
- Provide assistance to enhance capacity of the Remote sensing centre to upgrade its capacity to assist in land use planning activities of the project.
- Conduct training of the Village Councils and *Jhum* Resource Management Committees to understand the land use maps and also to make land allocation for *jhum* and other activities based on these maps.
- Based on the need, prepare 3 D models of the land use maps and undertake participatory land use planning exercise to allocate steep slopes for maintaining tree cover and moderate slopes for *jhum* and plantation crops.

### c. Better *Jhum* and fallow management

- Identify a Lead Farmer in each project village in consultation with the Village Council and *Jhum* Resource Management Committees. This task will have to be taken up by the Circle/Block level staff and Village level workers of the line departments.
- Youth (including women) and progressive farmers to be preferred as Lead Farmers.
- Take a commitment letter from the selected Lead Farmer to support project activities in the villages and to be the project contact point in the villages.
- Orient the Lead Farmers on their role in project implementation and their role in supporting FIGs and project target households.
- Conduct a training for all Lead Farmers to undertake nursery management and also train them in use of better seed and seedling, fertility management in *jhum*, low cost soil and water conservation measures, linear planting, environmental impact of *jhum* cultivation, FIG formation and management for better *jhum* and fallow management.
- The project has allocated INR 50,000 to support each Lead Farmer. Seek a plan from each Lead Farmer on utilization of this support for establishing a nursery or any activity that will become a model activity for the community.
- Provide support to the Lead Farmers in two instalments after signing an agreement with each Lead farmer. The amount to be released directly to the bank account of Lead Farmers in two instalments and should be based on the implementation of the agreed plan.
- Lead Farmers and Village Level workers to conduct a meeting of *jhum* farmers interested in taking up *jhum* and establish a FIG comprising about 20 farmers and each FIG member having about 20 associate members. Only one FIG per village will be established covering all *jhum* households
- Each FIG to open a bank account and prepare two plans covering: (i) *jhum* cultivation during the next cycle; and (ii) *jhum* to be left fallow.

- FIG to be trained in low cost soil and water conservation, better seeds and seedling, tree plantation, linear planting, fertility enhancement measures and techniques to continue cultivation on the land for more number of years.
  - The project support for better *jhum* in about 0.13 ha of land of each *jhum* farmer and also 0.18 ha of fallow land to flow through FIG bank account.
  - Each FIG to submit a plan for: (i) better *jhum*; and (ii) fallow management indicating the activities to be undertaken and the costs separately from; (i) centrally sponsored schemes; (ii) IFAD project; and (iii) beneficiary contribution.
  - Once the plan is approved by the DMU, FIGs to start implementation and the project to release funds directly to the bank account of FIGs based on progress in work.
  - In instances where water harvesting measures are required, the Lead Farmer will support the FIGs to prepare plans for the same and access funds either from the project or from other centrally sponsored schemes.
  - FIG support will be repeated during the third year of implementation subject to the farmers continuing the cultivation activities on the same *jhum* plot and taking up soil and water conservation activities.
- d. Support to Village Conservation Areas**
- Lead Farmer and the Village level workers in consultation with the Village Council to identify village conservation areas of about 20 Ha per village.
  - A FIG for village forest conservation to be established and a bank account to be opened.
  - FIG to prepare a plan for village forest protection, establishing nursery and for replanting of high value trees.
  - The project to release funds based on approved plans and also based on progress in implementation
- e. Support to settled Agriculture – Terrace Rice Cultivation**
- The Lead Farmer and the Village Level workers of the line departments to form a FIG comprising the terrace rice cultivation farmers. Each FIG to consist of about 10-20 farmers and each FIG member to have 20 associate members. Each farmer to get support for 0.25 Ha.
  - Each FIG to open a bank account and prepare a plan covering terrace rice cultivation.
  - FIG to be trained in SRI, use of better climate resilient seeds, azolla, rice and fish cultivation, in situ fertility management techniques and double cropping.
  - Once the plan is approved by the DMU, FIGs to start implementation and the project to release funds directly to the bank account of FIGs based on progress in work.
  - In instances where water harvesting measures are required, the Lead Farmer will support the FIGs to prepare plans for the same and access funds either from the project or from other centrally sponsored schemes.
- f. Support to settled Agriculture – Upland Farming**
- The Lead Farmer and the Village Level workers of the line departments to form a FIG comprising the terrace rice cultivation farmers. Each FIG to consist of about 10-20 farmers and each FIG member to have 20 associate members. Each farmer to get support for 0.25 Ha.
  - Each FIG to open a bank account and prepare a plan covering upland farming.
  - FIG to be trained in use of better horticultural practices, intercropping, water harvesting, soil fertility management.
  - Once the plan is approved by the DMU, FIGs to start implementation and the project to release funds directly to the bank account of FIGs based on progress in work.
  - In instances where water harvesting measures are required, the Lead Farmer will support the FIGs to prepare plans for the same and access funds either from the project or from other centrally sponsored schemes.

**g. Value chain – Production support**

- Identify clusters for undertaking cultivation of selected value chain crops.
- Identify two Community Resource Persons (CRPs) in each cluster in consultation with the Village Council and Village Development Boards. This task will have to be taken up by the Circle/Block level staff and Village level workers of the line departments.
- Youth (including women) and progressive farmers to be preferred as CRPs. CRPs should have good knowledge about cultivation of selected value chain crops.
- Take a commitment letter from the selected CRPs to support project activities in the villages and to be the project contact points in the villages.
- Orient the CRPs on their role in project implementation and their role in supporting FIGs and project target households.
- Conduct a training for all CRPs to undertake nursery management, fertility management, low cost soil and water conservation measures, linear planting, environmental impact of *jhum* cultivation, and FIG formation and management.
- Each CRP to prepare a plan for developing nursery of selected value chain crop and project to provide support to these CRPs to emerge as nursery entrepreneurs in the clusters.
- The CRPs and the Village Level workers of the line departments to form a FIG comprising the value chain farmers.
- Each FIG to open a bank account and prepare a plan covering value chain crop cultivation. Each farmer to get support for 0.5 Ha.
- FIG to be trained in use of better cultivation practices, intercropping, water harvesting, soil fertility management.
- Once the plan is approved by the DMU, FIGs to start implementation and the project to release funds directly to the bank account of FIGs based on progress in work.
- In instances where water harvesting measures are required, the Lead Farmer will support the FIGs to prepare plans for the same and access funds either from the project or from other centrally sponsored schemes.

**h. Value chain – Marketing support**

- PMU to establish a Marketing Unit in the State Agriculture Marketing Board.
- The Marketing Unit to identify youth interested in the aggregation of farm produce and marketing.
- The Marketing Unit to establish contacts with the companies from outside the state and assist the entrepreneurs of the state to establish market linkages.
- The marketing Unit to identify local units of processors and value addition units and make plans for quality improvement, expansion and rehabilitation.
- The Marketing Unit to identify community (i.e. FIGs) interested in setting up agro processing units in project locations.
- The Marketing Unit to develop market linkages and establish contract farming arrangements with the farmers.
- The Marketing Unit to facilitate farmers and entrepreneurs attend trade fairs and exhibitions, and organise buyer-seller meets and market exposure visits.
- The Marketing Unit to establish linkages with IDH India and introduce digital delivery of extension.
- The Marketing Unit to identify service providers for facilitating organic certification, sustainable agriculture or good agriculture practices to target premium markets.
- The Marketing Unit to identify locations for constructing common facility centres /collection centres and facilitate construction using project funds.

**i. Value chain – Livestock support**

- Identify a CAHW in each village in consultation with the Village Council and Village Development Boards. This task will have to be taken up by the Circle/Block level staff and Village level workers of the line departments.
- Youth (including women) and progressive farmers to be preferred as CRPs. CRPs should have good knowledge about livestock rearing.
- Take a commitment letter from the selected CAHWs to support project activities in the villages and to be the project contact points in the villages.
- Orient the CAHWs on their role in project implementation and their role in supporting livestock farmers.
- Conduct a training for all CAHWs in livestock management practices, preventive care, vaccination and first aid.
- CAHWs to conduct vaccination and deworming of pigs and all livestock.
- CAHW to identify persons interested in starting pig breeding unit, conduct training of these persons and provide support for establishment of breeding units.
- Identify persons for purchase of piglets with 50% project assistance and DMU to provide support for supply of piglets.
- Start demonstrations of sweet potato cultivation and supply of fish meal, soya beam meal and oil cakes for supporting pig rearing.
- Mithun and other livestock initiatives to be explored.
- Animal Husbandry and Veterinary Services Department to provide a plan for strengthening of boar stations and expansion of artificial insemination of pigs. The project to provide support to the department for these activities.

**j. Innovation Fund**

- Innovation fund guidelines to be reviewed and approved by the Project Management Committee.
- Call for concepts to provide funding under Innovation Fund.
- Review the concepts and seek detailed proposal from the selected agencies.
- Review the detailed proposals and sanction the proposals.
- Provide funding, monitor the performance and evaluate the results.

**k. Market Access**

- The Engineering Section of the Agriculture Department to identify road stretches requiring cross drainage structures.
- Prepare detailed design incorporating climate resilient features and Bill of Quantities and seek IFAD's approval in case the estimated cost exceeds the prior review threshold.
- Invite tender and evaluate the tender and submit the results to the appropriate approving authority of SoCRAN and also to IFAD in case the estimated cost exceeds the prior review threshold.
- Sign a contract with the selected contractors.
- Execute road construction work

**3. Project Management**

**a. Supervision**

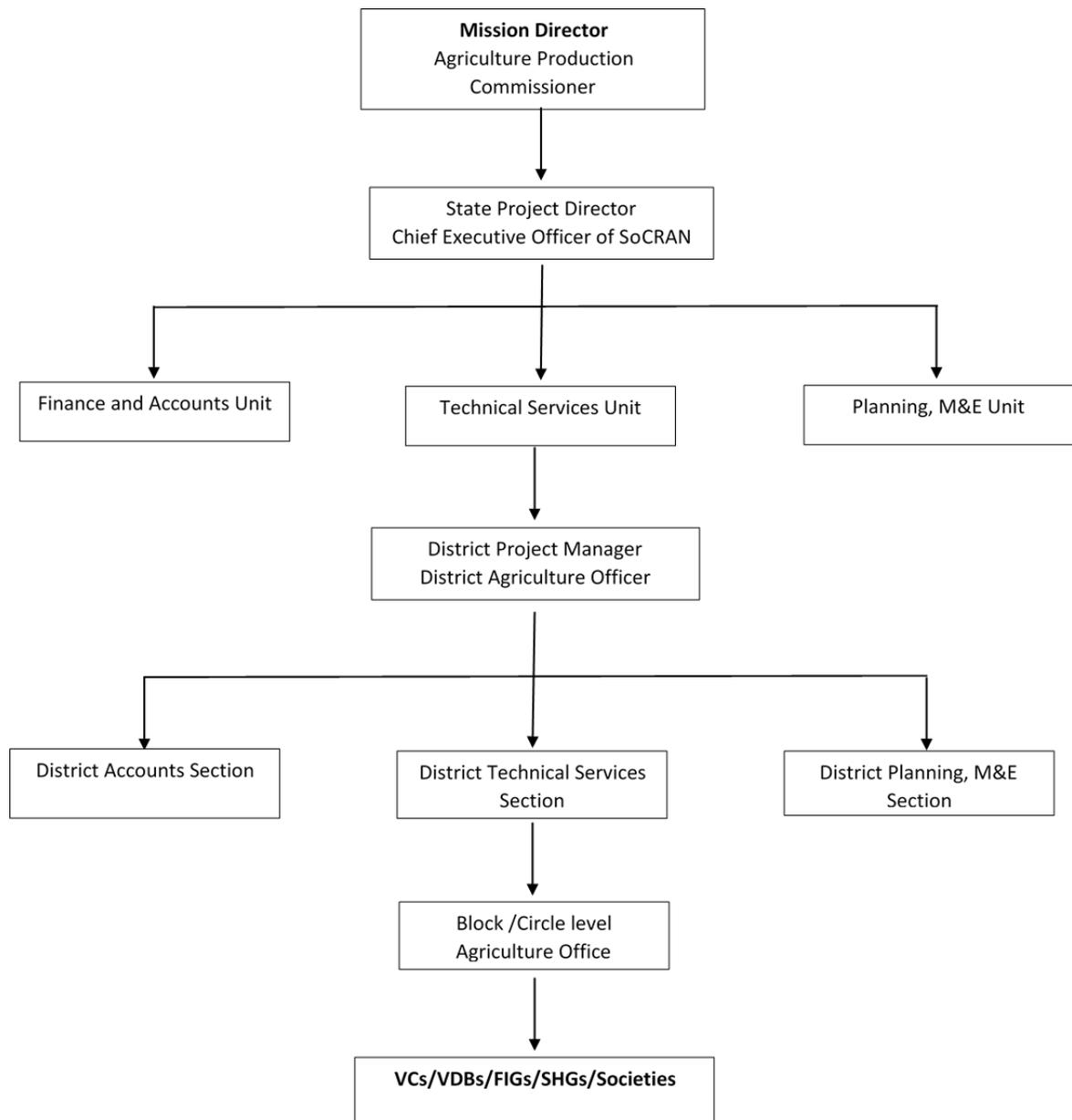
- PMU and DMU to undertake supervision of the field level activities and ensure implementation of project activities as planned.
- PMU to allocate a state level officer as the Field Coordinator for each district.
- PMU to submit regular reports to PMC and the Governing Council of SoCRAN.

- Action taken report to be submitted on the recommendations of IFAD's Supervision Mission reports within 30 days from the date of receipt of management letter.
- b. Preparation of AWP&B**
- PMU to provide indicative budget for each DMU.
  - Based on the yearly micro-plans of each villages indicative budget, AWP&B for each year to be prepared and submitted to PMU for approval.
  - PMU to consolidate and send the same to IFAD for comments and no-objection by 30 January every year.
  - Based on comments of IFAD, PMU to rework AWP&B and present it to the Governing Council for approval.
  - Based on this, include the AWP&B into the budget of GoN for IFAD and GoN contribution of the project.
- c. Fund flow**
- As per the AWP&B seek release of funds from GOM (IFAD and GoN).
  - Fund to flow from PMU to DMU and other government agencies: The fund recipients to submit statement of expenditure every month certified by the authorised signatory of DMUs and other government agencies.
  - Funds to flow from DMUs to FIGs and entrepreneurs: The fund recipients to submit statement of expenditure authorised by the Block/Circle Officers.
- d. Monitoring and Evaluation**
- FAO to engage an Agency specialized in M&E for conducting Baseline and impact assessment survey. Baseline survey to be undertaken during the first year of the project.
  - FAO to engage an agency for developing computerised management information system.
  - PMU to conduct annual outcome survey in collaboration with DMUs every year starting from second project year and submit a report by end January every year.
  - Maintain pictorial evidence of pre-project and post scenarios with respect to activities implemented under the project. Take google pictures of the *jhum* plot and other plots in each village every year for comparison purposes.
- e. Knowledge Management**
- Identifying emerging best practices and contributing to the knowledge management related activities of the project.
  - Prepare documentation of best practices and lessons for knowledge sharing and also place it on the web site of the project.
  - Undertake impact of project interventions on effectiveness of government programmes that have been converged with the project.
  - Develop knowledge sharing platforms for knowledge dissemination amongst DMUs and line departments.
  - Document replications resulting from such knowledge dissemination exercise.
  - Coordinate with ICAR to conduct regional workshops to disseminate the results of the *jhum* cultivation and settled agriculture.
- f. Reporting**
- Submit half yearly and annual progress reports to IFAD within 45 days of end of the reporting period.
  - Submit half yearly financial statements to IFAD within 45 days of end of the reporting period.
  - Submit ORMS (RIMS) report to IFAD by end march every year.
  - Submit Audited annual report with financial statements and management letter to IFAD by 30 September every year

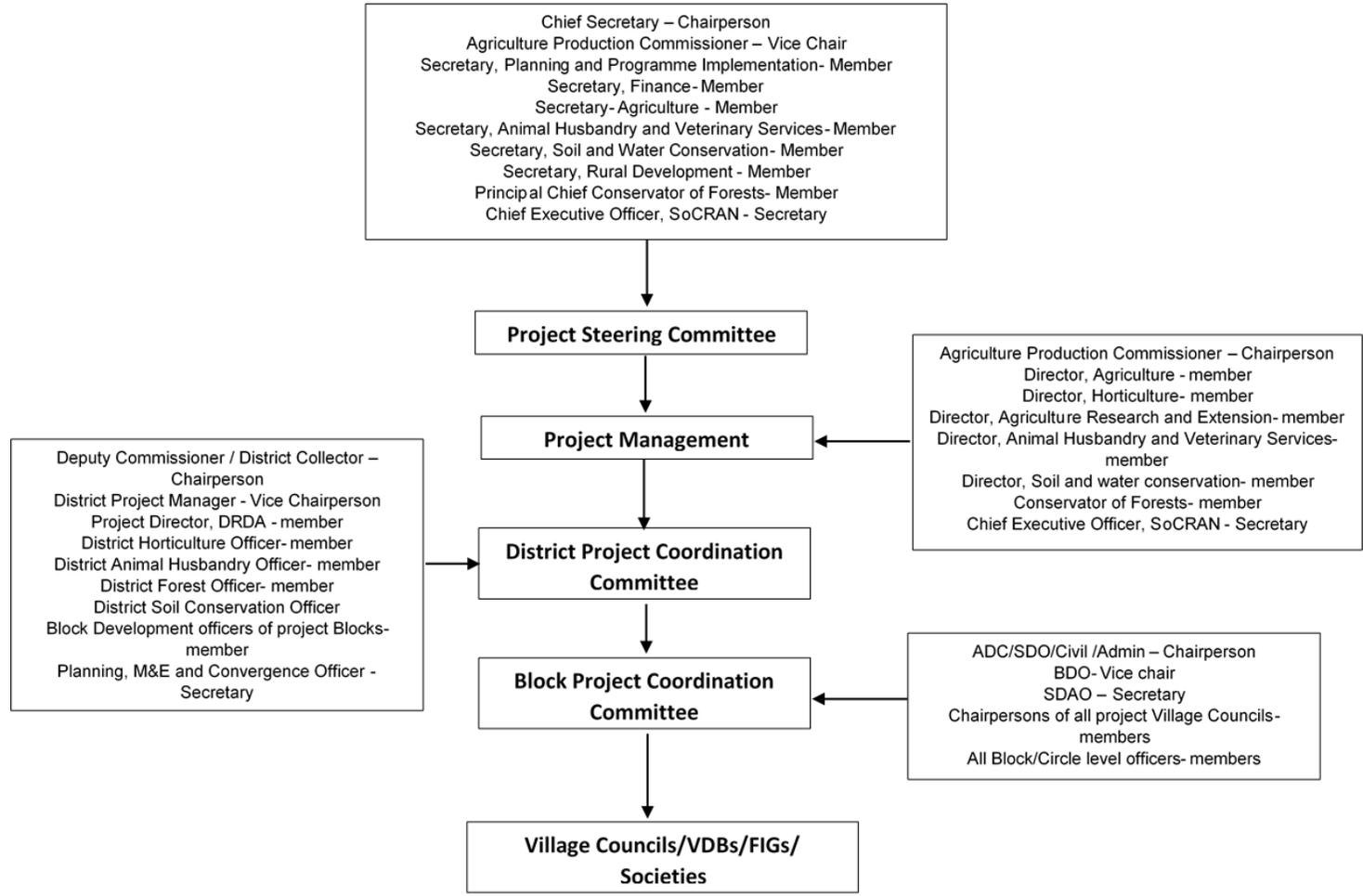
**g. Project Closing**

- Conduct a project completion impact assessment survey during the last quarter of the last project year
- Prepare a Project Completion Report and submit it to IFAD- end of last project year
- Make only committed expenditure during the period between project closing date and loan closing date.
- Reconcile and submit all withdrawal applications.

### Annex 1: Project Management Structure



**Annex 2: Project Coordination Structure**



**Annex 3: Project Phasing Plan**

S. No.	Activity	Pre project	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Project Closing
			2018-19	2019-20	2020-21	2021-22	2022-23	2023-24							
	<b>Preparatory activities</b>														
	Registration of SoCRAN														
	Appointment of SPD														
	Appointment of State Level Project Implementation Team (PMU staff)														
	Orientation of PMU staff and DCs in New Delhi														
	Appointment of Finance and Accounts Specialist														
	Appointment of District Project Implementation Team (DMU staff)														
	Orientation of DMU and block staff														
	Opening bank accounts														
	JRMC establishment														
	Benefit sharing system developed and notified														
	Review and approval of financial regulations of SoCRAN														
	Review and approval of PIM														
	<b>FAO - Technical Assistance</b>														
	Preparation of a TA agreement														
	Approval of TA agreement by GoN and IFAD														
	Signing an agreement with FAO														
	<b>ICAR - Knowledge Generation and Dissemination</b>														
	Preparation of a draft MoU with ICAR														
	Approval of MoU by GoN and IFAD														
	Signing an agreement with ICAR														
	<b>Capacity Building</b>														
	<b>Training of trainers by FAO</b>														
	Preparation of training modules and materials														

S. No.	Activity	Pre project	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Project Closing
			2018-19	2019-20	2020-21	2021-22	2022-23	2023-24							
	ToT on SALT														
	ToT on TRC														
	ToT on fruits and nuts nursery management														
	ToT on spice nursery management														
	ToT on animal husbandry														
	ToT on spice cultivation														
	<b>Training of field staff</b>														
	Training on SALT														
	Training on TRC														
	Training on fruits and nuts nursery management														
	Training on spice nursery management														
	Training on animal husbandry														
	Training on spice cultivation														
	<b>Component 1: Improvement <i>jhum</i> management</b>														
	<b>Sub-component 1.1: Better <i>jhum</i> and conservation</b>														
	<b><i>Jhum</i> improvement (first year <i>Jhum</i>)</b>														
	Obtain FPIC														
	Lead farmer identification and training														
	Lead farmer support - nursery development														
	Land use plan preparation and training														
	Allocation of <i>jhum</i> plot and FIG formation														
	FIG support and training														
	Low cost SWC structure construction														
	Supply of seeds and planting materials														
	<b>Fallow management (first year fallow)</b>														
	Allocation of fallow <i>jhum</i> plot														
	Low cost SWC works														
	Supply of seeds														

S. No.	Activity	Pre project	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Project Closing
			2018-19	2019-20	2020-21	2021-22	2022-23	2023-24							
	<b>Community Conservation Forest</b>														
	Allocation of CCF for development														
	Development of nursery														
	Low cost SWC works														
	Water source protection works														
	Planting of seedlings and management														
	<b>Sub-component 1.2: Support to Settled Agriculture</b>														
	<b>Terrace Rice Cultivation</b>														
	FIG formation and training														
	Supply of seeds and planting materials														
	Irrigation support														
	<b>Upland farming</b>														
	Identification of a <i>jhum</i> plot for upland farming														
	FIG formation and training														
	Low cost soil and water conservation works														
	Supply of seeds and planting materials														
	<b>Component 2: Value chain and market access</b>														
	<b>Sub-component 2.1: Value chains</b>														
	<b>Production support</b>														
	Cluster identification														
	CRP support (nursery management)														
	FIG formation and training														
	Supply of planting materials														
	<b>Marketing support</b>														
	Establishment of marketing unit														
	Participation in trade fair and exhibitions														
	Exposure visits														
	Buyer seller meets														
	Promotion agro processing units (bamboo etc.)														

S. No.	Activity	Pre project	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Project Closing	
			2018-19	2019-20	2019-20	2020-21	2020-21	2021-22	2021-22	2022-23	2022-23	2023-24	2023-24			
	Organic certification															
	Contract farming and market linkages															
	Construction of collection centres/CFC															
	<b>Livestock support</b>															
	CAHW support - vaccination															
	Boar station support															
	Pig breeding unit support															
	Pig rearing support															
	Support to other livestock															
	Demonstrations															
	<b>Innovation fund support</b>															
	Approval of innovation fund guidelines															
	Call for proposals															
	Appraisal of proposals															
	Sanction and implementation															
	Monitoring and evaluation															
	<b>Sub-component 2.2: Market access infrastructure</b>															
	Planning, survey and design for cross drain structures															
	Invite tenders & award works															
	Execution of works															
	Maintenance of defective works															
	<b>Knowledge Generation and Dissemination</b>															
	Settled agriculture in 50 ha on watershed basis															
	Impact assessment of settled agriculture interventions															
	Demonstrations															
	Regional level workshop for knowledge dissemination															
	<b>Planning, MIS and M&amp;E</b>															

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Nagaland

S. No.	Activity	Pre project	Year 1			Year 2			Year 3			Year 4			Year 5			Year 6			Project Closing
			2018-19	2019-20	2020-21	2019-20	2020-21	2021-22	2021-22	2022-23	2022-23	2023-24	2023-24	2023-24	2023-24						
	Engagement of an agency for MIS development																				
	Development of MIS software																				
	Baseline survey																				
	AWP&B and Procurement Plan submission																				
	Annual outcome survey																				
	Submission of ORMS																				
	Endline survey																				
	Project Completion Report																				

## Appendix 6: Planning, M&E, learning & knowledge management

### A. Logical Framework and Annual Work Plan & Budget (AWP&B)

1. The project logframe prepared as per IFAD's guidelines show the main activities that lead on to the outputs, outcomes and goals (Annex 1). The logframe will be the basis for preparing the AWP&B each year. The logframe will demonstrate a clear discernible *theory of change* with outputs contributing to outcomes and subsequently impacts at goal level of the project. The logframe that is included in the detailed design report will be refined periodically to reflect changes and modifications that become necessary during the course of project implementation. Particular attention will be paid to revise the logframe targets and indicators during the Mid-Term Review (MTR) of the project.

2. Each year the draft AWP&B will be consolidated by the PMU with inputs from District Project Management Unit (DMU). In formulating its input for the AWP&B, the DMU will consolidate proposals for activities that have come from project villages. The AWP&B is key planning document for FOCUS and will serve as the instrument for identifying specific targets and activities and in relating these to project outcomes and objectives. The overall responsibility for the preparation of the AWP&B would be assumed by the SPD and DPM in each district supported by M&E staff in PMU and DMU. The AWP&B would be presented as an integrated plan (but identified separately for each district).

3. The PMU would coordinate the preparation of a consolidated AWP&B which would be finalized with the approval of the Project Steering Committee (PSC). The AWP&B would be submitted to IFAD for its concurrence. If required, the PMU may propose adjustments or revision in the AWP&B during the relevant project year. The AWP&B can be disaggregated into quarterly segments for ease of implementation and follow-up. It would be also the foundation for monitoring the progress at the activity level and financial resource allocation and utilisation. IFAD guidelines would be used for the preparation of the AWP&B. *Guidelines for the preparation of AWP&B are included in the Project Implementation Manual (PIM).*

### B. Monitoring & Evaluation (M&E) in FOCUS

4. The main purpose of setting up an M&E system in any IFAD-funded project is to provide comprehensive, frequent, periodic and reliable data and information for sound result-based management and decision-making by the project management. The M&E system is designed to inform project management of whether implementation is going as planned and what corrective actions are needed in planning, target setting, budget allocation, etc. M&E system will general relevant knowledge based on analysis and disseminates lessons learned in a targeted and strategic manner to comprehend achievements in development objectives of the project. The M&E system is expected to perform and achieve four essential objectives: (a) to monitor and manage project progress; (b) assess project outcomes and impact; (c) capture and disseminate lessons learned and good practices; and (d) build local/community capacities for participatory M&E. However, the M&E system would operate in four interlinked domains:

a) *Setting up the M&E system* by identifying information needs to guide the project strategy, ensure effective operations and meet external reporting requirements (of IFAD and Government) – *prime responsibility* of the Manager Planning and M&E in the PMU supported by the Deputy Manager MIS and Manager KM, CI, Gender and IP, with inputs from the TA team (FAO). It will also be very useful to get inputs from IFAD at this stage. If needed an M&E expert can be employed as a short term consultant. The system and processes involved will be documented in the form of project M&E guidelines, which will form part of the PIM;

b) *Implementing the M&E system* - gathering and managing information/data – information will need to be collected from the eight DMU, the district offices of partner line agencies, and from the 600 project villages. The DMU M&E focal persons (Field Coordinators) will be supported by DMU Assistant Managers Planning, M&E and MIS in each district. Their prime responsibility will be the

monitoring of the progress of physical implementation against project targets and the AWP&B, along with collecting some key outcome data from each village - especially concerning changes in land use. Information on project outcomes and the results of processes will be collected via Annual Outcome Surveys (AOS) commissioned by the PMU M&E units and implemented via contracted enumerators and a data analyst. Impact evaluation surveys at project start-up, mid-term and completion will be contracted to an external agency;

c) *Involving project stakeholders in critical reflections* - once information has been collected it would be analyzed and discussed by project stakeholders (via monthly/quarterly/half-yearly/annual meetings)– prime responsibility of the Manager Planning and M&E, who will interact with project implementing partners including partner line agencies for a smooth information flow and results generation. This will include preparation of monthly/quarterly/half-yearly/annual physical and financial progress reports against AWP&B targets; and

d) *Communicating results of M&E* to all stakeholders including policy makers, project participants, Government and IFAD. The key combined M&E results will include Annual Progress Report, Mid-Term Review Report and Project Completion Report<sup>44</sup>. As part of good practice M&E such report will include details of project implementation and adequate information about what has been achieved and worked well. However, in the end, what makes the difference is how people interact, how ideas are shared and developed, and by doing so, how people are motivated and supported to learn and contribute to benefit all by meaningfully investing in rural people.

5. **M&E framework.** FOCUS will set up its M&E system following IFAD's M&E guidelines<sup>45</sup>. The basic M&E framework to support in development of M&E system is the systematic collection, analysis and reporting of information/data at three different levels of project implementation results: **(i) outputs** (from inputs and activities); **(ii) outcomes**; and **(iii) impact**, encompasses result-chain approach. A key element of the M&E framework is the M&E matrix - an expanded version of the logframe which identifies exactly when information will need to be collected and the methods of collection. The overall M&E framework will also include other M&E tasks annually or during the course of project implementation. These include conducting / reporting Annual RIMS, Annual Outcome Surveys, and Baseline & Completion Impact Assessments. The project will also carry out a Mid-Term Review and draft a Project Completion Report following IFAD guidelines.

6. **Output monitoring** will measure the progress of activities and achievement of outputs against annual targets in the annual work plan & budget (AWP&B) for each project component. AWP&B outlines the inputs and activities to be undertaken and data on outputs would be collected or measured for each indicator at the end of each month/quarter/year. This can be linked to the financial expenditure on the concerned activities, and data will be stored and report via a computerised Management Information System (MIS). The type of output data to be collected and monitored will be carefully dovetailed with the **project logical framework indicators**. The computerised MIS will also record village profiles for each village where the project is working, which will be drawn up before work starts to collect basic human, economic and natural resource information against which progress can be measured. The Participatory Land Use Plan (PLUP) will form part of this benchmark information and the MIS will record the implementation of the PLUP. Physical and financial progress data and reports for each component/sub-component in each village will be recorded in the computerised MIS. Data would be collected by partner line agencies, the Village Committee, the Agricultural Field Assistants, Veterinary Field Assistants and community service providers such as CAHWs. Where required data will be disaggregated by gender, age and social groups, particularly related to training and access to services. Output monitoring data are provided in Annex 2.

7. Although output monitoring would appear to be a straightforward process, the experience of a number of IFAD projects in India and elsewhere have highlighted the need to pay adequate attention to the details of how data is collected (formats used, frequency of data collection, etc.) and reported.

---

<sup>44</sup>For each of these reports, IFAD's appropriate guidelines would be provided and IFAD will support the project in understanding and applying these guidelines.

<sup>45</sup>See *Managing for Impacts in Rural Development – A Guide for Project M&E*, IFAD.

Overlapping components can mean households participate in more than one activity with the risk of double counting when calculating the number of households reached by project services. These problems can be overcome by training of staff responsible for progress reporting to use a common reporting format and carefully defining how participating households will be counted. The PMU M&E Unit will take the lead in harmonizing the different formats for data collection and reporting, and it at all possible a list of all households in each village will be maintained in the MIS - referenced by village geocode numbers and the head of household's national identify card (Aadhar card) number.

8. **Outcome monitoring** measures the immediate changes coming about as a result of project interventions. A few outcome indicators are shown in the project logical framework, but others will need to be added to create a results chain of evidence of change linking project outputs to the objective and goal. However, it is difficult to collect information from all households on indicators such as improved soil moisture, adoption of improved methods or increases in sales of commercial crops, the project will conduct Annual Outcome Surveys (AOS) as per IFAD's guidelines<sup>46</sup>. An AOS involves interviewing a sample of 400 to 800 farmers/households with a short questionnaire. Outcome surveys may also be carried out on a thematic basis in FOCUS in order to cover a specific area of project intervention, such as a specific value chain (e.g. spices) or sub-sector (e.g. mithun). Thematic Outcome Surveys (TOS) are needed where the number of households involved in the value chain or sub-sector is too few to generate a reliable sample in an AOS<sup>47</sup>. Further outcome indicators in the logframe are changes in the period of *jhum* cultivation, the area of *jhum* cultivation and the length of the *jhum* cycle, along with area of community conservation forest. These indicators will be collected annually from each VC with the LPUP providing a baseline against which to measure changes.

9. Related to outcome monitoring is **process monitoring**, which involves monitoring the processes leading to outputs and outcomes. Examples of specific areas where progress monitoring will be useful in FOCUS may include adoption and effectiveness of PLUP, functioning of farmers' organisations and community service provision. Information on these may be gathered via Participatory M&E or PME (see section on PME below), as well as from the records of VCs and FOs. An annual rating of VCs in terms of their implementation of PLUP and related activities is included as a logframe indicator at the outcome level. In addition, the project can undertake specific studies related to social inclusion, natural resource governance, traditional knowledge, etc.

10. **Impact evaluation** is the process which will assess the contribution of project activities in achieving the overall goal of the project. The main tool for impact evaluation will be baseline and end-of-project surveys of project households. These surveys will be coordinated by the PMU M&E unit and FAO will engage an external agency, with specific expertise in such assessments. The indicator data to be collected by these surveys include those shown at objective and goal levels in the project logframe, as well as on outcomes and outputs in order to show evidence of a results chain from project activities, through outputs and outcomes to objectives and goals. This helps relate changes in impact indicators to participation in project activities and delivery of project outputs, and also to other logframe. *Draft ToR for impact evaluation surveys has been included in PIM.*

11. Information on two of the indicators at objective level in the project logframe are not suitable for data collection via a sample household survey. The first of these is an indicator for the vegetation in *jhum* fallow land. This would be measured in terms of the density of plants and diversity of plant species (for diversity the Shannon index could be used). This work would need to be contracted to an agency with expertise in biology and upland ecosystems with surveys of sample sites being carried out at baseline, mid-term and completion.

12. The second indicator is the increase in farm income and income for farm households per day that they work. Although this question could be included in a household survey (or data collected in

---

<sup>46</sup> See Designing and Implementing ANNUAL OUTCOME SURVEYS -- a guide for practitioners –IFAD, 2016

<sup>47</sup> For example, if only 3,000 households are involved in dairy value chains, this is only 5% of the total of 62,000 participating households. An AOS may only cover 600 sample project households, of which around 30 (5%) would be involved on milk production, which is rather few to provide a reliable sample. Moreover, a thematic survey can be more focused and so obtain more detailed information on the particular value chain interventions and resulting outcomes.

the survey on farm inputs and outputs), experience shows that this is unlikely to yield useful data. Farm households are rarely able to report input and output data for individual crops with any degree of accuracy. This is made even more difficult for projects in upland area where households are rarely able to report on crop areas (land areas are not measured or known) and volumes of inputs and outputs. It is therefore proposed that this data be collected by a small team of agricultural economists using a range of tools such as focus group discussions and case studies. The validity of key information from these sources will be confirmed using data from AOS and other surveys. Such key information could include the mix of crops grown, input use and overall production levels.

**13. Participatory Monitoring and Evaluation (PME):** This tool will be used particularly for outcome monitoring. At project level, one of the strategies could be to organise an annual workshop in which the participating *jhum* and settled agriculture farmers, livestock producers, women, progressive farmers, representatives from FOs, private sector representatives, partner line agencies, and banks, etc., would be given the opportunity for sharing their views about the project and identify mechanisms for improvement. In PME, the primary stakeholders - the project target communities – are active participants in all stages of project cycle, not just sources of information. PME will also focus on building the capacity of the local communities to analyse, reflect and take decisions and actions. PME attempts to provide opportunities for joint learning of various stakeholders at various levels of the project cycle. PME facilitates greater stakeholder commitment and ownership on the project activities, in turn empowering them to take corrective actions to help themselves. In the field implementation and community level, participatory M&E is a kind of social process; it generally involves intense negotiations between different target communities having different needs, expectations and worldviews. In a way PME is also a kind of grassroots political process which addresses issues of equity, power and social transformation. Above all, PME could be a highly flexible process, continuously evolving and adapting to the programme specific circumstances and needs. PME is but the building block for successful M&E system in all IFAD projects and the project staffs will be oriented and sensitized on the need for sharing of project information and knowledge on regular basis with all stakeholders including the project target communities with open mind and transparent attitudes.

**14. RIMS indicators.** The Results and Impact Management System (RIMS)<sup>48</sup> of IFAD generates annual report tables on a number of first and second level results indicators that correspond to the output and outcome indicators (of the project logframe). IFAD has produced a standard list of these indicators, but only some of these will apply to an individual project. Prior to mid-term review, the project will report on only the *first level results*, but after the mid-term report it will report on *second level indicators*. IFAD's RIMS Handbook (now being up-dated) provides clear guidelines on whole range of conducting, measuring and reporting RIMS results. The selection of first level indicators and second level indicators will be done on the basis of specific project characteristics or relevance to FOCUS, which the project would develop and discussed during project start-up workshop. All indicators would be reported on sex-disaggregated basis and to the extent relevant differentiation of results by gender, age and other social groups would be made. Draft list of *RIMS indicators have been included in the PIM*. New RIMS core indicators are provided as Annex 3.

**15. Mid-Term Review (MTR).** A mid-term review would be conducted at the end of project year three (PY 3), to assess the progress, achievements, constraints and emerging impact and likely sustainability of project activities and make recommendation and necessary adjustments for the remaining project period. The MTR would be carried out jointly by FOCUS and IFAD, and will also assess the role of the implementing agencies, community institutions, the private sector, banks, etc.

**16. Project Completion Review and Report.** At the end of the project, the PMU will draw up a Project Completion Report (PCR) based on IFAD's guidelines<sup>49</sup> for project completion. IFAD will provide support to the project in this work. IFAD will carry out a PCR Validation on the basis of the

---

<sup>48</sup>RIMS First and Second Level Results Handbook, IFAD, April 2014. This is now under revision

<sup>49</sup> Guidelines for Project Completion Review, IFAD, October 2015. This includes stakeholder workshops to gather feedback on results and lessons learned

project PCR at least 3 months before the loan closing. IFAD's Independent Office of Evaluation (IOE) may also undertake a formal Evaluation of the project well after the closure of the project (which is usually known as Project Performance Assessment or PPA).

17. **Annual Outcome Survey (AOS).** The AOS is a short and quick household survey that is undertaken annually by project staff. This aims to provide regular or timely information about results that can be used to take corrective action during project implementation. In particular, the AOS is intended to set out to identify positive and negative changes taking place at the household level, provide early evidence of project success or failure, and also assess targeting efficiency. These changes are measured relative to non-project households and normally an AOS covers a small sample of 200 to 400 households selected randomly in project areas (project beneficiaries) and 200 to 400 households selected randomly in non-project areas (non-beneficiaries, to be used as a comparison group). However it may be difficult in this project to find villages where project interventions are not being implemented if the JICA-funded project with the Forestry Department covers most non-FOCUS villages with a similar set of interventions. This means that an AOS for FOCUS will not have a control group, and it may be worthwhile expanding the project sample to say 600 households to enable comparisons to be made between different project groups or household categories.

18. **Special thematic/diagnostic studies.** The project may carry out, or commission, a number of relevant thematic special studies. The project will allocate budget in its AWP&B and some of the thematic studies could include, for example, health and nutrition among the tribal population; social inclusion and exclusion; access to, and management of, common property resources; forest/ NTFP based livelihoods; and migration dynamics. All the studies must be carried out through gender lens.

### C. Gender and vulnerable groups in M&E

19. Integrating gender dimension in M&E and reporting on gender through sex-disaggregated data is imperative in all IFAD projects. Integrating gender into M&E system helps to measure the extent to which a project has addressed the different needs of women and men, and has made an impact on their lives and overall social and economic well-being. It also facilitates to improve project performance during implementation, allows for mid-term course correction, and makes it possible to derive lessons for future projects. Project reports will clearly identify the extent to which the project has reached women and men the degree to which they have benefited from project activities and outputs. This involves gender disaggregation of data on project activities and outputs to see if women have fully participated in group membership, group leadership, training, livelihoods activities, credit activities and enterprise support. Further, gender disaggregation is needed to see if women have benefited in terms of outcomes - such as increasing production - or impacts - increased income and assets. As some indicators are better measured on a household basis, these need to be disaggregated by gender of the household head. Special studies may also be undertaken on measures to reduce women's drudgery and on other issues regarding women's welfare and empowerment (for example access to health services, and household decision making). Some ideas of gender-sensitive monitoring indicators<sup>50</sup> in FOCUS could be developed using the followings (Table 1):

**Table-1: Examples of gender-sensitive indicators for M&E**

Particulars	Questionnaire / issues to identify gender-sensitive indicators
Gender division of labour	<ul style="list-style-type: none"> <li>- What is the gender division of labour or work burden at the household level? In other words, who is more responsible for working in the household, women or men?</li> <li>- When the project got started, have men started sharing household work with women, or do women now have to work more?</li> </ul>
Gender differences in access and control over resources (e.g. income, employment, land, social)	<ul style="list-style-type: none"> <li>- Who controls income in the household? Do the man and woman equally contribute in decision making on expenditure relating to household income?</li> <li>- Who participated in the project training more, female or male? What have been the outcomes of training in applying the knowledge to household economics?</li> </ul>

<sup>50</sup> Modified from M&E Manual Guide for IFAD funded Projects in Vietnam.

Particulars	Questionnaire / issues to identify gender-sensitive indicators
services)	<ul style="list-style-type: none"> <li>- In whose name is the land under the household control? Do both man and woman equally contribute in deciding the types of crops to be grown in the household land?</li> <li>- What different kinds of social services do the man and woman receive or enjoy? What influences do these services have into the woman's health and ability to access information?</li> </ul>
Gender differences in information and knowledge	<ul style="list-style-type: none"> <li>- Are there gender differences in accessing the same information (about amount of information and how to access)?</li> <li>- Are there any differences in economic opportunities between man and woman due to different amount of information accessed?</li> </ul>
Decision making patterns in the household and community	<ul style="list-style-type: none"> <li>- Who in the household has the decision power? (Compare with the contribution of man and woman in the total household income; whether person contributing the most in total income has the decision power).</li> <li>- The participation of female and male in activities of community (the voice and respectfulness opinions in community activities).</li> </ul>
Women and men's attitude and self-confidence	<ul style="list-style-type: none"> <li>- The difference between female and male about self-confidence in all different project and community activities (on participation and responsibility).</li> </ul>
Gender differences in vulnerability and coping strategy	<ul style="list-style-type: none"> <li>- Differences in dealing problems and in adjusting to external shock.</li> </ul>

20. **Vulnerable groups in M&E.** The vulnerable categories are women headed households (WHH), households having person with disability (PwD) and households where members have migrated away. In line with IFAD's targeting strategy and Policy on Engagement with Indigenous and Tribal People, the M&E system will capture the following indicators:

- No. of traditional /indigenous crop varieties recovered and conserved.
- Area under traditional /indigenous crop varieties and changes over the project period.
- No. of traditional soil and water conservation technologies replicated.
- No. of traditional settled agriculture technologies replicated.

#### D. Implementation Responsibilities of M&E

21. **M&E Staff:** The project will recruit staff experienced in M&E for the PMU and DMUs. As already mentioned, the M&E staff would be trained appropriately by the project and IFAD. In the first year of the project, the M&E staff will focus on establishing a functional M&E system for the project. This would include reviewing the results framework and indicators with the project management and IFAD to ensure that they are relevant, refining the M&E plan and M&E matrix, assessing staff training needs on M&E, organising M&E training at all level (PMU, DMU and village), coordinating and conducting the baseline survey, designing the various reporting formats, developing databases, setting up the MIS, and training of the VCs and village level staff on some elements of data to be monitored, etc. From the second year, the M&E staff will amongst others focus on timely conduct of AOS, annual RIMS Report, etc. (see also under step by step implementation arrangements).

22. The PMU Planning and M&E Manager will be responsible for coordinating project planning - such as consolidation of the AWP&B. This person will also oversee the preparation and submission of project reports (such as Annual/Half Yearly Progress Report, RIMS and AOS) - with support from the Manager KM. IP, Gender and IP. M&E staff would also support the PD during IFAD supervision, implementation support, MTR and PCR missions, and will organise all data and information relating to the project for reference by the IFAD missions.

23. **Technical support agency for M&E.** The project may obtain the services of a technical agency via the proposed FAO TA. This technical agency would build the capacity of the project M&E staff and provide specialised advice and backstopping. Capacity building in M&E for project staff will

be undertaken through structured orientation training programme, refresher training, and information sharing.

**24. Key M&E tasks and implementation arrangements during project implementation cycle.**

The overall key M&E tasks and implementation steps during various cycles of project implementation are summarised in Table 2 below:

**Table-2: Summary of key M&E tasks for FOCUS**

Key stages of project cycle	Key M&E tasks <sup>51</sup>
Project initiation (loan effectiveness) to project start-up workshop (usually PY 1)	<ul style="list-style-type: none"> <li>• Recruitment of all M&amp;E staff</li> <li>• Review the project design/detail project report in relation to M&amp;E with key stakeholders;</li> <li>• Review the PIM in relation to the section on M&amp;E and KM in particular;</li> <li>• Develop a detailed M&amp;E plan and system including appreciation of project M&amp;E culture and practices that would be emerging taking into consideration the various project results chain;</li> <li>• Review / develop various M&amp;E formats (data collection and reporting formats);</li> <li>• Undertake and complete the baseline surveys (outsource/procure an agency);</li> <li>• Develop project MIS (outsource the task / procure an agency);</li> <li>• Prepare the KM strategy and action plan; integrate M&amp;E and KM.</li> <li>• Prepare the knowledge management strategy and link it up with</li> <li>• Put in place necessary conditions and capacities for M&amp;E to be implemented.</li> </ul>
Main implementation period	<ul style="list-style-type: none"> <li>• Ensure all data and information needs for management and key stakeholders are regularly met;</li> <li>• Coordinate information gathering and analysis, as also data storage and data management;</li> <li>• Facilitate and support regular review meetings and processes with all implementers and stakeholders;</li> <li>• Prepare for and facilitate the project reviews/ review meetings (monthly/ quarterly/ half-yearly/yearly or annual);</li> <li>• Coordinate/prepare for supervision missions; implementation support missions, etc.; prepare the action taken report on recommendations of IFAD's missions.</li> <li>• Organise meeting of IFAD mission and government during supervision missions, etc.</li> <li>• Conduct focused studies on emerging questions including documentation of good practices and missed opportunities (those not working well; suggest alternatives);</li> <li>• Disseminate / communicate project results with various stakeholders;</li> <li>• Prepare/undertake and ensure timely submissions of various reports as per IFAD's norms and requirements including documentation of success case studies, half-yearly/annual progress report, Annual Outcome Survey, Annual RIMS Report, etc.</li> <li>• Prepare the draft Exit Strategy cum Post Project Sustainability.</li> <li>• Consolidate the various types of supervision mission and implementation support mission feedback.</li> </ul>
Mid-term	<ul style="list-style-type: none"> <li>• Collate information for the mid-term review (MTR);</li> <li>• Coordinate for conduct of the MTR;</li> <li>• Facilitate internal review processes to prepare the external review processes.</li> <li>• Adjust the M&amp;E system as required.</li> <li>• Revise the draft exit strategy and post-project sustainability.</li> <li>• Organise project workshop to review, share and disseminate changes proposed at MTR with all project staffs and partners.</li> </ul>
Phasing-out and completion	<ul style="list-style-type: none"> <li>• Assess what the implementers and communities can do to sustain project interventions, impacts and M&amp;E/KM activities could be sustained after closing down; implement these specific ideas; revise and update the project exit strategy and post-project sustainability strategy or action plan.</li> <li>• Undertake end-line surveys / impact studies (outsource/procure an agency)</li> <li>• Organise workshops to review the key elements of project exit and post-project sustainability strategy.</li> <li>• Organise workshops and field studies with key stakeholders to assess project impacts; identify lessons learned for next phase of the project and/or other projects to be designed in future.</li> </ul>

<sup>51</sup>Should be read along with the overall KM tasks to have link between M&E and KM

Key stages of project cycle	Key M&E tasks <sup>51</sup>
	<ul style="list-style-type: none"> <li>• Prepare the Project Completion Report (PCR) as per IFAD’s guidelines.</li> <li>• Facilitate and coordinate IFAD’s PCR validation mission.</li> <li>• Organise closure workshop to share and disseminate lessons learned with all key stakeholders.</li> </ul>

25. **Annual M&E Activities Calendar.** The key M&E activities and reporting requirements to be performed by the project by date/month are illustrated below. This does not include the higher level project coordination meeting such as Project Steering Committee (PSC) meeting.

Key activities	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Annual Progress Performance Review												
AWP&B preparation and submission												
Annual Progress Report												
Half-yearly Progress Report												
Annual RIMS Report submission												
Annual Outcome Survey Report submission												
Annual Audit Report submission												
Quarterly Results Report Preparation (Outputs)												
Quarterly Review Meetings at PMU												
Focus Groups and Key Informant Interviews (Theme or Output based)												
Monthly physical & financial data collection/ MIS entry												
Village PME meetings												

26. **Management Information System (MIS).** The project will establish an MIS system in the first year of project implementation. The MIS would generate, monthly, quarterly and annual progress reports on physical and financial progress and on project outputs and outcomes - and may have a GIS interface so that key data can be shown on maps. The MIS may, if feasible, be developed include information on individual households and so track their participation in different project activities. However experience shows that it would be wise to be cautious in developing a very comprehensive MIS system. Attempting to gather and record a large amount of detailed information can result in data overload, with no time to check to accuracy and validity of data entered, and no time to properly analyse and interpret the information in the MIS.

27. The Manager Planning and M&E staff would work with the PMU Deputy Manager MIS. Via the TA component, suitable software/computing company would be contracted to develop the MIS software (or adapt an existing package) and then train staff and provide continuing support. The FAO TA will provide assistance in the process of drawing up a system specification and will be responsible for its procurement. FAO will also engage an agency to set up computerised MIS. It is likely that the system will need to be modified in the light of practical experience and emerging needs. In each district there will be an Assistant Manager Planning, M&E and MIS who will be responsible for operation of the MIS in the DMU. However much data will be actually entered by other people (such as the staff of partner line agencies and DMU Agricultural Officers. If tablet computers are used

down to the village level, then VCs, AFA, VFA and CAHW may all enter data. A major part of the job for MIS staff at the district level will be helping these people enter accurate and complete data, and checking on data quality (this work may need additional staff in the DMUs). Once the system is operation the FAO shall employ a specialist to monitor the performance of the system who shall take a lead in adapting and refining the system so that it works better and meets the needs of project management. To do this will require close contact with the team in the software supplier. The TA will also pilot the use of tablet computers for field data collection and monitoring. This pilot must take place before the system is rolled out across the project.

## **E. Reporting and Communicating Project Results**

28. As part of the MIS, the PMU will develop common reporting formats to be used by all the project entities. All data would be gender disaggregated and the analytical reports are to be used for taking timely corrective actions and to learn from implementation experiences to further improve project management effectiveness and efficiency. As required, monthly, quarterly and annual reports may be produced at different levels within the Project. For IFAD corporate reporting the following are needed: Half-yearly progress Report (only against the AWP&B), Annual Progress Report, RIMS Annual Reports and AOS.

29. Monthly Progress Reports (MPR) will be prepared from the project MIS developed to generate information at the village levels for reporting to the DMU and onward to the PMU. Information in the report will contain component/sub-component wise physical and financial progress against annual targets. This report will form the basis for monthly progress reviews at all levels and subsequently feed to the quarterly progress report.

30. Quarterly Progress Reports (QPR) will have physical and financial progress with information on challenges encountered in implementation and corrective actions and solutions to address constraints as well as communities response to project initiated activities. QPR would also be useful for consolidating RIMS Annual Report each year to be carried out for a calendar year (1<sup>st</sup> January to 31<sup>st</sup> December - although the RIMS reporting period is now flexible).

31. Half yearly and Annual Progress Reports (HR/APR) will be prepared from information compiled by the PMU on component/sub-component wise physical and financial progress, and loan category wise financial progress. The information will be generated via the project MIS and could contain summarised information and data from villages and findings from PME and annual outcome surveys, showing progress towards development objectives, usefulness of training, benefits from component/sub-component interventions, gender issues and knowledge management. The reports could be dovetailed with case studies of successful interventions. The PMU will prepare the half-yearly progress report by the end of October (primarily progress against the AWP&B) and a more detailed annual progress report by April end to mid-May every year and send to IFAD India Country Office and other stakeholders. *PIM will contain model format or guideline for preparing the Annual Progress Report.*

32. RIMS Annual Report. The key RIMS indicators corresponding to the project outputs and outcomes by components are included in the project's Logical Framework and will be reported annually by the end of January every year. In the first year the project information on RIMS first level indicators (list of indicators included in RIMS Handbook) associated with outputs would be reported. After mid-term review the report will include 2<sup>nd</sup> level indicators.

33. Annual Outcome Survey (AOS) Report: Each year the project will undertake AOS and report to IFAD. The first AOS will be done in the second year of project implementation after completing a full first year of project implementation. The AOS would be for a calendar year of January to December. Each year the project will submit the AOS report by February.

34. Mid-Term Review Report (MTR): IFAD in cooperation with the GoN and FOCUS would undertake a mid-term review by the fourth year of the project lifecycle (or as would be specified in financing agreement) to review project achievements and implementation constraints including issues

relating to loan administration and financial management. Any corrective measure would be addressed at MTR. A mutually agreed action plan will be prepared based on the MTR findings.

35. **Project Completion Report (PCR):** As the project reaches completion point, the PMU would prepare a draft Project Completion Report based on IFAD's Guidelines for Project Completion. IFAD and the Government will then carry out a Project Completion Review and validation based on the information in the Project Completion Report and other data. This review is usually done during the intervening period of project completion date and loan closing date.

36. **Case studies on project innovations and success stories<sup>52</sup>:** The project will undertake case studies of project innovations and success stories on regular basis and report them through Annual Progress Report and in the India Country Newsletters. The project will also report them and communicate through its IFAD Asia webpage managed by IFAD and on the project's own webpage.

## F. Learning and Knowledge Management (KM)

37. **KM Staffing:** In line with IFAD's policy, learning and knowledge management would be key element in FOCUS with integrated approach in which M&E will feed to generating learning for the project and from the project. While the KM functions in the project would be cross-cutting and would be responsibility of every sector head or manager, the project will have KM officer or KM focal person in PMU. Knowledge services would be important element in FOCUS management systems. The KM Officer / KM focal person and all relevant staff would be trained in KM. The M&E and KM units of the project at PMU will closely function as M&E will provide the building blocks for KM in the project.

38. **Knowledge Management in FOCUS.** The project will prepare a Knowledge Management Strategy building on IFAD's Knowledge Management Strategy in the first year of project implementation. This will be the responsibility of the Manager KM, CI, Gender and IP. Staff responsible for KM activities at the district level would undergo training on KM. *An outline of the ToR of the KM focal person and KM training module will be provided in the PIM.*

39. The project **learning system** would comprise of various activities relating to M&E and KM functions. Some of these would include monthly, quarterly and annual review meetings; capturing information on progress, lessons and finding solutions for implementation constraints. KM and lesson learning would be used as a tool for internal learning by project stakeholders such as staff of various implementing agencies, participating villagers and farmers, both women and men. This will involve a series of regular meetings at village/cluster, block (where useful), district and state levels. At these meetings, progress of project activities will be reviewed and learning from success and reasons for failure identified. Participatory tools such as "most significant change", "story telling" and "participatory monitoring and evaluation" (PME) may be used at these meetings.

40. The project will be encouraged to learn from KM culture and practices of experiences of other IFAD projects in India. A tested approach in sharing knowledge are "Learning Routes" - a continuous process of in-the-field training that seeks to broaden and diversify the markets of rural technical services, placing special value on the best experiences and knowledge of institutions, associations, communities and rural families. Each Route is organized thematically around experiences, case studies and best practices on innovative rural and local development. The project will have the opportunity of accessing the learning routes experiences from other IFAD projects in the country and outside.

41. **Enhancing Use of Knowledge from M&E.** In all IFAD-funded projects, each monitoring and evaluation activity has a purpose. The significance of M&E in projects are critical; when done and used correctly, M&E contributes to strengthening the basis for managing results, foster learning and generate knowledge for all the stakeholders including IFAD, Government and Communities. Thus, knowledge gained from M&E is at the core of IFAD-funded projects. IFAD and government will use

---

<sup>52</sup>IFAD's Communication Division has brought out a guideline for preparing case studies in the field. This will be provided at the time of start-up workshop.

and apply learning from M&E to improve the overall performance and quality of results of ongoing and future projects and strategies. M&E is now oriented to generating knowledge and learning. Projects are now designed with emphasis not only on the inputs, outputs and processes but on development results as outcome. FOCUS would use its M&E data and information for improved learning, enhancing accountability of the project for learning, use the knowledge and learning from M&E for project planning, implementation and improved monitoring, and document innovations and success stories so as to contribute in the overall local, national and global knowledge pool in development particularly in the areas of rural development and poverty eradication in the era of climate change.

42. **Knowledge Products, Dissemination and Communication.** FOCUS will generate various knowledge products such as publications, documented case stories, photo documentation, videos, charts, manuals, posters, etc. However, for meaningful learning and knowledge sharing, knowledge products should be of quality with clearly identified audience and purpose. The characteristics of good knowledge products<sup>53</sup> have the following elements:

- Based on an assessment of needs and demand for the product among targeted users to ensure relevance, effectiveness, usefulness and value of the knowledge product.
- Designed for a specific audience, taking into consideration functional needs and technical levels.
- Relevant for decision-making needs.
- Knowledge products brought out timely.
- Written in clear and easily understandable language.
- Data is presented in a clear and coherent manner; all data and information being from project M&E without any bias, both successful and failure cases.
- Knowledge products developed through participatory process and validated through quality assurance processes with relevant stakeholders or peer reviewed appropriately.
- The knowledge products should be easily accessible to the target audience through most effective and efficient means, and timely.
- Consistency in presentation of products to enhance visibility and learning.

Practical tips for developing knowledge products from project M&E and dissemination of the products could include the following steps:

- Identify the target audiences and their information needs.
- Collect and keep at hand the contact information of all key stakeholders.
- Identify and determine the types of knowledge products to be developed (keep in mind the availability of project resources for this purpose as also the capacity of the project to develop the knowledge products, directly or through outsourced).
- Select and determine types of knowledge products that meet the target audience's information needs.
- Identify language requirements per product and audience.
- Determine most likely efficient forms and dissemination methods for each knowledge product.
- Monitor feedback and measure results of dissemination efforts as also quality of knowledge products.

43. **Knowledge Sharing and Learning Culture.** The project will endeavour to capture and disseminate lessons learned, successful case studies and document good practices. The project will adopt various knowledge sharing methods and tools including designing and facilitating knowledge events such as meetings and workshops. FOCUS will adopt some of the best practices in knowledge sharing and learning culture of IFAD funded projects in India around the followings:

- Building strong network by conducting periodic workshops/seminars/conferences on key thematic issues relevant to the project.
- Conduct monthly/quarterly/half-yearly/yearly review meetings of key stakeholders.

---

<sup>53</sup>Adopted from the "Handbook on Planning, Monitoring and Evaluating for Development Results", UNDP, 2009

- Developing skills and competencies of project staffs to improve human resources in the areas of knowledge management.
- Tailoring knowledge management activities closely to the needs of project staff and stakeholders.
- Developing and actively using project website, newsletter, etc. and contributing in the IFAD Asia website.
- Adoption of specific knowledge sharing methodologies and tools<sup>54</sup> with capacity building components, such as: Tools treasure hunt, Video storytelling, Speed sharing, Chat show, Jumpstart storytelling, World Café, Peer Assist, etc.

#### 44. **Linking with Research Institutions for knowledge and learning.**

45. The project will be working on both *jhum* improvement and settled agriculture. In order to generate concurrent impact data and to demonstrate the effectiveness of these approaches, the project will engage with a Specialist Organisation which has expertise in upland farming systems as well as good knowledge of the region. This exercise will also generate knowledge that may be useful for informing the policies and practices of other states in the NER. The project has allocated USD 260,000 to generate knowledge on the evolution and sustainability of upland farming systems and their capacity to respond to climate change. The ICAR Regional Centre in Barapani with specialisation in Research and the Regional ATARI which co-ordinates the work of all KVKs in the NER have been identified by the project as the most suitable agency to be engaged for this purpose. Both these institutions come under the Deputy Director General (Extension), ICAR, GoI. It is, therefore, proposed that the GoN will sign an agreement with ICAR detailing the terms of engagement. The responsibilities will be divided between the ICAR Regional Centre, Barapani and the ATARI as follows:

- a. Regional Centre of ICAR which has a sub-centre in Medziaphema will be responsible for: (i) demonstration of settled agriculture models on a micro-watershed basis in about 50 ha per district; (ii) technical backstopping for project activities in the field related to *jhum* and settled agriculture; (iii) evaluating impact of project's settled agriculture activities; (iv) knowledge sharing by way of regional workshops to disseminate the results impact assessment studies; and (v) knowledge sharing by way of regional workshops to disseminate the results of action research conducted by KVKs under the supervision of ATARIs.
- b. Agriculture Technology Application Research Institute (ATARI) through the KVKs in all the district will be responsible for (i) action research on settled agriculture on *jhum* land in various microclimates of Nagaland in collaboration with local research agencies; (ii) supply of quality planting materials; (iii) development of improved varieties of seeds (paddy) using local seeds; (iv) technical backstopping and training of village level workers; and (v) establishment of demonstrations of pig breeding units, stall fed goat units and backyard poultry hatchery units.

---

<sup>54</sup> Details are available at "Introducing Knowledge Sharing Methods and Tools: A Facilitator's Guide" by Allison Hewlitt and Lucie Lamoureux. IDRC-IFAD, 2010

## Appendix 6, Annex1: Logical Framework – Nagaland

Results Hierarchy	Name	Indicators			Means of Verification			Assumptions (A) / Risks (R)
		Base-line	Mid-Term	Endline	Source	Frequency	Responsibility	
<b>Outreach</b>	-Number of persons receiving services promoted by the project	0	274,000	685,000	Project MIS	Yearly	M&E Unit	
	-Number of youth receiving services promoted by the project	0	16,440	41,100				
	Number of HH reached	0	54,800	137,000	Project MIS	Yearly	M&E Unit	
<b>Goal:</b> Income of 137,000 farm households in hill areas of Nagaland increased and their resilience to climate change enhanced	% of HH <i>jhum</i> - farming for 3 or more years continuously on single plot				Impact assessment	Baseline End-line	M&E Unit Commissioned Study	A) economic growth and social stability
	Number of HH reporting increase of >100% in household incomes	0	41,100	102,750	Impact assessment	Baseline End-line	M&E Unit Commissioned Study	
<b>Development Objective:</b> Environmental sustainability and profitability of <i>the</i> farming systems in hill areas enhanced	% soil carbon			4%	Soil carbon test	Baseline Annual	M&E Unit	(R) Climate change and/or better non-farm opportunities makes farming unattractive.
	Real increase in net farm income (July 2017 prices) in million INR	0	2,485.8	3,480.1	TOS	Baseline MTR End-line	M&E Unit Commissioned Study	
	Number of trees increased at least 20 per ha in <i>jhum</i> land	0	10 tree/ha	20 tree/ha	TOS	Baseline MTR End-line	M&E Unit Commissioned Study	
<b>Outcome 1:</b> Improved farmers' capacities to manage upland farming sustainably	Number of HH reporting adoption of environmentally sustainable and climate resilient technologies and practices <sup>55</sup>	0	54,800	137,000	Project MIS	Yearly	M&E unit	(A) Producers are able to finance the continued investments required to climate proof their farms
<b>Outputs:</b>								
a. Participatory Land Use Planning conducted	No of VC with completed PLUP and land suitability maps	0	650	650	Project MIS	Yearly	M&E unit	(A) Access to reliable technical advice and planting material is

<sup>55</sup>Climate resilient technologies and practices refer to agro-forestry, soil and water conservation, improved planting material, integration with livestock

Results Hierarchy	Name	Indicators			Means of Verification			Assumptions (A) / Risks (R)
		Base-line	Mid-Term	Endline	Source	Frequency	Responsibility	
b. improved production system	No farmers trained (W/M) on better <i>jhum and fallow management</i>	0	96,000	182,000	Project MIS	Yearly	M&E unit	secured  (A) Effective convergence with Govt prog to build the assets of the poorer HH
	No farmers trained (W/M) on settled agri	0	26,000	78,000	Project MIS	Yearly	M&E unit	
	Area in ha under SWC, by <i>jhum</i> , <i>jhum fallow</i> , settled agriculture	0	18,980	47,450	Project MIS	Yearly	M&E unit	
c. Community forest conserved	Area under CCA managed by VC	0	5,200	13,000	Project MIS	Yearly	M&E unit	
<b>Outcome 2:</b> Increased volume of marketed crops and livestock , with improved returns to producers	Gross returns from spices in million INR	0	196.7	669.1	Project MIS	Yearly	M&E Unit Commissioned Study	(R) High transaction cost due to small volume and remote location
	Gross returns from livestock in million INR	0	157.3	316.5				
<b>Outputs:</b> a. Spice producers are integrated in national and international spice markets	No participating HH in organized spice value chain	0	3,200	8,000	AOS	Annual	M&E unit	(R) Implementation of APMC Act prevents new types of market linkages and reduces farm-gate prices.
b. Increased productivity of pig production	Pig off-take hh number	0	12,000	30,000	AOS	Annual	M&E unit	
c. value-chain clusters developed	Number of clusters	0	20	50	AOS	Annual	M&E unit	
<b>Outcome 3:</b> Improved access to markets	<u>Number of households reporting improved physical access to markets</u>	0	30,000	75,000	AOS	Annual	M&E unit	(A) Operation and maintenance by communities and Gvt is effective.
<b>Outputs:</b> a. Rural roads rehabilitated	<u>Length and type of access road rehabilitated in km</u>	0	150	400	Project MIS	Quarterly	M&E unit	

Underlined indicators are IFAD RIMS indicators

**Appendix 6, Annex2: Monitoring Indicators for Nagaland State**

	Description	Unit	Project Target	AWP&B Target	Annual Achivt	AWP&B Target	Annual Achivt	AWP&B Target	Annual Achivt
<b>A. Better <i>Jhum</i> and Conservation</b>									
1.1	Village level consultation	VC	650						
1.2	Number of FIGs organised	#	650						
1.3	Land use maps prepared	district	8						
1.4	Training of VC members:	VC	650						
		Male							
		Female							
1.5	Training of lead farmers:	persons	650						
		Male							
		Female							
1.6	Fallow management with legume crops	ha	16,250						
1.7	Current <i>jhum</i> improvement	ha	11,700						
1.8	Number of farmers trained in <i>jhum</i> and fallow:	Persons	182,000						
		Male							
		Female							
1.9	Construction of low cost SWC works	ha	28,000						
1.10	Planting materials supplied	households	91,000						
1.11	Area under Community forest	ha	13,000						
1.12	Water sources protected	sites	1950						
1.13	No. of traditional crops recovered and conserved	No.							
1.14	Area under traditional crop varieties	ha							
1.15	No. of traditional SWC technologies replicated	No.							
<b>B. Support to settled agriculture</b>									
2.1	Number of FIGs organised	FIG	650						
2.2	Number of farmers trained:	Persons	78,000						
		Male							

	Description	Unit	Project Target	AWP&B Target	Annual Achivt	AWP&B Target	Annual Achivt	AWP&B Target	Annual Achivt
		Female							
2.3	Support to WRC/TRC	ha	9750						
2.4	Support to upland farmers	ha	9750						
2.3	SWC Bunding	ha	9750						
2.4	Seeds & seedlings provided	households							
2.5	No. of traditional settled agriculture technologies replicated	No.							
2.6									
2.7									
2.8									
2.9									
	<b>C. Value-chain development</b>								
3.1	FIGs promoted for 3 crops	FIG	400						
3.2	CRPs engaged	persons	100						
		Male							
		Female							
		Youth							
3.3	Training of FIG members:	persons	8,000						
		Male							
		Female							
3.4	Planting materials to CRPs	CRP	100						
3.5	Supply of planting materials to farmers	ha	8,000						
3.6	Aggregation/ common facility centres	#	50						
3.7	Drying yards, centre	#	30						
	Agro-processing units	#	15						
3.8	Pig-breeding units set up	#	148						
3.9	Distribution of cross-bred piglets	households	30,000						
3.10	Feed & fodder demonstrations	village	650						
3.11	Villages covered under mithun	villages	50						
3.12	Vaccinations of								
	-Pigs	Pigs	950,000						
	-Poultry birds	birds							
	-Cattle	Cattle							
3.13	Training of VFAs:	persons	74						
		Male							
		Female							
3.14	CAHW training:	Persons	1300						

	Description	Unit	Project Target	AWP&B Target	Annual Achivt	AWP&B Target	Annual Achivt	AWP&B Target	Annual Achivt
		Male							
		Female							
3.15	Livestock farmers training:	persons	91,000						
		Male							
		Female							
3.16	Improvement of meat-market chain	village	650						
3.17	No. of Innovation subprojects approved	No.	50						
3.18	No. of persons benefitted from innovation sub-projects	persons							
		Male							
		Female							
		Youth							
<b>d. Market access infrastructure</b>									
4.1	Rehabilitation of earth road	km	200						
4.2	CDS in existing roads	structure	600						
4.3	Road maintenance	Km/year	500						
5.0	Project outreach:								
5.1	Number of hh covered	households	125,000						
5.2	Number of persons covered, total	Persons							
		Male							
		Female							
5.3	Number of youth covered, total	persons							
		Male							
		Female							

**Appendix 6, Annex3: New RIMS Core Indicators: FOCUS (Target groups are Indigenous People)**

		<b>Output indicators</b>			<b>Outcome indicators</b>		
<i>Areas of thematic focus</i>	<i>Target</i>	<i>No</i>	<i>Title</i>	<i>Legend</i>	<i>No</i>	<i>Title</i>	<i>Legend</i>
Outreach: To increase the income households and enhance their resilience to climate change in hill areas of Mizoram and Nagaland		1.1	Number of persons receiving project services	Male Female			
		1.a	Number of households reached;	Youth			
		1.b	Total number of hh members	IP 1/ <b>C</b>			
<b>SO 1:increase poor rural people's productive practices</b>							
Access to natural resources		1.1.1	Number of persons whose ownership or user rights over natural resources have been registered in national cadasters and / or geographic information management systems	Male Female Youth	1.2.1	Percentage of persons or households reporting improved access to land, forests, water or water bodies for production purposes	Male Female Youth
Access to agricultural technologies and production services		1.1.2	Number of ha of farmland under water related infrastructure constructed and rehabilitated	ha	1.2.2	Number of households reporting reduced water shortages vis-à-vis production needs	Male Female Youth
		1.1.3	Number of rural producers accessing production inputs and /or technological packages	Male Female Youth	1.2.3	Number of households reporting adoption of improved inputs, technologies or practices	Male Female Youth
		1.1.4	Number of people trained in production practices and /or technologies	Male Female Youth	1.2.4	Number of households reporting an increase in production	Male Female Youth
Inclusive financial services		1.1.5	Number of persons in rural areas accessing financial services (savings, credit, insurance, remittances, etc)	Male Female Youth	1.2.5	Number of households reporting using rural financial services	Male Female Youth
		1.1.6	Number of financial service providers supported in delivering outreach strategies, financial products and services to rural areas		1.2.6	Number of partner financial services providers with portfolio risk >30 days below 5%	
		1.1.7	Number of persons in rural areas trained in financial literacy and /or use financial products and services	Male Female Youth	1.2.7	Number of financial service providers with operational self-sufficiency above 100%	
Nutrition		1.1.8	Number persons or households provided	Male	1.2.8	Number of women reporting improved	Youth

		<b>Output indicators</b>			<b>Outcome indicators</b>		
<i>Areas of thematic focus</i>	<i>Target</i>	<i>No</i>	<i>Title</i>	<i>Legend</i>	<i>No</i>	<i>Title</i>	<i>Legend</i>
			with targeted support to improve their nutrition	Female Youth		quality of their diets	Female
<b>SO 2: Increase poor rural people's benefits from market participation</b>							
Diversified rural enterprises and employment opportunities		2.1.1	Number of rural enterprises accessing business development services	Male Female Youth C	2.2.1	Number of New jobs created	
		2.1.2	Number of persons trained in income generating activities or business management	Male Female Youth C	2.2.2	Number of supported rural enterprises reporting an increase in profits	
Rural producers organisation		2.1.3	Number of rural producers organisation supported	C	2.2.3	Number of rural producers organisation engaged in formal partnership, agreements or contract with public or private entities	
<b>SO 3: Strengthen the environmental sustainability and climate resilience of poor people's economic activities</b>							
Environmental sustainability and climate change		3.1.1	Number of groups supported to sustainably manage natural resources and climate related risks		3.2.1	Number of greenhouse gas emissions avoided and or sequestered	
		3.1.2	Number of people provided with climate information services	Male Female Youth	3.2.2	Number of persons or households reporting adoption of environmentally sustainable and climate resilient technologies and practices	Male Female Youth
		3.1.3	Number of persons accessing technologies that sequester carbon or reduce greenhouse gas emissions	Male Female Youth	3.2.3	Number of households reporting a significant reduction in the time spent for collecting water or fuel	Male Female Youth
<b>Policy</b>							
Policy, cross-cutting		Policy 1	Number of policy relevant knowledge products completed		Policy 3	Number of existing or new laws, regulations, policies or strategies proposed to policy-makers for approval, ratification or amendment	
		Policy 2	Number of functioning multi-stakeholder platforms supported				

1/ IP Indigenous peoples

## **Appendix 7: Financial Management and disbursement arrangements**

### **A. Summary Risk Assessment**

1. During design, a Financial Management (FM) risk assessment has been completed in accordance with Financial Management Division (FMD) guidelines. The assessment has been conducted after visiting the Department of Finance (DoF), Office of the Auditor and Accountant General of Nagaland (AG), Finance Section of the Agriculture Production Commissioner's Office (APC's Office). Additional meetings have been held in the districts. No Public expenditure and financial accountability assessment (PEFA) has been conducted at Nagaland State level. The inherent risk assessment is based on the latest national PEFA conducted in 2010 and on a series of financial and performance audit reports issued by the AG in the last few years. Due consideration has been given to the Transparency International (TI) survey of 2016 on the perceived level of corruption in India.
2. The 2010 PEFA discloses the "status of arts" in the organization of the Public Financial Management (PFM) function in the country at the federal level highlighting results, issues and planned reforms to improve support to national development. While the overall budget management function is sufficiently efficient, internal and external audit functions are in need of substantial improvements. No information has been provided on donor practices in the country.
3. At Nagaland State level, PFM needs improvement. The public sector organizational function is in place but substantial efforts are required to modernize the PFM. The accounting, internal control and reporting functions appear to be particularly weak and budgeting needs improvement. The only FM efficient function appears to be the external audit performed by AG which however operates in a quite challenging environment. There is a need to increase the level of accountability and control over the use of public financial resources and drastically reduce cash transactions in the public sector by use of bank transfer systems.
4. Within the Nagaland State, a specific analysis has been conducted on APC's office which was initially meant to host the PIU. Given the organizational limitations, it has been decided to create a new society for the implementation of the project. The results of the assessment indicate that the APC's office is not sufficiently efficient from an FM perspective. Absence of any computerized accounting, reconciliation and reporting procedures, as well as limited capacity in the implementation of schemes, indicate the need to improve its organizational arrangements.
5. Nagaland is a "Special Category State", in this case all external assistance that is received in foreign currency by India and is passed from the Union to the State as rupee grant for the 90% of the external assistance amount and as rupee loan for the balance 10%. The loan is repayable in 15 years, with foreign exchange risk or interest rate risk towards the external financier absorbed by the central government. Despite the "medium" risk reported in TI Corruption Perception Index of 2016, corruption continues to be perceived as a major obstacle to efficient and equitable development.
6. A society named Society for Resilient Agriculture in Nagaland (SoCRAN) has been registered by the GoN under the Societies Registration Act, 1860. The society is based at Kohima. It is planned to have offices at the eight districts in which the project will be implemented. The Chief Secretary is the Chairperson of the society with the Agriculture Production Commissioner (APC) as the Vice Chairperson and the Mission Director of this project. The SPD is an officer from the All India Services and is the Secretary of the society. The district offices will be based in the District Agriculture Office with the District Agriculture Officer as the DPM. The society has already taken ten officers on deputation from the line departments of the GoN.
7. The finance and accounting staff at the PMU and the districts have not yet been recruited and will be engaged from the open market. The PMU will have a senior person as the Finance & Accounts Specialist and supported by an Accounts Officer. An F&AO will be engaged for each of the districts. The project will fund capacity building of PMU and DMU staff and development of a computerised

accounting system. The audit of the society will be carried out by a firm of Chartered Accountants to be engaged for the purpose and the AG Nagaland will be requested to do the ‘certification audit’.

8. Based on the combination of inherent with control risks, explained in detail in the following paragraphs, the overall FM risk rating assigned to new project in the North East at this stage is **HIGH**. However, project implementation will still contain some risk elements. Risk mitigation measures are specifically described in the subsequent pages.

## B. Financial Management Risk Assessment

### Inherent risk at country level

9. The latest available PEFA is dated 2010 and is related to the central government only. No specific information on Nagaland is available, but the document gives useful information to understand PFM in the country context.

10. *Credibility of budget:* while the budget classification system is uniform throughout the country, the revenue estimates to finance it are precise, the extra budgetary expenditures are reported and external funded financing is duly considered, substantial overdraft of expenditures over approved budget are recorded. Other areas for improvement include the presence of variation in the composition of expenditures in relation to the approved budget, and limited ability of the central government to monitor the financial positions of each state.

11. *Policy based budgeting:* A clear calendar for budget preparation exists and relevant circulars are issued by Ministry of Finance. However the link between investment and recurrent costs is weak and its persistence undermines the policy aspects of the budget.

12. *Predictability of the budget (tax management) and budget execution:* Despite the articulated and documented tax policies and exemptions, their applicability is largely subject to the discretion of administrative authorities. The system for debt management and its monitoring is adequate as well as the management of public sector employees’ salaries. The monitoring of non-salary expenditures is in need of improvements.

13. *Internal audit:* The internal audit function is not independent; it is conducted in a routine manner and does not focus on systemic issues to help management in improving efficiency and effectiveness of operations. Internal audit recommendations are not necessarily binding for implementation.

14. *Accounting, Recording and Reporting:* At the federal level, the accounting function is well established and efficient both in terms of information provided and timely submission. Year-end financial statements, in the form of Finance Accounts, are presented to the legislature with a time lag of 8-10 months. Accounting standards used are the national ones which are not fully aligned to IPSAS.

15. *External scrutiny and audit:* There is a detailed scrutiny process run by the legislature before discussion and approval of the annual budget law. CAG audits all government departments and public entities every year as prescribed by the law, but the submission of audit reports to legislature is delayed up to 12 months after the end of the fiscal year. There is a limited scrutiny of audit reports followed by a limited implementation of audit recommendations.

16. The following table summarizes the features of the public finance management system, based on the PEFA methodology:

Criteria	Assessment
Credibility of the budget  <b>PEFA score: B-</b>	<ul style="list-style-type: none"> <li>Increased alignment between actual expenditures and approved budget;</li> <li>Still substantial misalignment between actual composition of expenditures and approved budget;</li> <li>Forecast of revenue to finance budget very realistic as well budget classification;</li> <li>Monitoring and clearance of arrears remains an issue.</li> </ul>
Comprehensiveness	<ul style="list-style-type: none"> <li>Comprehensiveness of Information Included in Budget Documentation;</li> </ul>

and transparency <b>PEFA score: B+</b>	<ul style="list-style-type: none"> <li>• Government operations completely reported;</li> <li>• Limited fiscal analysis;</li> <li>• Adequate public access to key fiscal information.</li> </ul>
Policy-based Budgeting <b>PEFA score: C-</b>	<ul style="list-style-type: none"> <li>• While budget preparation is a participative exercise, there is still a lack of multi-year perspective in fiscal planning, expenditure policy and budgeting.</li> </ul>
Predictability and control in budget execution <b>PEFA score: C-</b>	<ul style="list-style-type: none"> <li>• Taxation codification leaves room for interpretation;</li> <li>• Problematic collection of arrear tax payments;</li> <li>• Adequate cash and debt management;</li> <li>• Payroll controls to be enhanced;</li> <li>• Internal audit function is not independent.</li> </ul>
Accounting, recording and reporting <b>PEFA score: B+</b>	<ul style="list-style-type: none"> <li>• Reconciliations and production of reports are regular exercises, the quality needs to be improved as the information provided is not complete.</li> <li>• Financial statements are prepared timely and the information provided is complete. Standards used for accounting are not completely in line with IPSAS.</li> </ul>
External Scrutiny and audit <b>PEFA score: C</b>	<ul style="list-style-type: none"> <li>• Annual audit reports are submitted to the legislature with delay; limited follow up for the implementation of recommendations;</li> <li>• The annual budget law is properly scrutinized, while the examination of audit reports is limited.</li> </ul>
Donor Practices <b>PEFA score : N/A</b>	<ul style="list-style-type: none"> <li>• 2010 PEFA did not scrutinize donor practices</li> </ul>

#### Inherent risks at Nagaland State and APC level

17. Some of the observations mentioned in the PEFA of 2010 are outlined also in the reports of the “Comptroller and Auditor General (CAG) of India on States Finances of Nagaland State”, related to the years ended 31 March 2013 to 2016. The information provided gives adequate insight of trends in the PFM area at State level. They include:

- a. Financial management and control of finances was poor at all levels, delay in sanction resulted in delay in release of funds, incorrect reporting and submission of UCs, delay in release of funds from 1 to 14 months by the State.
- b. A rush of expenditure was noticed in which expenditure of more than 50% of the total expenditure was incurred in the last quarter of 2015-16 and in some cases in the month of March 2016.
- c. The monitoring and internal control mechanism were inadequate and needs to be strengthened
- d. Timely submission of utilization certificates is a major area of concern.
- e. Failure in exercising the statutory checks prescribed under various rules resulted in fraudulent withdrawals.
- f. Quarterly progress reports were not submitted.
- g. There was an overall excess/inadmissible payment of financial assistance due to improper classification of land holding.
- h. Excess payment made to a contractor by arbitrarily increasing the rates of items of work
- i. Amounts received under Govt Scheme was diverted to private bank accounts
- j. Expenditure incurred without prior approval.
- k. Amount was paid without actual supply/ procurement of equipment. Some items were not sanctioned by the Competent Authority

18. Considerations on APC’s office: Based on the discussions, it was observed that: (i) financial management practices in APC’s office are performed in a basic and fragmented way; (ii) accounting is undertaken manually and in a single entry system; (iii) cash book and bill registers are maintained with no system of ledger accounts; (iv) bank reconciliations are not regularly carried out; (v) internal control system needs improvement; (vi) financial reporting is prepared in excel sheets from the

manual books; (vii) expenditure statements and vouchers are passed to the Accountant General's Office which compiles the APC's office financial reports; (viii) no control on the reliability and completeness of the information provided by APC's office to the Accountant General's Office; and (ix) presence of large number of cash transactions. As a result of the above mentioned shortcomings, the inherent fiduciary risk associated with the public financial management system at State and APC's office level is considered **high**.

19. Considering the weakness identified in the existing public entities, for project's implementation proposes an autonomous public Society governed by its bye-laws. It will be staffed in its administrative/financial section with resources hired on the market. The PIM will detail the procedures to be used for project's administration.

### Control risks

20. Overall, the new project in the NE region will be operating in a rather high inherent risk environment due to the persistence of some weaknesses in the public sector financial management systems as outlined in the PEFA analysis. The proposed financial management arrangements for the project incorporate a number of measures intended to reduce such risks to acceptable levels and ensure that (i) the programme funds are used for intended purposes in an efficient and effective way; (ii) reliable and timely financial reports are prepared; and (iii) programme assets and resources are safeguarded from unauthorized or wasteful use. After mitigation, the overall programme fiduciary risk remains **high**.

### Summary of FM risks and mitigating actions

Summary of Programme Fiduciary Risk Assessment at Design			
	Initial Risk Assessment	Proposed Mitigation	Final Risk Assessment
<b>Inherent Risk</b>			
1. TI Index	<b>M</b> Index: <b>40</b> in 2016 (ranked <b>79</b> out of 176 surveyed countries)	-	<b>M</b>
2. RSP Score	<b>M</b> Score: <b>4.00</b> (2016) <sup>56</sup>	-	<b>M</b>
<b>Control Risks</b>			
1. Organization and Staffing	<b>H</b>	<ul style="list-style-type: none"> <li>• A Society which will be the PIU has been formed and some officers have been already been deputed to the society. However, finance and accounts staff have to be recruited as there has been no contractual recruitment as yet.</li> <li>• Ensure the recruitment process of contracted staff provides the project with qualified and experienced human resources</li> <li>• Comprehensive, user-friendly PIM</li> </ul>	<b>M</b>
2. Budgeting	<b>H</b>	<ul style="list-style-type: none"> <li>• A separate line item for the project will have to be ensured in the State budget.</li> <li>• The project budget will be prepared annually be way of a AWP&amp;B which will be compiled at the PMU based on inputs from the districts and the JRMCs/FIGs</li> </ul>	<b>M</b>

<sup>56</sup> <http://www.ifad.org/operations/pbas/>

3. Funds flow and Disbursement Arrangements	<b>H</b>	<ul style="list-style-type: none"> <li>• Ensure timely release of budget to the Society project account</li> <li>• Support early release of the DA advance in RBI to the State</li> <li>• Ensure timely release of counterpart funding</li> <li>• <b>The initial contribution of the Govt as endowment fund will act as a buffer and will be used in case of delay/ irregularity in release of funds.</b></li> </ul>	<b>H</b>
4. Internal Controls	<b>H</b>	<ul style="list-style-type: none"> <li>• Internal control mechanism has to be set up by disaggregation of duties, monthly reconciliations, reporting and quarterly internal audit of the project activities</li> <li>• Periodic physical verification of assets</li> </ul>	<b>H</b>
5. Accounting Systems, Policies & Procedures	<b>H</b>	<ul style="list-style-type: none"> <li>• Use of accounting software for the project is required. The current Govt. procedures uses manual accounting systems</li> <li>• The hiring of a Finance and Accounts Specialist and the Accounts Officer from the market and training them in the use of the software should mitigate reporting risks</li> <li>• Regular back-ups of accounting records and reports</li> </ul>	<b>M</b>
6. Reporting and monitoring	<b>H</b>	<ul style="list-style-type: none"> <li>• Project Implementation Manual (PIM) to detail reporting and monitoring requirements and rules</li> <li>• To ensure finance staff contracted in the market has the means to fulfil IFAD reporting requirements</li> </ul>	<b>H</b>
7. Internal Audit	<b>H</b>	<ul style="list-style-type: none"> <li>• An internal auditor will be engaged for the internal audit role</li> <li>• Hiring of a dedicated staff to follow up on the implementation of internal audit recommendations</li> <li>• Project management to act on internal audit findings and recommendations</li> </ul>	<b>H</b>
8. External Audit	<b>M</b>	<ul style="list-style-type: none"> <li>• A CA firm will be appointed to conduct the audit of the project.</li> <li>• AGs office will be requested to do the 'certification audit' of the project</li> <li>• The project to ensure timely preparation of PFS for enabling timely submission of acceptable reports, timely submission of annual audits and informative management letters</li> </ul>	<b>M</b>
<b>Programme Fiduciary Risk @ Design</b>	<b>H</b>		<b>H</b>

### C. Financial Management and disbursement arrangements

21. **Finance unit organization of the Society at central and district level.** A society named Society for Resilient Agriculture in Nagaland (SoCRAN) has been registered under the Societies Registration Act, 1860 at Kohima which will implement the project. The society will have a Project Management Unit at Kohima and District Management Units at the eight districts in which the project will be implemented.

22. A Finance & Accounts Specialist (FAS) and an Accounts Officer (AO) shall be recruited by the project at the PMU for the project period. The incumbents will have a sound knowledge of accounting systems and preparation of financial statements. Computer literacy will be essential and experience in

using an accounting software will be essential. They will be responsible for accounting, reporting and management of all disbursements to the districts and claims from IFAD and the Govt. The FAS shall be responsible for the preparation of the project's consolidated financial statements, review of financial reports and getting audit completed within the stipulated time. The ToR for the FAS and the AO are provided in the PIM.

23. At the district level a Finance and Accounts Officer (F&AO) shall be recruited by the project who will be in charge for the accounting and record keeping of all financial transactions at the district level and will be responsible for reporting to the PMU, management of all disbursements to the communities and claims to the PMU.

24. **Budgeting.** The PMU, after consultation with its district offices, shall prepare its annual budget linking all the planned activities at the head office and district level to the cost categories outlined in the schedule II of the Financing Agreement. The annual budget of the project will be included into the budget of the APC's Office by creating a separate line in the State Government's budget. IFAD will provide an initial advance to the Government. This advance will serve as part of the counterpart funding from the GoN. In addition, the Government will deposit a sum of INR 150 million towards the corpus of (SoCRAN) as endowment grant. This grant is meant to be a buffer fund available with the society in case there are delays in release of funds or if funds are blocked in advances, the liquidation of which is delayed. The endowment grant will ideally be invested by the society in term deposits and it will be utilized only in case regular funds as budgeted are not available and as soon as the budgeted funds are available the endowment grant should be reinstated to the original amount by repaying the amount withdrawn from it. The endowment grant may be used the Government as part of its counterpart funds during the last stages of the project period.

25. **Disbursement arrangements and Flow of Funds.** The loan and grant funds from IFAD will be designated in USD and not SDR as has been the practice hitherto. Concurrence of the DEA will be sought for the purpose. A Designated Account in USD will be opened by the Govt. at Reserve Bank of India (RBI) in which funds will flow from IFAD. In India, generally the Government pre-finances IFAD funded projects and the amount of initial advance is managed by the CAAA. Considering the weak fund position in Nagaland state, it is proposed that the State Government firm up the budget requirements for the domestic counterpart funding in accordance with extant rules and procedures on the subject. The advance funding from IFAD to the Designated Account is fixed at USD 3 million. This is equivalent to about six months of projected allocation. In addition, GoN will transfer the estimated budget chargeable to the identified missions / centrally sponsored schemes (CSS) including state share to the Society in a timely manner in two instalments. It was agreed that funds of 4 CSSs (RKVY, ATMA, PMKSY and MOVCD) in respect of the project districts will be deposited with the society for project implementation. The society will utilize the amount in accordance with the AWP&B which will be dovetailed to be in accordance with such CSS, account for such expenditure and report the same separately to the GoI. The society will submit WAs for the IFAD financed eligible expenditures as per the procedures and formats agreed with IFAD to the Office of CAAA, Ministry of Finance, GoI. A separate bank account for SoCRAN shall be opened at the PMU and all the districts. Since money will also flow to the proposed JRMCS/FIGs, they will also be required to open separate bank accounts. The funds from the SoCRAN account both from the PMU and the DMUs will be utilized directly.

26. Disbursements to the district offices shall be made by the PMU. The funds from the district offices shall be advanced/disbursed to the communities through the JRMCS/FIGs. The JRMCS/FIGs shall be required to provide utilization certificate for each quarter based on which further releases shall be made. The districts shall provide expenditure statements to the PMU every month based on which the PMU shall prepare and submit withdrawal applications every quarter after consolidating the actual expenditure incurred at the PMU and districts. The counterpart funds, other than salaries to the GoN staff, (which will be paid directly by the Govt) will also be made available by the GoN to the PMU account from which expenditure will be incurred. Thus there will be a single project account in all implementing units from which all funds would be spent. GoN will provide the details of expenditure

incurred by it directly (salaries and allowances) towards the project, to enable consolidation and reporting of total expenditure of the project. SoCRAN will submit Utilisation Certificates to the nodal department for the eligible expenditures under the CSS budget.

27. **Internal controls.** Procedures and record maintenance at all levels will be based on GoN procedures as well as other specific project's procedures documented in the PIM. The PIM shall include specific provisions in respect of internal controls, PFS preparation procedure, financial reporting arrangements between the districts and the PMU, contract management, financial reporting and audit requirements. The FAS shall play a pivotal role for the effective implementation of the overall internal control system. As far as possible all transactions will be by way of and through bank (cheques and direct transfers). There will be stringent limitations on cash transactions and it will be used only in exceptional cases with prior permission of the Competent Authority and for reasons to be recorded in writing except for routine petty cash expenses.

28. **Accounting systems, policies, procedures and financial reporting.** The project will follow a double entry cash system of accounting. The accounts will be computerized at all levels (PMUs and DMUs). The FAOs at the DMUs will submit monthly reports based on which the FAS at the PMU shall be responsible for the preparation of consolidated quarterly financial reports. The FAS shall be also responsible for the preparation of the annual financial statements of the project which will be subject to external audit. The half yearly reports prepared by the FAS shall be submitted to the attention of the Project Steering Committee and forwarded to IFAD.

29. The financial statements of the project shall be prepared in accordance with the requirements of International Public Sector Accounting Standards-Cash (IPSAS). The financial statements of the project for each fiscal year should consist of (i) yearly and cumulative statements of sources and application of funds, which should disclose separately IFAD funds, Government funds and beneficiary contribution; (ii) the Balance Sheet which should disclose bank and cash balances that agree with the statement of sources and application of funds, fixed assets and liabilities; and (iii) yearly and cumulative SOEs by withdrawal application and category of expenditures. SoCRAN shall also prepare a statement of the actual expenditure against the budget and the variance thereof by components and categories, annually and cumulative. SoCRAN shall prepare and deliver to IFAD such financial statements within three months of the end of each Fiscal Year. The aforesaid statements duly audited should be delivered to IFAD within six months of the end of each Fiscal Year.

30. **Internal Audit.** SoCRAN will appoint an independent Chartered Accountant or a firm of Chartered Accountants to undertake internal audit at all implementing levels (PMU/ DMUs/ JRMCs/FIGs) from the first year of its operations. The internal auditors will, besides the financial audit, will review the systems of internal control and suggest improvements, if required, thereto. The internal audit should also include statutory compliances. The terms of reference for the internal audit are included in the Project Implementation Manual. The TOR will include the key aspects of financial management and procurement. The internal auditors will submit quarterly reports to the State Project Director (SPD). Corrective follow up action shall be taken by the FAS at the PMU and the DMUs. The action taken report shall be submitted to the SPD and the internal auditors. The internal auditors will evaluate action on previous internal audit reports, and effectiveness thereof and report on the compliance thereof in the subsequent report. The SPD will place the reports and its action taken reports before the PSC every six months. The quality of internal audit reports submitted by the internal auditors in the first year of implementation will be reviewed by the Review Mission/ IFAD ICO and if these reports are found to lack quality, SoCRAN may be requested to make alternate arrangements, acceptable to IFAD, for conducting the internal audit during subsequent years.

31. **External Financial Audit.** The AGs office in Nagaland is not adequately staffed and it is possible that their performing the audit might delay submission of the report beyond the stipulated period of six months from the end of the fiscal year. It is therefore proposed that the Society shall appoint an external firm of Chartered Accountants to audit the accounts of the PMU and all district offices. The audit shall be in accordance with Article 9 of the IFAD's General conditions and the IFAD's *Guidelines on Project Audits (for Borrowers' Use)*. The appointment of the auditor shall be

through a fair, transparent and competitive process. The terms of reference of the auditor shall follow IFAD approved Audit Terms of Reference. The auditors shall adopt the International Standards of Auditing while auditing and reporting on the Project Accounts. The audit report shall contain a clear expression of the auditor's opinion regarding the financial statements. It should include a financial statements audit, a compliance audit and should include a Management Letter. It should also include a section on the project's compliance with loan covenants, particularly those dealing with financial matters. The auditor shall review the project accounts including the financial statements and the SOEs and give an opinion on the same. In addition, the audit report shall address (a) the adequacy of accounting and internal controls, including the internal audit mechanism, for monitoring expenditures and other financial transactions and ensuring safe custody of the project assets and (b) the adequacy of documentation maintained by the project for all transactions. Through the management letter, the auditor will identify deficiencies in the project accounting records, procedures, systems and internal controls and make appropriate recommendations for improvement. It will also include any significant matters that come to the auditor's attention and might have a material impact on project implementation. The audit of the Designated Account will be done by the Office of the C&AG. Besides this, the AG office at Nagaland will perform a "certification audit" for external funded projects.

32. The audited statement of accounts along with the audit report and the Management Letter shall be furnished by the project to IFAD within six months of the end of each Fiscal Year. The project shall submit the reply to the management letter of the auditors within one month of receipt thereof. The Project shall maintain an Audit Log in respect of the audit observations and get it validated by the auditor during the subsequent audit or earlier.

33. **Taxes.** The proceeds of the IFAD financing is not to be used to pay taxes which will be part of the contribution of GoI and GoN to the project. Social security benefits, if any, (employee's portion) and income tax (employee deductions) are eligible for IFAD financing. GST has become effective from July 2017. The project shall use a reimbursement percentage which takes into account the approximate tax applicable to the expenditure category.

## Appendix I

### Financial Management Assessment Questionnaire (FMAQ)

<b>Project: Fostering Climate Resilient Highland Farming Systems in the North East</b>	<b>Date : 03 Apr 2017</b>
<b>Implementing Entity: A new Society to be created under the auspices of APC - Society for Climate Resilient Agriculture (SoCRAN)</b>	
<b>Assessment completed by: Pratul Dube, Consultant</b>	

Topic		Response	Remarks
<b>1.</b>	<b>Organization and Staffing</b>		
	<b>Implementing Entity</b>		
1.1	Which entity is the LPA? What is the entity's legal status?	A society named Society for Resilient Agriculture in Nagaland (SoCRAN) has been registered by the GoN under the Societies Act, 1860	The society will be the implementing agency for the project
1.2	Will financial management of the programme be the responsibility of the LPA or be undertaken within the-PIU?	The FM will be undertaken within the new society which will be the PIU	The society will be staffed separately will full time staff for FM
1.3	Has the entity implemented a donor financed programme in the past - if so, please provide details?	No	For the APC this will be the first donor financed project and the implementation will also be done by the new society and hence with no previous experience
	<b>Staffing</b>		
1.4	What is the (proposed) organizational structure of the accounting department?	The accounting department of the PMU will be headed by a FAS and be assisted by an AO. Each of the districts the DMU will have anF&AO	
1.5	Identify the (proposed) accounts staff, including job title, responsibilities, educational background and professional experience.	The FAS will be responsible for the overall financial management, consolidation of accounts of all units, preparation of reports, submission of Withdrawal Applications and disbursement to the districts, reviewing of district reports, getting audit done and replying to the audit observations. Ideally the FAS will be a CA or a post graduate with at least 5 years' experience in accounting and be conversant with the accounting software to be used for accounting	The society will advertise and engage persons of the required calibre from the open market. The CVs of the potential candidates will be obtained during the selection process.
1.6	Are written position descriptions that clearly define duties, responsibilities, lines of supervision, and limits of authority for all of the officers, managers, and staff?	These details will be included in the PIM, to be developed.	

Topic		Response	Remarks
1.7	Is the finance and accounts staff adequately qualified and experienced?	Relevant qualification and experience will be detailed in the PIM	
1.8	Are the programme accounts and finance staff trained in IFAD procedures?	Since the project is still in design stage no staff is in place	The staff to be recruited will need to be trained in IFAD procedures
1.9	Are any Finance Staff appointed on contract What is the duration of the contracts Indicate key positions not contracted yet, and the estimated date of appointment	Staff have not been engaged for the project	
1.10	What is training policy for the finance and accounting staff?	Training policy will have to be developed as part of the HR policy on formation of the society	
1.11	Is there evidence that finance staff are regularly transferred to other Government departments At what frequency are personnel transferred?	This will not be applicable as the society will engage accounting staff on a contractual basis	
<b>2.</b>	<b>Budgeting</b>		
2.1	Who is responsible for preparation and approval of programme budgets?	The project's planning unit will coordinate budget preparation, with input from all programme parties and beneficiaries and will be approved by the Board of Governors	
2.2	Are programme budgets prepared for all significant programme activities in sufficient detail to provide a meaningful tool with which to monitor subsequent performance?	The IFAD format of AWP&B will be used which has sufficient details as to the project activities and will also track the physical and financial progress	
2.3	Are procedures in place to plan programme activities, collect information from the units in charge of the different components, and prepare the budgets?	The AWP&B preparation mechanism will be provided in the PIM	
<b>3</b>	<b>Funds Flow/Disbursement Arrangements</b>		
3.1	Does the Implementing Entity have previous experience of using imprest fund and donor funding SOE procedures? Were there any problems or issues encountered by programme staff in the operation of the imprest fund or SoE procedures in the past?	The Society will operate only bank project accounts at central and district level. DA will be managed by CAAA in Delhi as per normal procedures.	
3.2	Does the Implementing Entity have experience in the management of disbursements from IFAD or other donors? Have there been the major problems in the past in receipt of funds by the entity?	The new Society as also the APC do not have experience of externally aided projects	

Topic		Response	Remarks
3.3	Does the entity have/need to develop capacity to manage foreign exchange risks?	The exchange risk of current projects is managed by the central bank. No issues are foreseen.	
3.4	Are the beneficiaries required to contribute to programme costs? How are payments made for the counterpart funds? If counterpart funds are to be contributed in kind (in the form of labour), are proper guidelines formulated to record and value the labour contribution?	Yes. Counterpart funds (except payment of salary to Govt staff) will be routed through the project account in the PMU	The beneficiaries will contribute towards labour costs. The counterpart funds will be mainly by way of CSS funds and taxes
3.5	Is part of the programme implemented by communities or NGOs? Does the PCU have the necessary reporting and monitoring features built into its systems to track the use of programme proceeds by such agencies?	A committee JRMC and farmers interest groups (FIGs) will be formed in the villages will be implementing some activities of the project. The PIU is yet to be formed. Reporting arrangements will be specified in the contracts	The reporting and monitoring features will have to be developed to track the use of the project proceeds
3.6	Describe (proposed) programme funds flow arrangements; (attach flow chart and explanation of the flow of funds from IFAD, government and other financiers.	The funds flow arrangement will be set-up in accordance with Gov. rules. DA will be maintained in RBI managed by CAAA. The possibility of transferring IFAD advance directly to GoN is being assessed.	For details please refer to Appendix 7
3.7	In which bank will the Imprest Account be opened?	Reserve Bank of India (Central Bank)	
3.8	Are the (proposed) arrangements to transfer the proceeds of the financing (from the government / Finance Ministry) to the Implementing Entity satisfactory?	Both IFAD and GoN funding for the new Society will need to be included in the annual GoN budget. Funds shall be transferred to the project account of the Society.	
<b>4.</b>	<b>Internal Controls</b>		
4.1	Segregation of duties - are the following functional responsibilities performed by different units or persons: (i) authorization to execute a transaction; (ii) recording of the transaction; and (iii) custody of assets involved in the transaction?	Will be done. Relevant details to be included in the PIM	
4.2	Are the functions of ordering, receiving, accounting for, and paying for goods and services appropriately segregated?	Will be done. Relevant details to be included in the PIM	

4.3	Are bank reconciliations prepared by someone other than those who make or approve payments?	The bank reconciliation will be prepared by the accounts officer	
<b>5.</b>	<b>Accounting Systems, Policies and Procedures</b>		
5.1	Does the entity have an integrated accounting system that allows for the proper recording of programme financial transactions, including the allocation of expenditures in accordance with the respective components, disbursement categories, and sources of funds? Will the programme use the entity accounting system?	The Society will purchase an accounting software to be installed both at central and district level. Software customization will foresee compliance to IFAD requirements and integration of central and district accounts	
5.2	Are controls in place concerning the preparation and approval of transactions, ensuring that all transactions are correctly made and adequately explained?	Controls will be provided for in respect of the society. Relevant details to be included in the PIM	
5.3	Is the chart of accounts adequate to properly account for and report on programme activities and disbursement categories?	Controls will be provided for in respect of the society. Relevant details to be included in the PIM	Once the components and categories of financing are finalized on completion of the design, the chart of accounts will have to be prepared based on the components and disbursement categories
5.4	Can cost allocations to the various funding sources be made accurately?	It will need to be done in the software. The software may need to be customized for the purpose	
5.5	Are the General Ledger and subsidiary ledgers reconciled and in balance?	In computerized system, this will not be applicable	The ledger posting in the software is automatically done and hence there will be no subsidiary ledgers
5.6	Are all accounting and supporting documents retained on a permanent basis in a defined system that allows authorized users easy access?	Records will be preserved and available for access. Relevant details to be included in the PIM	
5.7	What is the basis of accounting (e.g., cash, accrual)?	Cash system of accounting will be followed	
5.8	What accounting standards are followed?	Nationally accepted accounting standards will be followed	
5.9	Does the programme have an adequate policies and procedures manual to guide activities and ensure staff accountability?	The project will use the PIM	
5.10	Do procedures exist to ensure that only authorized persons can alter or establish a new accounting principle, policy or procedure to be used by the entity?	This will be ensured with the FAS having the authority to do so. Relevant details to be included in the PIM	

5.11	Is there a written policies and procedures manual covering all routine programme financial management activities? Are manuals distributed to appropriate personnel?	Copies of PIM will be made available to the appropriate personnel	All financial policies and procedures will be provided in the PIM which will be distributed to the concerned staff
	<b>Payments</b>		
5.12	Are all invoices stamped PAID, dated, reviewed and approved, and clearly marked for account code assignment?	Will be done- Relevant details to be included in the PIM	
	<b>Cash and Bank</b>		
5.13	Does the organization maintain an adequate, up-to-date cashbook, recording receipts and payments?	Will be done. Relevant details to be included in the PIM.	
5.14	Are bank and cash reconciled on a monthly basis?	Will have to be done on a monthly basis	
5.15	Positions of authorized signatories of programme bank accounts.	The SPD will be the authorized signatory of the project bank accounts. Relevant details to be included in the PIM	
	<b>Safeguard over Assets</b>		
5.16	Is there a Fixed Asset accounting system, with a Fixed Asset Register, fully implemented - as part of an integrated accounting system Is the system maintained up to date?	The Fixed Asset records will be maintained separately. Only the asset head (in the ledger), date of purchase, vendor and its value will be available in the accounting system	A separate Fixed Asset Register will be maintained which will contain the description, quantity, location, cost, date of purchase, vendor name, unique id and the date of physical inspections carried out
5.17	Are there periodic physical reconciliation of fixed assets and stocks?	The Physical verification will be done at least once a year	The auditors also carry out physical verification of the assets as part of their TOR
	<b>Other</b>		
5.18	Has the programme advised employees, beneficiaries and other recipients to whom to report if they suspect fraud, waste or misuse of programme resources or property?	The project will advise the employees on their joining about the same	The details of IFAD anti-corruption cell (AUO) will also be provided during start up
5.19	Do policies and procedures clearly define conflict of interest and related party transactions (real and apparent) and provide safeguards to protect the organization from them?	This will be ensured. Relevant details to be included in the PIM	
5.20	Do controls exist for the preparation of the programme payroll and are changes to the payroll properly authorized	This will be ensured. Relevant details to be included in the PIM	
<b>6.</b>	<b>Reporting and Monitoring</b>		
6.1	Does the reporting system need to be adapted to report on the programme components?	Yes, reporting system needs to be developed	The reporting system will be provided in the PIM

6.2	Does the programme have established financial management reporting responsibilities that specify what reports are to be prepared, what they are to contain, and the frequency of production?	These will be established and detailed in the PIM	The PIM will provide for all such reporting requirements
6.3	What is the frequency of preparation of financial statements? Are the reports prepared in a timely fashion so as to useful to management for decision making?	Quarterly receipts and payments statements will be prepared.	
6.4	Do the financial reports compare actual expenditures with budgeted and programmed allocations?	This will be done	
6.5	Are financial reports prepared directly by the automated accounting system or are they prepared by spreadsheets or some other means?	Financial reports will be generated from the accounting system	To the extent possible, the software should be made use of for generation of reports
6.6	(In case of need of consolidated financial statements) Is the accounting system sufficiently equipped to ensure proper consolidation of entities' financial data?	It needs to be established	The consolidation will be required for the district and PMU accounts for which the software should be used
	<b>Information Systems</b>		
6.7	Is the financial management system computerized?	Computerization of FM systems will need to be done	
6.8	Can the system produce the necessary programme financial reports?	With computerization, the customized software should be able to generate the project financial reports	
6.9	Is the staff adequately trained to maintain the system?	Need to be engaged by the project and trained for the system to be established	Once staff are engaged, training will be provided to them for the system to be followed
6.10	Are adequate systems in place to "back up" financial records	Need to be set up	Regular back-up mechanism will have to be set up
<b>7.</b>	<b>Internal Audit</b>		
7.1	Is there an internal audit department in the LPA?	It is proposed to set up an Internal Audit system for the project. Details will be provided in the PIM	Internal audit will be performed on a quarterly basis by a qualified person/ firm. A staff will be responsible for follow up on the implementation of recommendations
7.2	What are the qualifications and experience of internal audit department staff?	Will preferably engage a CA with audit experience as a consultant to be supported by a staff inhouse who will be a graduate in accounting	
7.3	To whom does the internal auditor report?	The internal auditor will report to the SPD who will submit the semi-annual reports to the PSC	
7.4	Will the internal audit department include the programme in its work programme?	The project will engage an internal auditor	
7.5	Are actions taken on the internal audit findings?	The PD will review the findings and take appropriate action as may be required.	

8.	External Audit		
8.1	Who is the external auditor of the entity?	For the project a CA firm will be engaged	The AG will do the 'certification audit'
8.2	Are there any delays in audit of the entity? When are the audit reports issued?	Timeliness of the report will be ensured.	The PFS will have to be prepared soon after the close of the FY which will enable the audit to be completed within the stipulated six month period.
8.3	Is the audit of the entity conducted according to the International Standards on Auditing?	Audit will be carried out in accordance with the prescribed national standards.	
8.4	Were there any major accountability issues brought out in the audit report of the past three years? Were there any issues noted in prior audit reports related to the operation of project imprest accounts or use of SOE procedures?	Not applicable as the project has yet to start and the society being the PIU is not yet formed	
8.5	Will the entity auditor audit the programme accounts or will another auditor be appointed to audit the programme financial statements?	A CA firm will be engaged to audit the PFS of the project and the CAG will be requested to do the 'certification audit'	The proposed arrangement will be effective for the project
8.6	Has the programme prepared acceptable terms of reference for an annual programme audit?	Needs to be prepared	The TOR will be in accordance with the IFAD Guidelines on Project Audit

**Comments:**

The decision to create a new Society to act as PIU of the project has been taken after having assessed the current fiduciary environment of public entities which may potentially be lead implementing agencies. The State PFM is not yet sufficiently equipped to manage externally funded projects using country systems. The Society will be organized following ring-fenced modalities to the most possible extent. The finance and accounting team will be sourced from the market having experience in a computerized environment. The auditor will also be a qualified CA firm and the project will request the AG to do the certification audit. AG appears to be a strong and independent institution able to accomplish its mandate. Considering environmental and project specific factors, FM risk at the current stage is assessed as HIGH.

## **Appendix 8: Procurement**

### **A. Country Level Procurement Framework**

1. In India, there is no law exclusively governing public procurement of goods by the departments and ministries at the Central level or at the State level. Rules and directives in this regard are provided in the General Financial Rules (GFR). An important number of instructions, issued by the Central Vigilance Commission (CVC), supplement these regulations. No central authority exists that is exclusively responsible for defining procurement policies, overseeing compliance and grievance redressal systems. A limited control and oversight functions are exercised by the CAG and the Central Vigilance Commission. As per the rules and procedures on procurement stipulated in the GFR, the Departments have been delegated full powers to make their own arrangements for procurement of goods and each of the Department has issued office orders to define the process. In the Government departments, no dedicated staff are available with procurement skills. In the absence of required procurement expertise, a Department can procure goods through the Central Purchase Organization, Directorate General of Supplies and Disposals (DGS&D). Tenders for contracts above a threshold size are issued and are reported by the respective departments. While the advertisements for procurement for goods, works and services are published, the data on actual procurement and the award of the contracts by the Departments are not publicly available but could be obtained under the Right to Information Act.

2. A complaint mechanism for protests/grievances redressal does not exist. The contract provisions provide for dispute resolution through mutual consultation for the contracts awarded. In case the mutual consultation is not successful, the affected party (usually the contract winner) can initiate arbitration under Indian Arbitration and Conciliation Act, 1996 to settle the disputes and/or differences. The option for complaint/protest available to the unsuccessful bidders is usually to approach the judiciary. However, considering the backlog of cases at the lower level civil courts and higher judiciary, the costs/time delays are not proportional to the value of the contract. Hence, protests/complaints are taken to the judiciary only in cases of large contracts.

3. While the procurement of goods and works have been generally done by the Government departments over the years, the procurement of consultancy services are new to government departments. As the consultancy services are knowledge-based, the Government departments find it extremely difficult to precisely prepare the terms of reference, deliverables, monitoring formats and contract management.

4. GoI had constituted a Task Force to examine in detail revision of procurement norms and to make suitable recommendations. The recommendations of the Task Force were accepted 'in principle' by the GoI. As part of the acceptance, Department of Economic Affairs, Ministry of Finance had prepared and circulated a Manual on Procurement of Goods, Works and Consultancy Services in August 2006. Essentially these are for the use of Central Ministries/Departments.

5. In addition, the Ministry of Finance has also proposed a Public Procurement Bill in 2013, which aims to provide the legal framework for the processes of public procurement, but it is yet to be approved by the Parliament of India.

### **2. State Level Procurement Framework**

#### **Nagaland**

6. Government of Nagaland (GoN) is implementing an Asian Development Bank (ADB) assisted Water Works and Sanitation Project and a World Bank project on Health. These projects follow the ADB and World Bank Guidelines on Procurement respectively. Under the ADB project, a consultant firm was engaged for design, preparation of bid document and monitoring through International Competitive Bidding.

7. For the procurement in Government departments, there are no separate procurement guidelines or rules. The rule is contained in the General Financial Rules. Rule 160 of the GFR stipulates that, all government purchases should be made in a transparent, competitive and fair manner, without detailing out the processes involved.

8. CAG Report for the year 2012-13 (Economic Sector Report 1 of 2014) highlights significant weaknesses in procurement and monitoring. Some of the findings are: (i) no competitive bidding system followed for procurements and firms/suppliers were not empanelled by the Department/Government for procurement - undue benefits were given to select few suppliers and contractors; (ii) Veterinary and Animal Husbandry Department forwarded supply orders of a few select suppliers without considering their credentials and without obtaining Government approval, while Agriculture and Horticulture Departments approved the selectlist of suppliers at the Directorate level itself; (iii) both at the Government and Directorate levels, reasons for selection/rejection of suppliers for supply of materials such as saplings, fertilizers, livestock, agri-tools etc., were not available; and (iv) no transparency in procurement which resulted in weak financial controls and management. CAG Report recommends that to ensure transparency, economy, efficiency and competitive rates, all procurements should be done after notice inviting tenders (NIT) or from Government empanelled vendors.

### **Mizoram**

9. Government of Mizoram has implemented multi-State education sector projects through assistance from the World Bank. Mizoram also has an ADB project for reforms in the Public Sector undertakings. Both the externally aided projects followed the respective International Financial Institution's (IFI's) procurement regulations. Also these projects engaged Procurement Consultancy firms for design, monitoring and review of procurement processes and contract management. The post review by one of the Procurement Consultant firm for the World Bank assisted project indicated the following key issues: (i) majority of the post review contracts were noted to be non-compliant to the applicable procurement procedures and poor record keeping; (ii) weaknesses were noted in understanding of the applicable procurement procedures and record keeping; (iii) weak procurement capacity of the staff with respect to the applicable procedures; and (iv) open tendering when adopted does not fulfill all the requirements of National Competitive Bidding as stipulated in the FM&P Manual.

10. Mizoram CAG Civil Audit Report, 2 of 2015 identifies the current weaknesses in the public procurement undertaken under various Departments in the State of Mizoram. These are: (i) Guidelines of the Gol's Central Sector Scheme are not strictly followed for procurement; (ii) At the districts, maintenance of basic records of procurement like sanction orders, stock and issue register, maintenance of payment vouchers is unsatisfactory, leading to inability in verifying expenditure; (iii) Year-wise requirement from the District Authorities were not always obtained; (iv) The Memorandum of Understanding (MOU) signed by the Agriculture Department with the Oil Palm companies were without timelines or milestones for stage wise completion of the project and also penalty clause or conditions applicable in case of breach of the MOU -Some of the companies are not eligible for assistance; and (v) Purchase of goods without observing the extant GFR Codal formalities and without specific recommendations of Departmental Purchase Advisory Board.

11. From the above reviews, the overall procurement risk for the State is considered 'High'.

## **B. Procurement assessment of Lead Implementation Agency in Nagaland**

12. Department of Agriculture or the allied Departments do not have the experience of implementing any external aided programmes. The staff capacities are technical or administrative in nature. There is no dedicated staff to handle procurement related functions and these are handled as per the administrative division of responsibilities. The IFAD project in Nagaland is proposed to be implemented by setting up a dedicated Society under the APC's office at the State level and by the District Agriculture Office at the district level. State Government has agreed to establish the Society and appoint key staff before loan effectiveness. Based on a procurement capacity assessment

undertaken in preparation of the project and the inherent issues identified in the CAG Audit reports, the overall procurement risk is considered “High”. The risk rating is due to the lack of a legal framework for public procurement, specific procedures and processes, limited experience and capacities of the DoA in implementing externally aided projects and also to the fact that the Society responsible for implementation of IFAD project is currently not in existence and will have to be created.

### **C. Procurement assessment of Lead Implementation Agency in Mizoram**

13. DoA do not have the experience of implementing any external aided programmes, hence the staff are not exposed to the IFI Procurement processes and guidelines. The IFAD project in Mizoram is proposed to be implemented by setting up a dedicated Society under the Agriculture Department. Considerable capacity building efforts and establishing of procurement management systems and controls have to be done for the new Society. The proposed Society is currently not in existence and will have to be incorporated with sufficient staff.

### **D. Risk Mitigation measures proposed for FOCUS**

14. It is proposed to establish the following risk mitigation measures to address the High Risk assessment: (i) Engaging one Procurement Consultant on a retainership basis from outside the State with the experience and skill sets of procurement and compliance to established procurement norms of international financial institutions. As the Procurement Consultant will be engaged from the market, it should be ensured that some of the Government staff should also be involved as counterpart staff to address the issues of attrition and continuity of capacity; (ii) Appropriate and regular on site and combined procurement training of selected procurement staff in “IFAD Procurement Guidelines” to enable efficient and effective project procurement actions; (iii) Procurement manual prepared consistent with IFAD Procurement Guidelines and Procurement Handbook which will require IFAD’s concurrence. Any changes/amendments/modifications in the approved Procurement Manual also requires IFAD’s no objection- The manual could be a stand-alone document or included in the Project Implementation Manual; (iv) Procurement plan for the initial 18 months of project implementation listing out all procurement activities to be taken up by the project consolidated at the State level to be prepared and submitted along with the first AWP&B-For the subsequent years of implementation procurement covering the 12 month period will be sufficient -The procurement plan will be updated at least semi-annually or as required to reflect the actual project implementation needs - All procurement plans and its revisions will have to be approved by IFAD- Any procurement undertaken which is not as per the approved plan will not be eligible for IFAD financing;(v) Putting in place an effective contract management system which includes all contracts and its administration -The Contract Management forms to be submitted to IFAD as part of the Withdrawal Applications for IFAD loan assistance - It is to be ensured that contract management is not merely reporting the contracts but continuously monitoring the performance against the deliverables, conditions of the contract, validity and frequent review and resolution of implementation bottlenecks; (vi) Use of model Bidding Documents and contracts approved by IFAD and included in the Procurement Manual/PIM; and (vii) maintain throughout the period of implementation of the Project, a full procurement documentation and record keeping system.

15. During Supervision Missions, the post review procurements will be reviewed on a sample basis selected from the procurement plan, from the stage of preparation of bid documents till contract award and amendments to contract to identify the weaknesses, delays and ineligible procurement.

16. After putting in place the above risk mitigation measures fully and effectively, the residual risk assessment is Medium.

### **E. Procurement arrangements under FOCUS**

17. Procurement of goods, works and services under FOCUS financed from resources provided or administered by IFAD will be undertaken in accordance with IFAD’s Procurement Guidelines and

Handbook (dated September 2010) and as amended from time to time as an exception to the provisions of the General Conditions. As the project will be directly implementing Central Sector Schemes (CSSs) in Nagaland, to maintain uniformity in processes and procedures, IFAD Procurement Guidelines will also apply for the procurement from CSS funds. In Mizoram, the CSS funds will flow directly to the respective department and hence the respective Scheme guidelines prescribed by the Central Ministries will apply.

18. **National Competitive Bidding, Shopping and Direct Contracting.** Goods and Civil works will be procured using NCB, Shopping and Direct Contracting and will follow the procedures and processes defined in the Procurement Manual/Project Implementation Manual approved by Project Steering Committee and the IFAD. The PIM shall also include details of selection method to be applied in case of consultancies and services such as Quality and Cost Based Selection, Fixed Budget Selection, Least Cost Selection, Consultants Qualification Selection and Single Source Selection.

19. The procedures would be adapted and adopted in accordance with the provisions of IFAD Procurement Guidelines and the Procurement Handbook. Consistent with these Guidelines, the Programme Implementation Manual to be developed will have detailed processes, steps and documentation requirements to comply with the principles of public procurement.

20. **Standard Bidding Documents (SBD) & Standard Contract:** Standard Bidding Documents are of paramount importance for transparency, speed of the process, increase competition and creation of capacity (standardization of procedures). The SBD to be used in all local open bidding processes would be described in the PIM and it should include: (i) Time to submit bid: minimum 30 days; (ii) Bids may be submitted by post or by hand; (iii) Budget could be disclosed (if local legislation so requires); (iv) Clear instructions on how to buy bidding documents indicating address and price to buy the bidding documents - However, bidders who decide to submit a bid without having bought the bidding documents should not be disqualified, submitting their bids under their own risk; (v) Clarifications to bidding documents should be in writing only; (vi) Amendments to bidding documents should be advertised with the same procedure used for advertisement of bidding documents; (vii) Single envelope procedure for goods and works notwithstanding any other Government instructions/guidelines; and (viii) Evaluation Criteria: the bid evaluation criteria should be non-discriminatory - It should be disclosed and rigorously quantified in clear terms to define the "lowest evaluated bidder" - This allows to indisputably identify the lowest evaluated responsive bid.

21. IFAD do not prescribe any SBD and would concur with the use of available templates from other multilateral donors adapted to project requirements, so long as they are consistent with IFAD Procurement Guidelines.

### **Procurement Plan**

22. As provided in appendix I, paragraph 1 of IFAD's Procurement Guidelines, IFAD review of and no objection to the consolidated procurement plan is compulsory and the 18 month procurement plan for the first year submitted by the PMU, FOCUS from each State must include as a minimum:

- i) A brief description of each procurement activity to be undertaken during the period and name of the implementing agency responsible for the procurement.
- ii) The estimate value of each procurement activity.
- iii) The method of procurement to be adopted for each procurement activity.
- iv) The method of review IFAD will undertake for each procurement activity indicating either post review or prior review.
- v) Proposed dates for each stage of the procurement.

23. The Procurement Plan should be prepared as a rolling Procurement Plan which captures the procurement during the entire duration of the project and revisions and modifications to the quantities, selection method and the proposed dates will be incorporated as Revision. Any changes and amendments to the procurement plan shall be subject to IFAD's No Objection. A draft procurement plan for the first 18 months is attached as Attachment 1.

### **Good governance framework**

24. All procurement for goods, works and services financed from resources funded or administered by IFAD require bidding documents and the contracts to include a provision requiring suppliers, contractors and consultants ensure compliance with IFAD zero tolerance to anti-corruption policy and to permit IFAD to inspect their accounts, records and other documents relating to the bid submission and contract performance, and to have them audited by IFAD-appointed auditors.

25. As part of the e-governance policy and framework, PMU of FOCUS in each State will disclose the following minimum documents either in its Project Website or Directorate of Agriculture Website: (i) Procurement plan and its revisions; (ii) Procurement manual; (iii) invitation for bids for goods and works for all NCB contracts; (iv) request for expression of interest for selection/hiring of consulting services, (v) contract awards of goods, works and all consultancy services, (vi) list of contracts following Direct Contracting or Single Source Selection (SSS); (vii) short list of consultants; (viii) contract award of all consultancy services; and (ix) action taken report on the complaints received. In addition, the PMU will also publish any information required under the provisions of suo-motu disclosure as specified by the Right to Information Act and the decisions of the State Information Commissioners applicable to project implementation.

### **Procurement involving community participation**

26. Due to the nature of IFAD financed projects, there is a high degree of involvement of communities in the procurement activities. Communities would be empowered to undertake procurement as a service provider or an implementing unit through Village Organizations, FIGs, and Farmer Producer Organizations under a legal framework (Grant Agreement). The operational and implementation arrangement would be defined in the Project Implementation Manual which shall include implementation, administration, financial management and procurement related activities supported by clearly defined roles and responsibilities of the intermediaries who will assist these community organizations in performing the activities. The activities which will be implemented by the community groups will be as per the design. Though the PMU or District Units will not include the community procurement in its procurement plan, it is recommended that the description and the quantum of procurement, procurement methods to be adopted will be separately listed out and attached to the Procurement Plan for monitoring.

## **F. Procurement Methods and Thresholds**

27. Procurement of Goods and Works: Methods for procurement of goods/works is established as follows:

- (a) **Goods**
  - i) National Competitive Bidding (NCB),
  - ii) National shopping
  - iii) Direct contracting
- (b) **Works**
  - i) National Competitive Bidding (NCB),
  - ii) National shopping
  - iii) Direct contracting

28. Consultancy and Services. Consulting service will include project management technical assistance, implementation support technical assistance for different components, conducting studies, mobilisation/establishment of community groups, technical training and strengthening of community groups, and monitoring and evaluation. Services would be provided by consulting firms and individual consultants. The Selection methods available for Consultancy Services and non-consultancy services are:

- Quality and Cost Based Selection
- Fixed Budget Selection
- Least Cost Selection

- Selection Based on Consultants Qualification
- Single Source Selection

29. **Selection of individual consultants.** Individual consultants are selected on the basis of their qualifications for the assignment of at least three candidates among those who have expressed interest in the assignment or have been approached directly by PMU or District units. Individuals employed by the PMU and the District Units shall meet all relevant qualifications and shall be fully capable of carrying out the assignment. Capability is judged on the basis of academic background, experience and, as appropriate, knowledge of the local conditions, such as local language, culture, administrative system, and government organization.

30. Consultancy Services and Individuals consultants may be selected on a **sole-source basis** with due justification in exceptional cases such as: (a) tasks that are a continuation of previous work that the consultant has carried out and for which the consultant was selected competitively; (b) assignments lasting less than six months; (c) emergency situations resulting from natural disasters; and (d) when the individual consultant or consulting firm is the only consultant qualified for the assignment. All proposals for contracts on Sole Source basis will require IFAD's prior review. For facilitating IFAD's prior review, justification for resorting to SSS, the detailed proposal including budget from the sole source agency/institution or individual, recommendation and approval following the Department's internal approval procedures to be submitted to IFAD.

#### **Review of Procurement Decisions by IFAD**

31. As part of the new approach to project procurement, no thresholds for each of the selection method will be prescribed. While preparing the rolling Procurement Plan, the selection method proposed to be adopted will be indicated by the project in the Procurement Plan, which will then be approved or modified by IFAD.

32. IFAD will undertake to review the provisions for the procurement of good, works and services to ensure that the procurement process is carried out in conformity with its Procurement Guidelines. For the purposes of IFAD's Procurement Guidelines, the following procurement decisions shall be subject to prior review by the Fund for the award of any contract for goods, equipment, materials, works, consultancy and services under FOCUS.

- i) Procurement of goods, materials and works
  - Prequalification documents and shortlist when prequalification is undertaken;
  - Bid Documents for goods, materials and works;
  - Evaluation Report and Recommendation for Award; and
  - Contract and amendments.
- ii) Procurement of consultancy services and services
  - Prequalification documents and shortlist when prequalification is undertaken;
  - Request for Proposal;
  - Technical evaluation report;
  - Combined (technical and financial) evaluation report and the recommendation for award; and
  - Contract and amendments.

33. **Prior Review.** IFAD Prior review threshold will be applicable for procurement valued above USD 100,000 in respect of goods and works and for procurement valued above USD 100,000 equivalent in respect of consultancy and non-consultancy services. All single source or direct contracting procurement above the threshold of USD 2000 equivalent in each case will require IFAD's prior review. In addition, the first 3 procurement actions of PMU irrespective of the value will require IFAD's prior review.

34. **Post Review:** Procurement actions which are not subject to IFAD prior review will be reviewed either during the Supervision Missions or Implementation Support Missions to evaluate the compliance to the Procurement Guidelines and principles and contract management.

## Procurement Plan for 18 months (Jan 2017 – March 2019) related to Works - Page 1 of 2

Country-India													
Project Title / Loan/Grant Ref: FOSTERING CLIMATE RESILIENT UPLAND FARMING SYSTEMS IN THE NORTH EAST (Nagaland)													
Project Executive Agency: Department of Agriculture, Government of Nagaland													
Project Implementing Agency: PMU, SOCRAN													
DATE OF GPN: .....		Thresholds: > USD 100,000 equivalent for works, and > USD 100,000 equivalent for procurement of goods and > USD 100,000 equivalent for consultancy and services require IFAD prior review . The threshold are established on a Project to Project basis and are referenced in the Letters to the Borrowers.											
STATUS AS OF (Date):													
IFAD APPROVAL DATE: Original:		Current:											
SL No.	Package No.	Review by Bank Prior/Post	Description of Works/Goods	Estimated Cost (Local Currency) InINR	Method of Procurement	Design/ Investigation/Specs . Completed (Date)	Final Estimate Prepared & Sanctioned (Date and Value) INR	Finalization of Bidding Document (Date)	IFAD's No Objection to Bidding Document (Date)**	Bids		Contract Award decided (Date/Value/Currency)	IFAD's No Objection to Contract Award (Date)**
										Invitation (Date)	Opened on		
1	2	3	4	5	6	7	8	9	10	11	12	13	
PP	1	1	Cross drainage structures with protective features side drains such as slab or pipe culverts for the existing road segments with climate resilient protective features with longitudinal GPS coordinates from xx to xx for approximate distance of 10 km in District xx	4,537,000.00	LCB								
R													
A													
PP	2	2	Cross drainage structures with protective features side drains such as slab or pipe culverts for the existing road segments with climate resilient protective features with longitudinal GPS coordinates from xx to xx for approximate distance of 10 km in District xx	4,537,000.00									
R													
A													
PP	3	3	Cross drainage structures with protective features side drains such as slab or pipe culverts for the existing road segments with climate resilient protective features with longitudinal GPS coordinates from xx to xx for approximate distance of 10 km in District xx	4,537,000.00									
R													
A													
PP	4	4	Cross drainage structures with protective features side drains such as slab or pipe culverts for the existing road segments with climate resilient protective features with longitudinal GPS coordinates from xx to xx for approximate distance of 10 km in District xx	4,537,000.00									
R													
A													
PP	5	5	Cross drainage structures with protective features side drains such as slab or pipe culverts for the existing road segments with climate resilient protective features with longitudinal GPS coordinates from xx to xx for approximate distance of 10 km in District xx	4,537,000.00									
R													
A													
PP	6	6	Cross drainage structures with protective features side drains such as slab or pipe culverts for the existing road segments with climate resilient protective features with longitudinal GPS coordinates from xx to xx for approximate distance of 10 km in District xx	4,537,000.00									
R													
A													
PP	7	7	Cross drainage structures with protective features side drains such as slab or pipe culverts for the existing road segments with climate resilient protective features with longitudinal GPS coordinates from xx to xx for approximate distance of 10 km in District xx	4,537,000.00									
R													
A													
PP	8	8	Cross drainage structures with protective features side drains such as slab or pipe culverts for the existing road segments with climate resilient protective features with longitudinal GPS coordinates from xx to xx for approximate distance of 10 km in District xx	4,537,000.00									
R													
A													
PP	9	9	Cross drainage structures with protective features side drains such as slab or pipe culverts for the existing road segments with climate resilient protective features with longitudinal GPS coordinates from xx to xx for approximate distance of 10 km in District xx	4,537,000.00									
R													
A													
PP	10	10	Cross drainage structures with protective features side drains such as slab or pipe culverts for the existing road segments with climate resilient protective features with longitudinal GPS coordinates from xx to xx for approximate distance of 10 km in District xx	4,537,000.00									
R													
A													



**Procurement Plan for 18 months (Jan 2017 – March 2019) related to Goods - Page 1 of 2**

Country-India													
Project Title / Loan/Grant Ref: FOSTERING CLIMATE RESILIENT UPLAND FARMING SYSTEMS IN THE NORTH EAST (Nagaland)													
Project Executive Agency: Department of Agriculture, Government of Nagaland													
Project Implementing Agency: PMU, SOCRAN													
DATE OF GPN: .....		Thresholds: > USD 100,000 equivalent for works, and > USD 100,000 equivalent for procurement of goods and > USD 100,000 equivalent for consultancy and services require IFAD prior review . The threshold are established on a Project to Project basis and are referenced in the Letters to the Borrowers.											
STATUS AS OF (Date):													
IFAD APPROVAL DATE: Original:		Current:											
SL No.	Package No.	Review by Bank Prior/Post	Description of Works/Goods	Estimated Cost (Local Currency) in INR	Method of Procurement	Design/ Investigation/Spec s. Completed (Date)	Final Estimate Prepared & Sanctioned (Date and Value) INR	Finalization of Bidding Document (Date)	IFAD's No Objection to Bidding Document (Date)**	Bids		Contract Award decided (Date/Value/Currency)	IFAD's No Objection to Contract Award (Date)**
1	2		3	4	5	6	7	8	9	10	11	12	13
*PP	1	1	8 Laptops for PMU, 4 desktops for PMU (INR 600,000)	600,000.00	LS								
R													
A													
*PP	2	2	6 printer cum scanners for PMU (INR 72,000)	72,000.00	LS								
R													
A													
*PP	3	3	1 heavy duty photocopier (A3/A4, LAN connectivity) (INR 150,000)	150,000.00	LS								
R													
A													
*PP	2	1	Furniture sets for PMU	500,000.00	LS								
R													
A													
*PP	3	1	13 desktop computers (PMU 4, DMU 8, Mktg 1)	455,000.00	LCB								
R													
A													
*PP	2	2	48 laptops	2,160,000.00	LCB								
R													
A													

**Procurement Plan for 18 months (Jan 2017 – March 2019) related to Goods - Page 2 of 2**

*PP		3		754 GPS sets to VLWs and 3 GPS to PMU	22,710,000.00														
R																			
A																			
*PP		4		120 nos. 8 inch screen android tablets with wi-fi connectivity	1,440,000.00														
R																			
A																			
*PP		5		9 nos. internet enabled LED TV with webcam for video conferencing	1,200,000.00														
R																			
A																			
*PP		6	Prior	8 nos. medium size B&W photocopier (A4) for DMUs	600,000.00	LCB													
R																			
A																			
*PP		7		9 nos. LCD projectors (1 for PMU and 8 for DMUs)	720,000.00														
R																			
A																			
*PP		8		Computer peripheral equipments (Monitors, USB storage, etc)	500,000.00														
R																			
A																			
*PP		9		One NT Server for M&E database and other databases including UPS and other related equipments	300,000.00														
R																			
A																			
*PP	4	1	Prior	21 4WD (1 Marketing, 1 Market Access, 8 DMUs, 11 PMU) Minimum 1400 CC, Diesel driven BS-IV standard	17,850,000.00	LCB													
R																			
A																			
*PP		2		2 premium 4WD Minimum 2000 cc, diesel driven and BS-IV Emission standard	3,400,000.00														
R																			
A																			
*PP		3		1 mini bus with 10+1 capacity, BS-IV Emission standard (Non-AC)	800,000.00														
R																			
A																			
*PP		4		1 Multipurpose vehicle BS-IV Emission standard Non-AC	1,800,000.00														
R																			
A																			
*PP		5		40 Motor cycles upto 125 CC	3,000,000.00														
R																			
A																			
*PP		5	1	Post	Equipments and kits for 74 VFA; Equipments and kits for 377 CAHW	2,988,000.00	LCB												
R																			
A																			
*PP		6	1	post	Furniture sets for District xx	200,000.00	LS												
R																			
A																			
*PP			2		Furniture sets for District xx	200,000.00	LS												
R																			
A																			
*PP			3		Furniture sets for District xx	200,000.00	LS												
R																			
A																			
*PP			4		Furniture sets for District xx	200,000.00	LS												
R																			
A																			
*PP			5		Furniture sets for District xx	200,000.00	LS												
R																			
A																			
*PP			6		Furniture sets for District xx	200,000.00	LS												
R																			
A																			
*PP			7		Furniture sets for District xx	200,000.00	LS												
R																			
A																			
*PP			8		Furniture sets for District xx	200,000.00	LS												
R																			
A																			
<b>Sub Total</b>					<b>61,523,000.00</b>														
<b>Total</b>																			
*PP: Target dates agreed as per Procurement Plan R: revision 1,2 etc.										A: actual dates									
** Applicable in case of 'Prior Review' by IFAD																			

### Procurement Plan for 18 months(Jan 2017 – March 2019) related to Services - Page 1 of 1

Country-India														
Project Title / Loan/Grant Ref: FOSTERING CLIMATE RESILIENT UPLAND FARMING SYSTEMS IN THE NORTH EAST (Nagaland)														
Project Executive Agency: Department of Agriculture, Government of Nagaland														
Project Implementing Agency: PMU, SOCRAN														
DATE OF GPN: .....			Thresholds: > USD 100,000 equivalent for works, and > USD 100,000 equivalent for procurement of goods and > USD 100,000 equivalent for consultancy and services require IFAD prior review . The threshold are established on a Project to Project basis and are referenced in the Letters to the Borrowers.											
STATUS AS OF (Date):														
IFAD APPROVAL DATE: Original: Current:														
Sl. No.	Package No.	Review by IFAD Prior/Post	Description of Services	Estimated Cost (INR)	Method of Selection	Advertising for EOI (Date)	TOR/Shortlist Finalized (Date)	RFP Final Draft forwarded to IFAD (Date)**	IFAD's No Objection for TOR Shortlist/Final REP (Date)**	RFP Issued (Date)	Proposals Received by the Project Authorities (Date)	Evaluation Finalized (Technical // Combined/Draft Contract/Final Contract)	Contract Award decided (Date)	IFAD's No Objection (Technical // Combined/Draft Contract/Final Contract)
1	2		3	4	5	6	7	8	9	10	11	12	13	14
<b>Component 1 -</b>														
*PP R A	1	C1	Prior	Preparation of 8 land use maps, 754 village land suitability classification maps and institutional capacity support from NIRSAC	21,680,000.00	SSS	NA							
*PP R A	2	1	Prior	Technical Assistance on different thematic areas through UN FAO financed by In-Loan Grant	37,400,000.00	SSS	NA							
*PP R A	3	1	Post	Consultancy for 4 months on Road Survey and Design	1,200,000.00	CQS								
*PP R A	4	1	Post	Consultancy support from Nagaland Agricultural Research Station	3,000,000.00	SSS								
*PP R A	5	1	Post	Cusotmisation of accounting software for financial reporting	600,000.00	SSS								
*PP R A	6	1	Post	Consultant agency for design, training and marketing linkage for bamboo products	1,500,000.00	CQS								
*PP R A	7	1	Post	Internal audit including handholding support for PMU and DMUs	1,800,000.00	QCBS								
*PP R A	8	1	Post	External audit through CA firm	400,000.00	QCBS								
*PP R A	9	1	Post	2 Subsector outcome survey	2,000,000.00	QCBS								
*PP R A	10	1	Post	Consultancy for conducting Annual Outcome Survey	1,000,000.00	QCBS								
*PP R A	11	1	post	Engaging enumerators through agency for M&E Surveys District x	187,500.00	LCS								
*PP R A	12	1	Post	Engaging enumerators through agency for M&E Surveys District x	187,500.00	LCS								
*PP R A	13	1	Post	Engaging enumerators through agency for M&E Surveys District x	187,500.00	LCS								
*PP R A	14	1	Post	Engaging enumerators through agency for M&E Surveys District x	187,500.00	LCS								
*PP R A	15	1	Post	Engaging enumerators through agency for M&E Surveys District x	187,500.00	LCS								
*PP R A	16	1	Post	Engaging enumerators through agency for M&E Surveys District x	187,500.00	LCS								
*PP R A	17	1	Post	Engaging enumerators through agency for M&E Surveys District x	187,500.00	LCS								
*PP R A	18	1	Post	Engaging enumerators through agency for M&E Surveys District x	187,500.00	LCS								
*PP R A	19	1	Prior	Technical assistance from ICAR and ATARI for capacity building and knowledge sharing	17,000,000.00	SSS								
*PP R A	20	1	Post	Engaging consultancy agency for preparing the climate risk assessment	500,000.00	CQS								
*PP R A	21	1	Post	Consultancy for climate impact assessment study and other studies	3,000,000.00	QCBS								
*PP R A	22	1	Post	Designing and hosting of project website	800,000.00	CQS								
<b>Total</b>				<b>93,380,000.00</b>										
PP: Target dates agreed as per Procurement Plan				R: revision 1,2 etc.				A: actual dates						
** Applicable in case of 'Prior Review' by IFAD														

## Appendix 9: Project costs and financing

- Introduction:** This Appendix describes the assumptions underlying the calculation of the project costs and estimates. It presents summary and detailed cost tables and proposed financing plans. Detailed costs were presented in INR and the summary costs in USD equivalents. All these Tables were generated using the Costab ver 3.2. (File reference: FOCUS\_Naga6.tab)
- Project period:** Annual cost estimates are presented in the corresponding fiscal year of India, ie April to March. The designed project duration is 6 years starting from the fiscal: 2018/2019.
- Annual Inflation:** In line with the estimates from The Economic Intelligence Unit, the annual domestic inflation rate has been set at 4.7% for the whole project period and that of the foreign inflation, ie USD set at 2%.
- Exchange rate:** Initial exchange rate has been assumed at INR 68 to one USD, the rate prevailing at the time of detailed design. Although the current exchange rate is at INR 65 to one USD, it is forecast that the exchange rate at the end of 2017 would be about INR 68 to one USD and the same has been set for the whole project period. No CPP option is used.
- Unit costs:** All unit costs are input in INR and are expressed in constant 2017 prices. These unit prices were provided by the GON and also collected during the mission.
- Taxes and duties:** Taxes are applied to all expenditure categories in accordance with the provisions contained in newly introduced GST of GOI. No taxes were assumed for training and workshop and also for Grants and Subsidies. All taxes and duties have been fully accounted for and treated as a part of GON counter-part contribution to the project. But no taxes were applied for parallel-financing items and other government-financed works.
- Physical and price contingencies:** Physical contingencies have been assumed at 7.5% for all civil work categories that are based on typical engineering estimates. Price contingencies related to annual inflation rate are applied to all expenditures.
- Costab accounts:** Expenditure and disbursement categories have been set in accordance with IFAD Circular IC/FOD/02/2013 on standardization of expenditures categories. Identical categories have also been set for procurement accounts also. These accounts are shown in Table-1 below.

Procurement accounts (PA)	Disbursement accounts (DA)	Expenditure accounts (EA)
<i>Civil works_PA</i>	<i>Civil works_DA</i>	<i>Civil works_EA</i>
<i>Equipment_PA</i>	<i>Equipment_DA</i>	<i>Equipment_EA</i>
<i>Consultancy_PA</i>	<i>Consultancy_DA</i>	<i>Consultancy_EA</i>
<i>Grants and subsidies_PA</i>	<i>Grants and subsidies_DA</i>	<i>Grants and subsidies_EA</i>
<i>Goods, services and inputs_PA</i>	<i>Goods, services and inputs_DA</i>	<i>Goods, services and inputs_EA</i>
<i>Training, workshop_PA</i>	<i>Training, workshop_DA</i>	<i>Training, workshop_EA</i>
<i>Salaries and allowances_PA</i>	<i>Salaries and allowances_DA</i>	<i>Salaries and allowances_EA</i>
<i>Operating costs_PA</i>	<i>Operating costs_DA</i>	<i>Operating costs_EA</i>

- Project costable structure:** The FOCUS project has 3 main components and 5 sub-components and accordingly the detailed cost tables have been structures as shown below in Table-2.

Components	Sub-components	Detailed cost Table Reference #
<i>A. Improved Jhum management</i>	<i>1. Better Jhum and conservation</i>	<i>1.1</i>
	<i>2. Settled agriculture</i>	<i>1.2</i>

B. Value chain development and market access infrastructure	1. Value chain development	2.1
	2. Market access infrastructure	2.2
C. Project management	1. Project management and M&E and KM	3.1

10. Detailed cost tables contain such information as units, quantities by year, unit cost in INR, total costs by year and activity, disbursement account and financing rules for each activity.

11. **Total project costs:** Total project costs including physical and price contingencies and taxes are estimated at USD 89.16 (INR 6,062.75 million). Taxes<sup>57</sup> account for about USD 3.18 of the total costs in the form of foregone taxes on IFAD Loan. Price contingencies account for about 8% of baseline estimates and the physical contingencies being 1% of the baseline estimates. The project costs by component are shown in Table-3 below and the details in Annex-1 & 2 of this Appendix-9.

India FOCUS_Nagaland State Components Project Cost Summary			
	(INR '000)	(US\$ '000)	% Total Base Costs
	Total	Total	
<b>A. Improved Jhum Cultivation</b>			
1. Better Jhum and Conservation	1,525,955.1	22,440.5	27
2. Support to settled agriculture	454,768.6	6,687.8	8
<b>Subtotal</b>	<b>1,980,723.7</b>	<b>29,128.3</b>	<b>35</b>
<b>B. Market access and value chain development</b>			
1. Value chain development	1,013,160.4	14,899.4	18
2. Market Access Infrastructure	1,644,847.7	24,188.9	29
<b>Subtotal</b>	<b>2,658,008.2</b>	<b>39,088.4</b>	<b>48</b>
<b>C. Project Management</b>			
1. Project Management	947,834.3	13,938.7	17
<b>Subtotal</b>	<b>947,834.3</b>	<b>13,938.7</b>	<b>17</b>
<b>Total BASELINE COSTS</b>	<b>5,586,566.2</b>	<b>82,155.4</b>	<b>100</b>
Physical Contingencies	45,108.7	663.4	1
Price Contingencies	431,077.8	6,339.4	8
<b>Total PROJECT COSTS</b>	<b>6,062,752.6</b>	<b>89,158.1</b>	<b>109</b>

12. Project investment costs is USD 69.04 million (77.7 % of the total costs) and that of the recurrent costs is USD 20.11 million (22.3% of total costs). The project costs by component and by year are presented in Table-4 below:

India FOCUS_Nagaland State Project Components by Year -- Totals Including Contingencie							
	Totals Including Contingencies (US\$ '000)						
	18/19	19/20	20/21	21/22	22/23	23/24	Total
<b>A. Improved Jhum Cultivation</b>							
1. Better Jhum and Conservation	6,681.4	7,248.9	3,701.9	3,682.7	2,299.0	1,114.6	24,728.7
2. Support to settled agriculture	1,708.9	2,481.5	2,218.1	861.0	-	-	7,269.5
<b>Subtotal</b>	<b>8,390.3</b>	<b>9,730.4</b>	<b>5,920.1</b>	<b>4,543.7</b>	<b>2,299.0</b>	<b>1,114.6</b>	<b>31,998.2</b>
<b>B. Market access and value chain development</b>							
1. Value chain development	1,387.4	4,173.3	3,940.8	3,276.0	2,280.1	1,315.8	16,373.4
2. Market Access Infrastructure	777.4	5,802.7	5,857.7	5,940.1	4,733.4	1,846.0	24,957.3
<b>Subtotal</b>	<b>2,164.8</b>	<b>9,976.0</b>	<b>9,798.5</b>	<b>9,216.1</b>	<b>7,013.5</b>	<b>3,161.8</b>	<b>41,330.7</b>
<b>C. Project Management</b>							
1. Project Management	2,682.9	2,534.0	2,547.1	2,705.4	2,618.8	2,741.0	15,829.2
<b>Subtotal</b>	<b>2,682.9</b>	<b>2,534.0</b>	<b>2,547.1</b>	<b>2,705.4</b>	<b>2,618.8</b>	<b>2,741.0</b>	<b>15,829.2</b>
<b>Total PROJECT COSTS</b>	<b>13,238.0</b>	<b>22,240.4</b>	<b>18,265.7</b>	<b>16,465.2</b>	<b>11,931.3</b>	<b>7,017.4</b>	<b>89,158.1</b>

<sup>57</sup> Taxes broadly include 10% of staff salaries, 20% for vehicles and equipment, 10% for goods, services and inputs, 15% for consulting services, etc for IFAD financed categories. No taxes applied for all government-financed activities.

13. **Financing Plan:** Sources of financing of the FOCUS are (i) IFAD loan, (ii) IFAD Grant, (iii) parallel financing of GOI's centrally sponsored schemes, (iv) Convergence funds such as MGNREGA and (v) the participating beneficiaries and along with GOM's counter-part funds. The proposed financing arrangements by project components by financiers are shown in Table-5 below.

India FOCUS_Nagaland State Components by Financiers (US\$ '000)																
	Govt		IFAD Loan		IFAD Grant		Parallel finance (CSS)		Parallel Finance,GON		Beneficiaries		Convergence		Total	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
<b>A. Improved Jhum Cultivation</b>																
1. Better Jhum and Conservation	5,966.6	24.1	14,317.9	57.9	-	-	3,149.2	12.7	349.9	1.4	945.1	3.8	-	-	24,728.7	27.7
2. Support to settled agriculture	289.0	4.0	6,076.6	83.6	550.0	7.6	-	-	-	-	353.9	4.9	-	-	7,269.5	8.2
<b>Subtotal</b>	<b>6,255.6</b>	<b>19.5</b>	<b>20,394.5</b>	<b>63.7</b>	<b>550.0</b>	<b>1.7</b>	<b>3,149.2</b>	<b>9.8</b>	<b>349.9</b>	<b>1.1</b>	<b>1,299.1</b>	<b>4.1</b>	<b>-</b>	<b>-</b>	<b>31,998.2</b>	<b>35.9</b>
<b>B. Market access and value chain development</b>																
1. Value chain development	836.4	5.1	9,049.2	55.3	-	-	3,495.7	21.3	390.0	2.4	2,602.1	15.9	-	-	16,373.4	18.4
2. Market Access Infrastructure	874.1	3.5	4,340.8	17.4	-	-	5,880.0	23.6	727.5	2.9	-	-	13,134.8	52.6	24,957.3	28.0
<b>Subtotal</b>	<b>1,710.5</b>	<b>4.1</b>	<b>13,390.0</b>	<b>32.4</b>	<b>-</b>	<b>-</b>	<b>9,375.7</b>	<b>22.7</b>	<b>1,117.5</b>	<b>2.7</b>	<b>2,602.1</b>	<b>6.3</b>	<b>13,134.8</b>	<b>31.8</b>	<b>41,330.7</b>	<b>46.4</b>
<b>C. Project Management</b>																
1. Project Management	9,363.3	59.2	6,466.0	40.8	-	-	-	-	-	-	-	-	-	-	15,829.2	17.8
<b>Total PROJECT COSTS</b>	<b>17,329.3</b>	<b>19.4</b>	<b>40,250.4</b>	<b>45.1</b>	<b>550.0</b>	<b>0.6</b>	<b>12,524.9</b>	<b>14.0</b>	<b>1,467.5</b>	<b>1.6</b>	<b>3,901.2</b>	<b>4.4</b>	<b>13,134.8</b>	<b>14.7</b>	<b>89,158.1</b>	<b>100.0</b>

### Abbreviations used in cost tables

#### Project financiers:

Loan	IFAD Loan financing
Grant	IFAD Grant financing
CSS	GOI's centrally sponsored schemes
GON	GON contribution of 10% for CSS
Converge	Convergence of ongoing schemes of GOI
BEN	Participating beneficiaries
GOVT	GON counter-part funding

#### IFAD Disbursement Categories

CON	Consultancy services
CW	Civil work
TRW	Training, workshop, studies etc
EQUIP	Equipment, office equipment, vehicles etc
GSI	Goods, services and inputs
SAL	Salaries and allowances
OP	Office operating costs

#### Cost Table Accounts Categories

PA	Procurement account
DA	Disbursement account
EA	Expenditure account

## Appendix 9 – Annex 1: SUMMARY TABLES

India FOCUS_Nagaland State Components Project Cost Summary		(INR '000)			(US\$ '000)			% Foreign Exchange	% Total Base Costs
	Local	Foreign	Total	Local	Foreign	Total			
<b>A. Improved Jhum Cultivation</b>									
1. Better Jhum and Conservation	1,382,590.2	143,364.9	1,525,955.1	20,332.2	2,108.3	22,440.5	9	27	
2. Support to settled agriculture	359,534.6	95,234.0	454,768.6	5,287.3	1,400.5	6,687.8	21	8	
<b>Subtotal</b>	1,742,124.8	238,598.9	1,980,723.7	25,619.5	3,508.8	29,128.3	12	35	
<b>B. Market access and value chain development</b>									
1. Value chain development	831,593.3	181,567.1	1,013,160.4	12,229.3	2,670.1	14,899.4	18	18	
2. Market Access Infrastructure	1,230,196.8	414,650.9	1,644,847.7	18,091.1	6,097.8	24,188.9	25	29	
<b>Subtotal</b>	2,061,790.1	596,218.1	2,658,008.2	30,320.4	8,767.9	39,088.4	22	48	
<b>C. Project Management</b>									
1. Project Management	851,036.9	96,797.4	947,834.3	12,515.2	1,423.5	13,938.7	10	17	
<b>Subtotal</b>	851,036.9	96,797.4	947,834.3	12,515.2	1,423.5	13,938.7	10	17	
<b>Total BASELINE COSTS</b>	4,654,951.8	931,614.4	5,586,566.2	68,455.2	13,700.2	82,155.4	17	100	
Physical Contingencies	31,956.7	13,152.0	45,108.7	470.0	193.4	663.4	29	1	
Price Contingencies	403,470.9	27,606.8	431,077.8	5,933.4	406.0	6,339.4	6	8	
<b>Total PROJECT COSTS</b>	5,090,379.4	972,373.2	6,062,752.6	74,858.5	14,299.6	89,158.1	16	109	

India FOCUS_Nagaland State Procurement Accounts by Years (US\$ '000)		Totals Including Contingencies						
	18/19	19/20	20/21	21/22	22/23	23/24	Total	
1. Consultancies	81.9	191.6	137.8	268.3	267.9	151.7	1,099.1	
2. Works	802.6	7,463.1	7,859.4	7,457.8	4,675.9	1,781.0	30,039.8	
3. Equipment & Materials	921.5	94.0	42.6	78.8	-	-	1,136.9	
4. Grant&Subsidies	550.0	-	-	441.2	882.4	882.4	2,755.9	
5. Goods, Services & Inputs	4,008.3	7,537.1	4,863.5	4,593.0	2,453.5	388.0	23,843.3	
6. Training & Wshops	3,853.5	3,750.5	2,125.2	232.1	90.8	119.5	10,171.6	
7. Salaries & Allowances	2,363.2	2,499.8	2,483.6	2,590.0	2,711.7	2,806.2	15,454.6	
8. Operating Cost	657.1	704.4	753.6	804.0	849.2	888.6	4,656.9	
<b>Total</b>	13,238.0	22,240.4	18,265.7	16,465.2	11,931.3	7,017.4	89,158.1	

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Nagaland

India FOCUS_Nagaland State Procurement Arrangements (US\$ '000)	Procurement Method						Community Participation in Procurement	N.B.F.	Total
	Local Competitive Bidding	Consulting Services: QCBS	Consulting Services: LCS	Local Shopping	Direct Contracting				
	A. Consultancies	-	948.0 (590.6)	151.1 (128.5)	-	-			
B. Works	12,912.8 (5,382.6)	-	-	3,647.7 (2,569.4)	-	13,479.3 (282.5)	-	30,039.8 (8,234.5)	
C. Equipment & Materials	-	-	-	1,136.9 (911.2)	-	-	-	1,136.9 (911.2)	
D. Grant&Subsidies	-	-	-	2,205.9 (1,544.1)	550.0	-	-	2,755.9 (1,544.1)	
E. Goods, Services & Inputs	-	-	-	10,741.5 (5,803.9)	-	12,315.7 (7,525.1)	786.1	23,843.3 (13,328.9)	
F. Training & Wshops	35.0 (35.0)	-	-	9,663.0 (9,643.3)	473.5 (473.5)	-	-	10,171.6 (10,151.9)	
G. Salaries & Allowances	-	-	-	1,397.2 (1,288.0)	-	-	14,057.4 (285.3)	15,454.6 (1,573.3)	
H. Operating Cost	-	-	-	4,542.6 (3,787.5)	-	8.3	105.9	4,656.9 (3,787.5)	
<b>Total</b>	12,947.8 (5,417.6)	948.0 (590.6)	151.1 (128.5)	33,334.9 (25,547.3)	1,023.5 (473.5)	25,803.4 (7,807.5)	14,949.4 (285.3)	89,158.1 (40,250.4)	

Note: Figures in parenthesis are the respective amounts financed by IFAD Loan

India  
Fostering Climate Resilient Upland Farming Systems in the Northeast  
Design completion report – Appendices - Nagaland

India FOCUS_Nagaland State Disbursement Accounts by Financiers (US\$ '000)																	
	The Government		IFAD Loan		IFAD Grant		Parallel finance (CSS)		Parallel Finance,GON		Beneficiaries		Convergence		Total		Duties & Taxes
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	
1. Consultancies	128.4	11.7	719.1	65.4	-	-	226.5	20.6	25.2	2.3	-	-	-	-	1,099.1	1.2	128.4
2. Works	1,661.6	5.5	8,234.5	27.4	-	-	5,880.0	19.6	653.3	2.2	475.6	1.6	13,134.8	43.7	30,039.8	33.7	1,661.6
3. Equipment & Materials	225.7	19.9	911.2	80.1	-	-	-	-	-	-	-	-	-	-	1,136.9	1.3	204.6
4. Grant&Subsidies	-0.0	-0.0	1,544.1	56.0	550.0	20.0	-	-	-	-	661.8	24.0	-	-	2,755.9	3.1	-
5. Goods, Services & Inputs	625.8	2.6	13,328.9	55.9	-	-	6,418.4	26.9	714.8	3.0	2,755.4	11.6	-	-	23,843.3	26.7	384.9
6. Trainings & Wshops	19.7	0.2	10,151.9	99.8	-	-	-	-	-	-	-	-	-	-	10,171.6	11.4	19.7
7. Salaries & Allowances	13,881.3	89.8	1,573.3	10.2	-	-	-	-	-	-	-	-	-	-	15,454.6	17.3	160.8
8. Operating costs	786.9	16.9	3,787.5	81.3	-	-	-	-	74.2	1.6	8.3	0.2	-	-	4,656.9	5.2	600.4
<b>Total PROJECT COSTS</b>	<b>17,329.3</b>	<b>19.4</b>	<b>40,250.4</b>	<b>45.1</b>	<b>550.0</b>	<b>0.6</b>	<b>12,524.9</b>	<b>14.0</b>	<b>1,467.5</b>	<b>1.6</b>	<b>3,901.2</b>	<b>4.4</b>	<b>13,134.8</b>	<b>14.7</b>	<b>89,158.1</b>	<b>100.0</b>	<b>3,160.3</b>

India FOCUS_Nagaland State Components by Financiers (US\$ '000)																	
	Govt		IFAD Loan		IFAD Grant		Parallel finance (CSS)		Parallel Finance,GON		Beneficiaries		Convergence		Total		Duties & Taxes
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	
<b>A. Improved Jhum Cultivation</b>																	
1. Better Jhum and Conservation	5,966.6	24.1	14,317.9	57.9	-	-	3,149.2	12.7	349.9	1.4	945.1	3.8	-	-	24,728.7	27.7	384.0
2. Support to settled agriculture	289.0	4.0	6,076.6	83.6	550.0	7.6	-	-	-	-	353.9	4.9	-	-	7,269.5	8.2	284.3
<b>Subtotal</b>	<b>6,255.6</b>	<b>19.5</b>	<b>20,394.5</b>	<b>63.7</b>	<b>550.0</b>	<b>1.7</b>	<b>3,149.2</b>	<b>9.8</b>	<b>349.9</b>	<b>1.1</b>	<b>1,299.1</b>	<b>4.1</b>	<b>-</b>	<b>-</b>	<b>31,998.2</b>	<b>35.9</b>	<b>668.4</b>
<b>B. Market access and value chain development</b>																	
1. Value chain development	836.4	5.1	9,049.2	55.3	-	-	3,495.7	21.3	390.0	2.4	2,602.1	15.9	-	-	16,373.4	18.4	690.5
2. Market Access Infrastructure	874.1	3.5	4,340.8	17.4	-	-	5,880.0	23.6	727.5	2.9	-	-	13,134.8	52.6	24,957.3	28.0	767.7
<b>Subtotal</b>	<b>1,710.5</b>	<b>4.1</b>	<b>13,390.0</b>	<b>32.4</b>	<b>-</b>	<b>-</b>	<b>9,375.7</b>	<b>22.7</b>	<b>1,117.5</b>	<b>2.7</b>	<b>2,602.1</b>	<b>6.3</b>	<b>13,134.8</b>	<b>31.8</b>	<b>41,330.7</b>	<b>46.4</b>	<b>1,458.2</b>
<b>C. Project Management</b>																	
1. Project Management	9,363.3	59.2	6,466.0	40.8	-	-	-	-	-	-	-	-	-	-	15,829.2	17.8	1,033.7
<b>Total PROJECT COSTS</b>	<b>17,329.3</b>	<b>19.4</b>	<b>40,250.4</b>	<b>45.1</b>	<b>550.0</b>	<b>0.6</b>	<b>12,524.9</b>	<b>14.0</b>	<b>1,467.5</b>	<b>1.6</b>	<b>3,901.2</b>	<b>4.4</b>	<b>13,134.8</b>	<b>14.7</b>	<b>89,158.1</b>	<b>100.0</b>	<b>3,160.3</b>

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Nagaland

India FOCUS_Nagaland State Expenditure Accounts by Financiers (US\$ '000)																	
	he Government		IFAD Loan		IFAD Grant		Parallel finance (CSS)		Parallel Finance,GON		Beneficiaries		Convergence		Total		Duties & Taxes
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	
<b>I. Investment Costs</b>																	
A. Consultancies	128.4	11.7	719.1	65.4	-	-	226.5	20.6	25.2	2.3	-	-	-	-	1,099.1	1.2	128.4
B. Works	1,661.6	5.5	8,234.5	27.4	-	-	5,880.0	19.6	653.3	2.2	475.6	1.6	13,134.8	43.7	30,039.8	33.7	1,661.6
C. Equipment & Materials	225.7	19.9	911.2	80.1	-	-	-	-	-	-	-	-	-	-	1,136.9	1.3	204.6
D. Grant&Subsidies	-0.0	-0.0	1,544.1	56.0	550.0	20.0	-	-	-	-	661.8	24.0	-	-	2,755.9	3.1	-
E. Goods, Services & Inputs	625.8	2.6	13,328.9	55.9	-	-	6,418.4	26.9	714.8	3.0	2,755.4	11.6	-	-	23,843.3	26.7	384.9
F. Trainings & Wshops	19.7	0.2	10,151.9	99.8	-	-	-	-	-	-	-	-	-	-	10,171.6	11.4	19.7
<b>Total Investment Costs</b>	<b>2,661.1</b>	<b>3.9</b>	<b>34,889.7</b>	<b>50.5</b>	<b>550.0</b>	<b>0.8</b>	<b>12,524.9</b>	<b>18.1</b>	<b>1,393.3</b>	<b>2.0</b>	<b>3,892.8</b>	<b>5.6</b>	<b>13,134.8</b>	<b>19.0</b>	<b>69,046.6</b>	<b>77.4</b>	<b>2,399.1</b>
<b>II. Recurrent Costs</b>																	
A. Salaries & Allowances	13,881.3	89.8	1,573.3	10.2	-	-	-	-	-	-	-	-	-	-	15,454.6	17.3	160.8
B. Operating costs	786.9	16.9	3,787.5	81.3	-	-	-	-	74.2	1.6	8.3	0.2	-	-	4,656.9	5.2	600.4
<b>Total Recurrent Costs</b>	<b>14,668.2</b>	<b>72.9</b>	<b>5,360.8</b>	<b>26.7</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>74.2</b>	<b>0.4</b>	<b>8.3</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>20,111.5</b>	<b>22.6</b>	<b>761.2</b>
<b>Total PROJECT COSTS</b>	<b>17,329.3</b>	<b>19.4</b>	<b>40,250.4</b>	<b>45.1</b>	<b>550.0</b>	<b>0.6</b>	<b>12,524.9</b>	<b>14.0</b>	<b>1,467.5</b>	<b>1.6</b>	<b>3,901.2</b>	<b>4.4</b>	<b>13,134.8</b>	<b>14.7</b>	<b>89,158.1</b>	<b>100.0</b>	<b>3,160.3</b>

India FOCUS_Nagaland State Procurement Accounts by Financiers (US\$ '000)																	
	he Government		IFAD Loan		IFAD Grant		Parallel finance (CSS)		Parallel Finance,GON		Beneficiaries		Convergence		Total		Duties & Taxes
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	
1. Consultancies	128.4	11.7	719.1	65.4	-	-	226.5	20.6	25.2	2.3	-	-	-	-	1,099.1	1.2	128.4
2. Works	1,661.6	5.5	8,234.5	27.4	-	-	5,880.0	19.6	653.3	2.2	475.6	1.6	13,134.8	43.7	30,039.8	33.7	1,661.6
3. Equipment & Materials	225.7	19.9	911.2	80.1	-	-	-	-	-	-	-	-	-	-	1,136.9	1.3	204.6
4. Grant&Subsidies	-0.0	-0.0	1,544.1	56.0	550.0	20.0	-	-	-	-	661.8	24.0	-	-	2,755.9	3.1	-
5. Goods, Services & Inputs	625.8	2.6	13,328.9	55.9	-	-	6,418.4	26.9	714.8	3.0	2,755.4	11.6	-	-	23,843.3	26.7	384.9
6. Training & Wshops	19.7	0.2	10,151.9	99.8	-	-	-	-	-	-	-	-	-	-	10,171.6	11.4	19.7
7. Salaries & Allowances	13,881.3	89.8	1,573.3	10.2	-	-	-	-	-	-	-	-	-	-	15,454.6	17.3	160.8
8. Operating Cost	786.9	16.9	3,787.5	81.3	-	-	-	-	74.2	1.6	8.3	0.2	-	-	4,656.9	5.2	600.4
<b>Total PROJECT COSTS</b>	<b>17,329.3</b>	<b>19.4</b>	<b>40,250.4</b>	<b>45.1</b>	<b>550.0</b>	<b>0.6</b>	<b>12,524.9</b>	<b>14.0</b>	<b>1,467.5</b>	<b>1.6</b>	<b>3,901.2</b>	<b>4.4</b>	<b>13,134.8</b>	<b>14.7</b>	<b>89,158.1</b>	<b>100.0</b>	<b>3,160.3</b>

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Nagaland

India							%	% Total
FOCUS_Nagaland State		(INR '000)			(US\$ '000)		Foreign	Base
Expenditure Accounts	Project Cost Summ	Local	Foreign	Total	Local	Foreign	Exchange	Costs
<b>I. Investment Costs</b>								
A. Consultancies		51,963.2	13,568.6	65,531.8	764.2	199.5	21	1
B. Works		1,438,421.9	497,428.9	1,935,850.8	21,153.3	7,315.1	26	35
C. Equipment & Materials		52,351.8	23,370.6	75,722.4	769.9	343.7	31	1
D. Grant&Subsidies		187,400.0	-	187,400.0	2,755.9	-	-	3
E. Goods, Services & Inputs		1,269,655.3	203,679.4	1,473,334.7	18,671.4	2,995.3	14	26
F. Trainings & Wshops		519,600.2	132,753.5	652,353.7	7,641.2	1,952.3	20	12
<b>Total Investment Costs</b>		<b>3,519,392.5</b>	<b>870,800.9</b>	<b>4,390,193.4</b>	<b>51,755.8</b>	<b>12,805.9</b>	<b>20</b>	<b>79</b>
<b>II. Recurrent Costs</b>								
A. Salaries & Allowances		914,208.0	-	914,208.0	13,444.2	-	-	16
B. Operating costs		221,351.3	60,813.4	282,164.8	3,255.2	894.3	22	5
<b>Total Recurrent Costs</b>		<b>1,135,559.3</b>	<b>60,813.4</b>	<b>1,196,372.8</b>	<b>16,699.4</b>	<b>894.3</b>	<b>5</b>	<b>21</b>
<b>Total BASELINE COSTS</b>		<b>4,654,951.8</b>	<b>931,614.4</b>	<b>5,586,566.2</b>	<b>68,455.2</b>	<b>13,700.2</b>	<b>17</b>	<b>100</b>
Physical Contingencies		31,956.7	13,152.0	45,108.7	470.0	193.4	29	1
Price Contingencies		403,470.9	27,606.8	431,077.8	5,933.4	406.0	6	8
<b>Total PROJECT COSTS</b>		<b>5,090,379.4</b>	<b>972,373.2</b>	<b>6,062,752.6</b>	<b>74,858.5</b>	<b>14,299.6</b>	<b>16</b>	<b>109</b>

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Nagaland

India FOCUS_Nagaland State Project Components by Year -- Base Costs														
	Base Cost (INR '000)						Base Cost (US\$ '000)							
	18/19	19/20	20/21	21/22	22/23	23/24	Total	18/19	19/20	20/21	21/22	22/23	23/24	Total
<b>A. Improved Jhum Cultivation</b>														
1. Better Jhum and Conservation	444,628.1	459,686.3	224,040.9	211,629.7	127,110.0	58,860.0	1,525,955.1	6,538.6	6,760.1	3,294.7	3,112.2	1,869.3	865.6	22,440.5
2. Support to settled agriculture	114,606.2	156,245.6	133,573.2	50,343.8	-	-	454,768.6	1,685.4	2,297.7	1,964.3	740.3	-	-	6,687.8
<b>Subtotal</b>	<b>559,234.3</b>	<b>615,931.9</b>	<b>357,614.1</b>	<b>261,973.5</b>	<b>127,110.0</b>	<b>58,860.0</b>	<b>1,980,723.7</b>	<b>8,224.0</b>	<b>9,057.8</b>	<b>5,259.0</b>	<b>3,852.6</b>	<b>1,869.3</b>	<b>865.6</b>	<b>29,128.3</b>
<b>B. Market access and value chain development</b>														
1. Value chain development	92,141.2	264,592.4	239,179.4	194,775.8	139,050.3	83,421.4	1,013,160.4	1,355.0	3,891.1	3,517.3	2,864.3	2,044.9	1,226.8	14,899.4
2. Market Access Infrastructure	52,816.2	381,304.6	381,011.6	382,316.2	321,873.0	125,526.2	1,644,847.7	776.7	5,607.4	5,603.1	5,622.3	4,733.4	1,846.0	24,188.9
<b>Subtotal</b>	<b>144,957.3</b>	<b>645,897.0</b>	<b>620,191.0</b>	<b>577,092.0</b>	<b>460,923.3</b>	<b>208,947.5</b>	<b>2,658,008.2</b>	<b>2,131.7</b>	<b>9,498.5</b>	<b>9,120.5</b>	<b>8,486.6</b>	<b>6,778.3</b>	<b>3,072.8</b>	<b>39,088.4</b>
<b>C. Project Management</b>														
1. Project Management	179,034.4	161,481.8	155,432.9	158,553.6	146,480.9	146,850.7	947,834.3	2,632.9	2,374.7	2,285.8	2,331.7	2,154.1	2,159.6	13,938.7
<b>Subtotal</b>	<b>179,034.4</b>	<b>161,481.8</b>	<b>155,432.9</b>	<b>158,553.6</b>	<b>146,480.9</b>	<b>146,850.7</b>	<b>947,834.3</b>	<b>2,632.9</b>	<b>2,374.7</b>	<b>2,285.8</b>	<b>2,331.7</b>	<b>2,154.1</b>	<b>2,159.6</b>	<b>13,938.7</b>
<b>Total BASELINE COSTS</b>	<b>883,226.0</b>	<b>1,423,310.7</b>	<b>1,133,238.1</b>	<b>997,619.0</b>	<b>734,514.1</b>	<b>414,658.3</b>	<b>5,586,566.2</b>	<b>12,988.6</b>	<b>20,931.0</b>	<b>16,665.3</b>	<b>14,670.9</b>	<b>10,801.7</b>	<b>6,097.9</b>	<b>82,155.4</b>
Physical Contingencies	281.8	14,884.3	16,058.9	13,792.7	45.5	45.5	45,108.7	4.1	218.9	236.2	202.8	0.7	0.7	663.4
<b>Price Contingencies</b>														
<b>Inflation</b>														
Local	15,641.1	68,379.6	84,527.6	100,334.6	74,113.4	60,474.7	403,470.9	230.0	1,005.6	1,243.1	1,475.5	1,089.9	889.3	5,933.4
Foreign	1,036.2	5,774.4	8,245.7	7,890.1	2,657.1	2,003.3	27,606.8	15.2	84.9	121.3	116.0	39.1	29.5	406.0
<b>Subtotal Inflation</b>	<b>16,677.4</b>	<b>74,154.0</b>	<b>92,773.2</b>	<b>108,224.7</b>	<b>76,770.5</b>	<b>62,478.0</b>	<b>431,077.8</b>	<b>245.3</b>	<b>1,090.5</b>	<b>1,364.3</b>	<b>1,591.5</b>	<b>1,129.0</b>	<b>918.8</b>	<b>6,339.4</b>
Devaluation	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Price Contingencies	16,677.4	74,154.0	92,773.2	108,224.7	76,770.5	62,478.0	431,077.8	245.3	1,090.5	1,364.3	1,591.5	1,129.0	918.8	6,339.4
<b>Total PROJECT COSTS</b>	<b>900,185.1</b>	<b>1,512,348.9</b>	<b>1,242,070.2</b>	<b>1,119,636.4</b>	<b>811,330.2</b>	<b>477,181.8</b>	<b>6,062,752.6</b>	<b>13,238.0</b>	<b>22,240.4</b>	<b>18,265.7</b>	<b>16,465.2</b>	<b>11,931.3</b>	<b>7,017.4</b>	<b>89,158.1</b>

India FOCUS_Nagaland State Project Components by Year -- Totals Including Contingencie														
	Totals Including Contingencies (INR '000)						Totals Including Contingencies (US\$ '000)							
	18/19	19/20	20/21	21/22	22/23	23/24	Total	18/19	19/20	20/21	21/22	22/23	23/24	Total
<b>A. Improved Jhum Cultivation</b>														
1. Better Jhum and Conservation	454,337.0	492,927.0	251,732.3	250,424.0	156,334.3	75,795.2	1,681,549.7	6,681.4	7,248.9	3,701.9	3,682.7	2,299.0	1,114.6	24,728.7
2. Support to settled agriculture	116,204.4	168,741.4	150,833.4	58,549.8	-	-	494,329.0	1,708.9	2,481.5	2,218.1	861.0	-	-	7,269.5
<b>Subtotal</b>	<b>570,541.4</b>	<b>661,668.4</b>	<b>402,565.6</b>	<b>308,973.8</b>	<b>156,334.3</b>	<b>75,795.2</b>	<b>2,175,878.7</b>	<b>8,390.3</b>	<b>9,730.4</b>	<b>5,920.1</b>	<b>4,543.7</b>	<b>2,299.0</b>	<b>1,114.6</b>	<b>31,998.2</b>
<b>B. Market access and value chain development</b>														
1. Value chain development	94,345.2	283,786.0	267,977.2	222,766.0	155,043.5	89,474.0	1,113,392.0	1,387.4	4,173.3	3,940.8	3,276.0	2,280.1	1,315.8	16,373.4
2. Market Access Infrastructure	52,860.9	394,585.1	398,321.6	403,926.5	321,873.0	125,526.2	1,697,093.1	777.4	5,802.7	5,857.5	5,940.1	4,733.4	1,846.0	24,957.3
<b>Subtotal</b>	<b>147,206.1</b>	<b>678,371.1</b>	<b>666,298.8</b>	<b>626,692.4</b>	<b>476,916.5</b>	<b>215,000.2</b>	<b>2,810,485.1</b>	<b>2,164.8</b>	<b>9,976.0</b>	<b>9,798.5</b>	<b>9,216.1</b>	<b>7,013.5</b>	<b>3,161.8</b>	<b>41,330.7</b>
<b>C. Project Management</b>														
1. Project Management	182,437.6	172,309.5	173,205.8	183,970.1	178,079.4	186,386.4	1,076,388.8	2,682.9	2,534.0	2,547.1	2,705.4	2,618.8	2,741.0	15,829.2
<b>Subtotal</b>	<b>182,437.6</b>	<b>172,309.5</b>	<b>173,205.8</b>	<b>183,970.1</b>	<b>178,079.4</b>	<b>186,386.4</b>	<b>1,076,388.8</b>	<b>2,682.9</b>	<b>2,534.0</b>	<b>2,547.1</b>	<b>2,705.4</b>	<b>2,618.8</b>	<b>2,741.0</b>	<b>15,829.2</b>
<b>Total PROJECT COSTS</b>	<b>900,185.1</b>	<b>1,512,348.9</b>	<b>1,242,070.2</b>	<b>1,119,636.4</b>	<b>811,330.2</b>	<b>477,181.8</b>	<b>6,062,752.6</b>	<b>13,238.0</b>	<b>22,240.4</b>	<b>18,265.7</b>	<b>16,465.2</b>	<b>11,931.3</b>	<b>7,017.4</b>	<b>89,158.1</b>

India  
Fostering Climate Resilient Upland Farming Systems in the Northeast  
Design completion report – Appendices - Nagaland

India FOCUS_Nagaland State Expenditure Accounts by Years – Totals I														
	Totals Including Contingencies (INR '000)							Totals Including Contingencies (US\$ '000)						
	18/19	19/20	20/21	21/22	22/23	23/24	Total	18/19	19/20	20/21	21/22	22/23	23/24	Total
<b>I. Investment Costs</b>														
A. Consultancies	5,569.0	13,026.9	9,368.5	18,247.4	18,214.7	10,313.0	74,739.5	81.9	191.6	137.8	268.3	267.9	151.7	1,099.1
B. Works	54,576.4	507,492.3	534,439.2	507,132.6	317,959.2	121,107.7	2,042,707.4	802.6	7,463.1	7,859.4	7,457.8	4,675.9	1,781.0	30,039.8
C. Equipment & Materials	62,662.2	6,389.4	2,895.6	5,361.0	-	-	77,308.1	921.5	94.0	42.6	78.8	-	-	1,136.9
D. Grant&Subsidies	37,400.0	-	-	30,000.0	60,000.0	60,000.0	187,400.0	550.0	-	-	441.2	882.4	882.4	2,755.9
E. Goods, Services & Inputs	272,565.6	512,520.1	330,719.4	312,321.1	166,835.7	26,383.8	1,621,345.7	4,008.3	7,537.1	4,863.5	4,593.0	2,453.5	388.0	23,843.3
F. Trainings & Wshops	262,034.7	255,032.0	144,514.2	15,781.1	6,177.4	8,129.3	691,668.7	3,853.5	3,750.5	2,125.2	232.1	90.8	119.5	10,171.6
<b>Total Investment Costs</b>	<b>694,807.8</b>	<b>1,294,460.7</b>	<b>1,021,936.9</b>	<b>888,843.2</b>	<b>569,187.0</b>	<b>225,933.8</b>	<b>4,695,169.4</b>	<b>10,217.8</b>	<b>19,036.2</b>	<b>15,028.5</b>	<b>13,071.2</b>	<b>8,370.4</b>	<b>3,322.6</b>	<b>69,046.6</b>
<b>II. Recurrent Costs</b>														
A. Salaries & Allowances	160,697.7	169,986.5	168,887.9	176,120.8	184,398.5	190,824.6	1,050,915.9	2,363.2	2,499.8	2,483.6	2,590.0	2,711.7	2,806.2	15,454.6
B. Operating costs	44,679.6	47,901.7	51,245.5	54,672.4	57,744.7	60,423.4	316,667.3	657.1	704.4	753.6	804.0	849.2	888.6	4,656.9
<b>Total Recurrent Costs</b>	<b>205,377.3</b>	<b>217,888.2</b>	<b>220,133.3</b>	<b>230,793.2</b>	<b>242,143.2</b>	<b>251,248.0</b>	<b>1,367,583.2</b>	<b>3,020.3</b>	<b>3,204.2</b>	<b>3,237.3</b>	<b>3,394.0</b>	<b>3,560.9</b>	<b>3,694.8</b>	<b>20,111.5</b>
<b>Total PROJECT COSTS</b>	<b>900,185.1</b>	<b>1,512,348.9</b>	<b>1,242,070.2</b>	<b>1,119,636.4</b>	<b>811,330.2</b>	<b>477,181.8</b>	<b>6,062,752.6</b>	<b>13,238.0</b>	<b>22,240.4</b>	<b>18,265.7</b>	<b>16,465.2</b>	<b>11,931.3</b>	<b>7,017.4</b>	<b>89,158.1</b>

India FOCUS_Nagaland State Financing of Investment/Recurrent (US\$ '000)							
	Financing						
	18/19	19/20	20/21	21/22	22/23	23/24	Total
<b>I. Investment Costs</b>							
The Government	305.9	761.0	787.8	692.7	71.6	42.2	2,661.1
IFAD Loan	7,183.1	10,845.7	7,339.0	6,137.2	2,448.7	935.8	34,889.7
IFAD Grant	550.0	-	-	-	-	-	550.0
Parallel finance (CSS)	996.8	3,547.8	3,226.4	2,641.7	1,843.5	268.7	12,524.9
Parallel Finance,GON	111.0	394.5	358.7	293.8	205.1	30.1	1,393.3
Beneficiaries	328.9	964.1	793.5	782.7	759.0	264.7	3,892.8
Convergence	742.1	2,523.1	2,523.1	2,523.1	3,042.5	1,781.0	13,134.8
<b>Total Investment Costs</b>	<b>10,217.8</b>	<b>19,036.2</b>	<b>15,028.5</b>	<b>13,071.2</b>	<b>8,370.4</b>	<b>3,322.6</b>	<b>69,046.6</b>
<b>II. Recurrent Costs</b>							
The Government	2,164.9	2,270.4	2,374.7	2,495.6	2,622.6	2,740.0	14,668.2
IFAD Loan	855.3	932.9	852.4	879.0	916.0	925.1	5,360.8
IFAD Grant	-	-	-	-	-	-	-
Parallel finance (CSS)	-	-	-	-	-	-	-
Parallel Finance,GON	-	-	7.4	14.8	22.3	29.7	74.2
Beneficiaries	-	0.9	2.8	4.6	-	-	8.3
Convergence	-	-	-	-	-	-	-
<b>Total Recurrent Costs</b>	<b>3,020.3</b>	<b>3,204.2</b>	<b>3,237.3</b>	<b>3,394.0</b>	<b>3,560.9</b>	<b>3,694.8</b>	<b>20,111.5</b>
<b>Total Financing of Costs</b>	<b>13,238.0</b>	<b>22,240.4</b>	<b>18,265.7</b>	<b>16,465.2</b>	<b>11,931.3</b>	<b>7,017.4</b>	<b>89,158.1</b>

## Appendix 9 – Annex 2: Detailed Cost Tables

**Table 1.1: Better Jhum and Conservation**

India																		
FOCUS_Nagaland State																		
Table 1.1. Better Jhum and Conservation																		
Detailed Costs																		
Unit	Quantities						Total	Unit Cost (INR)	Totals Including Contingencies (INR '000)						Other Accounts			
	18/19	19/20	20/21	21/22	22/23	23/24			18/19	19/20	20/21	21/22	22/23	23/24	Total	Disb. Acct.	Fin. Rule	
<b>I. Investment Costs</b>																		
<b>A. Better Jhum and Conservation</b>																		
<b>1. Stakeholders' consultation</b>																		
District level consultation /a	district	8	-	-	-	-	8	100,000	824	-	-	-	-	-	824	TRW_DA	LOAN ( 100% )	
Village level consultation with VCs /b	VC	650	-	-	-	-	650	10,000	6,696	-	-	-	-	-	6,696	TRW_DA	LOAN ( 100% )	
FIG formation /c	village	300	350	-	-	-	650	30,000	9,271	11,265	-	-	-	-	20,536	TRW_DA	LOAN ( 100% )	
<b>Subtotal</b>									16,791	11,265	-	-	-	-	28,056			
<b>2. Land Use Planning</b>																		
Capacity building of NaGRSEC	lumpsum	1	1	-	-	-	2	500,000	515	536	-	-	-	-	1,051	TRW_DA	LOAN ( 100% )	
Land use maps /d	lumpsum	8	-	-	-	-	8	700,000	5,769	-	-	-	-	-	5,769	TRW_DA	LOAN ( 100% )	
Land suitability classification maps /e	village	650	-	-	-	-	650	20,000	13,401	-	-	-	-	-	13,401	TRW_DA	LOAN ( 100% )	
GPS to VLVs /f	each	650	-	-	-	-	650	30,000	20,195	-	-	-	-	-	20,195	EQUIP_DA	LOAN ( 80% )	
Training of VC members	VC	300	350	-	-	-	650	10,000	3,090	3,755	-	-	-	-	6,845	TRW_DA	LOAN ( 100% )	
Training and support to lead farmers	lead farmer	650	-	650	-	-	1,300	30,000	20,087	-	21,790	-	-	-	41,877	TRW_DA	LOAN ( 100% )	
Honourarium to lead farmers /g	lead farmer	7,800	7,800	7,800	-	-	23,400	1,000	8,035	8,368	8,716	-	-	-	25,119	TRW_DA	LOAN ( 100% )	
<b>Subtotal</b>									71,092	12,659	30,506	-	-	-	114,258			
<b>3. Orientation training to PMU &amp; DPMU</b>																		
PMU staff orientation in Delhi /h	pers_days	100	-	-	-	-	100	7,500	773	-	-	-	-	-	773	TRW_DA	LOAN ( 100% )	
DPMU staff orientation in Kohima /i	pers_days	200	-	-	-	-	200	2,000	412	-	-	-	-	-	412	TRW_DA	LOAN ( 100% )	
<b>Subtotal</b>									1,185	-	-	-	-	-	1,185			
<b>4. Better Jhum</b>																		
<b>a. Fallow management</b>																		
Legume cover crop - annual /j	per ha	-	3,000	6,500	3,500	-	13,000	1,500	-	4,828	10,895	6,111	-	-	21,834	GSI_DA	LOAN ( 90% ), BEN ( 10% )	
Legume cover crop - perennial	per ha	-	3,000	6,500	3,500	-	13,000	1,500	-	4,828	10,895	6,111	-	-	21,834	GSI_DA	LOAN ( 90% ), BEN ( 10% )	
Low cost bunds	per ha	-	5,400	5,400	5,450	-	16,250	2,000	-	11,587	12,068	12,688	-	-	36,343	GSI_DA	CSS ( 90% ), GON ( 10% )	
<b>Subtotal</b>									-	21,242	33,858	24,910	-	-	80,010			
<b>b. Current Jhum improvement</b>																		
Bunds, SCW	ha	5,400	6,300	-	-	-	11,700	5,000	27,813	33,794	-	-	-	-	61,608	GSI_DA	CSS ( 90% ), GON ( 10% )	
Farmer training /k	sessions	45,500	45,500	-	-	-	91,000	2,000	93,741	97,628	-	-	-	-	191,369	TRW_DA	LOAN ( 100% )	
Supply of quality seeds /l	household	45,500	45,500	-	45,500	45,500	182,000	1,500	69,854	73,137	-	80,173	83,942	-	307,106	GSI_DA	LOAN ( 90% ), BEN ( 10% )	
Supply of Planting materials for orchard crops	household	45,500	45,500	-	-	-	91,000	1,500	69,854	73,137	-	-	-	-	142,991	GSI_DA	LOAN ( 90% ), BEN ( 10% )	
<b>Subtotal</b>									261,262	277,696	-	80,173	83,942	-	703,073			
<b>Subtotal</b>									261,262	298,938	33,858	105,083	83,942	-	783,084			
<b>5. Community conservation forest</b>																		
Contour trenches in CCAs /m	ha	4,000	4,000	5,000	-	-	13,000	10,000	41,205	42,913	55,872	-	-	-	139,990	GSI_DA	CSS ( 90% ), GON ( 10% )	
Nursery establishment /n	ha	50	150	125	-	-	325	50,000	2,559	8,037	7,012	-	-	-	17,608	GSI_DA	LOAN ( 90% )	
Planting & maintenance /o	ha	-	4,000	4,000	5,000	-	13,000	5,000	-	21,432	22,439	29,368	-	-	73,239	GSI_DA	LOAN ( 90% )	
Protection of water sources /p	sites	-	600	600	750	-	1,950	50,000	-	34,608	36,005	46,830	-	-	117,443	CW_DA	LOAN ( 85% ), BEN ( 15% )	
<b>Subtotal</b>									43,764	106,990	121,329	76,198	-	-	348,280			
<b>Total Investment Costs</b>									394,094	429,852	185,693	181,281	83,942	-	1,274,862			
<b>II. Recurrent Costs</b>																		
<b>A. Salaries for Circle &amp; Village levels</b>																		
<b>1. Circle and village level staff</b>																		
Contractual staff for Circle offices /q	pers_month	444	444	444	444	444	444	2,664	20,000	9,089	9,516	9,963	10,431	10,922	11,435	61,356	SAL_DA	GOVT
Village level workers /r	pers_month	2,940	2,940	2,940	2,940	2,940	2,940	17,640	15,000	45,136	47,258	49,479	51,804	54,239	56,788	304,705	SAL_DA	GOVT
Motor cycle allowances /s	per month	2,940	2,940	2,940	2,940	2,940	2,940	17,640	2,000	6,018	6,301	6,597	6,907	7,232	7,572	40,627	OP_DA	LOAN ( 90% )
<b>Total Recurrent Costs</b>									60,243	63,075	66,039	69,143	72,393	75,795	406,688			
<b>Total</b>									454,337	492,927	251,732	250,424	156,334	75,795	1,681,550			

/a Village representatives are invited to this consultation  
 /b All community members are invited to this consultation  
 /c 20 members in a FIG in a village  
 /d Preparation of land use maps with the support of MIRSAC  
 /e For each village; prepared by NIRSAT  
 /f provided to each village level worker  
 /g one lead farmer per village, salary at INR 1000/month for 3 year period  
 /h For 3 days training and 2 days of travel  
 /i 5 days including two days of travel  
 /j 0.175 ha per household  
 /k Training of farmers conducted by the lead farmer in 3 sessions  
 /l such as rice, maize, beans, sesame, turmeric, ginger, etc for 0.2 ha/household  
 /m 20 ha per village  
 /n 0.5 ha per village - 1000 seedlings per ha  
 /o 20 ha per village; cost inclusive of maintenance for a 4 year period  
 /p 3 sites per village  
 /q As per approved vacant positions;  
 /r As per approved vacant positions  
 /s 491 in Block and village level staff

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Nagaland

**Table 1.2: Settled Agriculture, updated**

India																	
FOCUS_Nagaland State																	
Table 1.2. Support to settled agriculture																	
Detailed Costs																	
Unit	Quantities						Unit Cost (INR)	Totals Including Contingencies (INR '000)							Other Accounts		
	18/19	19/20	20/21	21/22	22/23	23/24		Total	18/19	19/20	20/21	21/22	22/23	23/24	Total	Disb. Acct.	Fin. Rule
<b>I. Investment Costs</b>																	
<b>A. Support to Settled Agriculture</b>																	
<b>1. Support to existing settled agriculture</b>																	
<b>a. Training and FIG promotion for TRC</b>																	
FIG promotion for TRC/WRT	FIG	300	350	-	-	-	650	30,000	9,271	11,265	-	-	-	-	20,536	TRW_DA	LOAN (100%)
Farmer training /a	sessions	13,000	13,000	13,000	-	-	39,000	2,000	26,783	27,894	29,053	-	-	-	83,730	TRW_DA	LOAN (100%)
<b>Subtotal</b>									36,054	39,158	29,053	-	-	-	104,266		
<b>b. Support for wetland agriculture</b>																	
Improved soil fertility measures - WRC/TRC /b	ha	-	3,000	3,000	3,750	-	9,750	1,850	-	5,956	6,196	8,059	-	-	20,211	GSI_DA	LOAN (90%), BEN (10%)
Support for wetland agriculture /c	ha	-	3,000	3,000	3,750	-	9,750	2,500	-	8,046	8,381	10,913	-	-	27,340	GSI_DA	LOAN (90%), BEN (10%)
<b>Subtotal</b>									-	14,002	14,577	18,972	-	-	47,551		
<b>c. Support to upland agriculture</b>																	
FIG promotion & support	FIG	300	350	-	-	-	650	30,000	9,271	11,265	-	-	-	-	20,536	TRW_DA	LOAN (100%)
Low cost SWC	ha	-	3,000	3,000	3,750	-	9,750	2,000	-	6,926	7,183	9,313	-	-	23,423	CW_DA	LOAN (85%)
Training on upland agriculture	sessions	13,000	13,000	13,000	-	-	39,000	2,000	26,783	27,894	29,053	-	-	-	83,730	TRW_DA	LOAN (100%)
Support for private nurseries and trainings	per nursery	50	50	-	-	-	100	100,000	5,151	5,364	-	-	-	-	10,515	GSI_DA	LOAN (90%), BEN (10%)
Supply of quality planting materials /d	household	-	13,000	13,000	13,000	-	39,000	2,000	-	27,894	29,053	30,265	-	-	87,212	GSI_DA	LOAN (90%), BEN (10%)
<b>Subtotal</b>									41,205	79,343	65,290	39,578	-	-	225,415		
<b>d. Irrigation support</b>																	
Irrigation support - water storage and delivery system /e	per system	-	300	350	-	-	650	100,000	-	34,629	41,913	-	-	-	76,542	CW_DA	LOAN (85%), BEN (15%)
<b>e. Support to Duck farming</b>																	
Supply of Ducklings /f	household	22,620	22,620	-	-	-	45,240	-	-	-	-	-	-	-	-	GSI_DA	LOAN (90%)
<b>Subtotal</b>									77,259	167,132	150,833	58,550	-	-	453,775		
2. Support to Agriculture Research Station /g	each	1	1	-	-	-	2	1,500,000	1,545	1,609	-	-	-	-	3,154	GSI_DA	LOAN (90%)
<b>3. Technical Assistance by FAO</b>																	
Technical Assistance by FAO	lumpsum	1	-	-	-	-	1	37,400,000	37,400	-	-	-	-	-	37,400	GRANT_DA	GRANT (100%)
<b>Total</b>									116,204	168,741	150,833	58,550	-	-	494,329		

/a Training by lead farmer to be conducted in 3 sessions  
 /b 0.25 ha/household  
 /c 0.25 ha per household  
 /d for 0.25 ha per household

/e such as common schemes like lift irrigation, water harvesting ponds, check dams  
 /f 5 ducklings per household and 60 hh per village  
 /g support to Nagaland state agriculture research stations

India  
Fostering Climate Resilient Upland Farming Systems in the Northeast  
Design completion report – Appendices - Nagaland

**Table 2.1: Value Chain Development**

India FOCUS_Nagaland State Table 2.1. Value chain development																		
Detailed Costs																		
Unit	Quantities							Unit Cost (INR)	Totals Including Contingencies (INR '000)							Other Accounts		
	18/19	19/20	20/21	21/22	22/23	23/24	Total		18/19	19/20	20/21	21/22	22/23	23/24	Total	Disb. Acct.	Fin. Rule	
<b>I. Investment Costs</b>																		
<b>A. Crop-based</b>																		
<b>1. Production Support</b>																		
a. FIGs promotion /a	per FIG	50	150	200	-	-	-	400	30,000	1,535	4,822	6,732	-	-	-	13,089	TRW_DA	LOAN ( 100% )
b. CRP training /b	per CRP	50	50	-	-	-	-	100	5,000	258	268	-	-	-	-	526	TRW_DA	LOAN ( 100% )
c. Training of FIG members /c	per FIG	1,000	3,000	4,000	-	-	-	8,000	2,500	2,575	8,046	11,174	-	-	-	21,796	TRW_DA	LOAN ( 100% )
d. CRP Engagement	per CRP	600	1,200	1,200	-	-	-	3,000	1,000	618	1,287	1,341	-	-	-	3,246	TRW_DA	LOAN ( 100% )
e. Production of improved planting material by CRPs /d	per CRP	50	50	-	-	-	-	100	70,000	3,605	3,755	-	-	-	-	7,360	GSI_DA	LOAN ( 100% )
f. Supply of Planting material - Large Cardamom	per ha	200	1,000	800	-	-	-	2,000	12,000	2,472	12,874	10,727	-	-	-	26,074	GSI_DA	LOAN ( 90% )
g. Supply of Planting material - Naga Chilli	per ha	200	300	500	-	-	-	1,000	1,500	309	483	838	-	-	-	1,630	GSI_DA	LOAN(90%)
h. Supply of planting material- Ginger	ha	200	300	500	-	-	-	1,000	7,500	1,545	2,414	4,190	-	-	-	8,149	GSI_DA	LOAN ( 90% )
<b>Subtotal</b>										12,918	33,950	35,003	-	-	-	81,871		
<b>2. Marketing Support</b>																		
<b>a. Marketing infrastructure</b>																		
Aggregation centres common facility centres /e	centre	-	10	20	20	-	-	50	1,500,000	-	17,316	35,916	37,254	-	-	90,486	CW_DA	LOAN ( 85% )
Equipment for aggregation center	set	-	10	20	20	-	-	50	100,000	-	1,074	2,227	2,310	-	-	5,612	EQUIP_DA	LOAN ( 85% )
Collection centres for storage and drying /f	centre	-	10	10	10	-	-	30	1,000,000	-	11,544	11,972	12,418	-	-	35,934	CW_DA	LOAN ( 85% )
<b>Subtotal</b>										-	29,934	50,115	51,982	-	-	132,031		
<b>b. Marketing support</b>																		
Design projects unspecified /g	each	-	1	1	-	-	-	2	1,500,000	-	1,609	1,675	-	-	-	3,285	GSI_DA	LOAN ( 90% )
Participation in Trade fairs and Exhibitions	lumpsum	-	1	1	1	1	1	5	500,000	-	536	558	581	605	630	2,912	GSI_DA	LOAN ( 90% )
Exposure visits	persons	-	5	5	5	5	-	20	50,000	-	268	279	291	303	-	1,142	TRW_DA	LOAN ( 100% )
Buyer-seller meet	lumpsum	-	1	1	1	1	1	5	1,000,000	-	1,073	1,117	1,164	1,213	1,263	5,830	TRW_DA	LOAN ( 100% )
Support for setting up of Agroprocessing units /h	lumpsum	-	-	5	5	5	-	15	2,000,000	-	-	11,164	11,617	12,089	-	34,870	GSI_DA	LOAN ( 75% ), BEN ( 25% )
Digital delivery of extension Tablets	cluster	50	100	50	-	-	-	200	12,000	621	1,289	668	-	-	-	2,578	EQUIP_DA	LOAN ( 80% )
Services for Digital Delivery of extension	lumpsum	-	1	1	-	-	-	2	450,000	-	483	502	-	-	-	985	CON_DA	LOAN ( 85% )
Organic Certification Spices	lumpsum	-	-	-	600	600	-	1,200	12,000	-	-	-	8,381	8,731	-	17,112	CON_DA	CSS ( 90% ), GON ( 10% )
<b>Subtotal</b>										621	5,258	15,966	22,034	22,941	1,894	68,715		
<b>c. Establishment of marketing unit</b>																		
Computer set	set	5	-	-	-	-	-	5	50,000	259	-	-	-	-	-	259	EQUIP_DA	LOAN ( 80% )
Furniture	set	5	-	-	-	-	-	5	40,000	207	-	-	-	-	-	207	EQUIP_DA	LOAN ( 80% )
Vehicles	set	1	-	-	-	-	-	1	850,000	880	-	-	-	-	-	880	EQUIP_DA	LOAN ( 80% )
Training Staff	persons	5	-	5	-	5	-	15	20,000	103	-	112	-	121	-	336	TRW_DA	LOAN ( 100% )
Studies	study	-	2	2	2	2	2	10	20,000	-	43	45	46	48	50	233	CON_DA	LOAN ( 85% )
Meeting workshops	workshop	1	2	2	1	1	-	7	50,000	52	107	112	58	61	-	389	TRW_DA	LOAN ( 100% )
<b>Subtotal</b>										1,501	150	268	105	230	50	2,304		
<b>Subtotal</b>										2,122	35,342	66,349	74,121	23,172	1,944	203,051		
<b>3. TA for spices cultivation</b>																		
a. TOT for spices /i	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	GRANT_DA	GRANT ( 100% )
b. Consultants - Marketing & Horticulture /j	pers_days	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	GRANT_DA	GRANT ( 100% )
<b>Subtotal</b>										-	-	-	-	-	-	-		
<b>4. Innovations</b>																		
Innovation Fund (Project support)	lumpsum	-	-	-	10	20	20	50	3,000,000	-	-	-	30,000	60,000	60,000	150,000	GRANT_DA	LOAN ( 70% ), BEN ( 30% )
<b>Subtotal</b>										15,040	69,292	101,352	104,121	83,172	61,944	434,921		

Contd..

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Nagaland

India  
 FOCUS\_Nagaland State  
 Table 2.1. Value chain development  
 Detailed Costs

Unit	Quantities							Unit Cost (INR)	Totals Including Contingencies (INR '000)							Other Accounts Fin. Rule	
	18/19	19/20	20/21	21/22	22/23	23/24	Total		18/19	19/20	20/21	21/22	22/23	23/24	Total		
<b>I. Investment Costs</b>																	
<b>B. Livestock-based</b>																	
<b>1. Pig Breeding</b>																	
<b>a. Capacity building</b>																	
Capacity Building: Training of farmers on breeding/ mgmt/ AH /k	farmer	37	74	37	-	-	-	148	7,100	271	564	294	-	-	-	1,128	LOAN ( 100% )
Capacity Building: Exposure visits- in state	farmer	37	74	37	-	-	-	148	5,500	210	437	227	-	-	-	874	LOAN ( 100% )
Capacity Building: Exposure visits- other states	farmer	37	74	37	-	-	-	148	15,000	572	1,191	620	-	-	-	2,383	LOAN ( 100% )
<b>Subtotal</b>										1,052	2,191	1,141	-	-	-	4,384	
<b>b. Pig breeding units</b>																	
Pig Breeding Stock (6 pigs & 1 boar)	lumpsum	37	74	37	-	-	-	148	35,000	1,334	2,779	1,447	-	-	-	5,560	LOAN ( 50% ), BEN ( 50% )
Construction of pig housing /l	structure	37	74	37	-	-	-	148	100,000	4,115	8,541	4,433	-	-	-	17,088	LOAN ( 50% ), BEN ( 50% )
<b>Subtotal</b>										5,449	11,320	5,880	-	-	-	22,648	
<b>c. AI unit for pigs</b>																	
Boar semen station construction	building	-	3	-	-	-	-	3	300,000	-	1,039	-	-	-	-	1,039	LOAN ( 85% )
Processing lab, store and office for AI station for pigs /m	lumpsum	-	3	-	-	-	-	3	2,366,670	-	7,619	-	-	-	-	7,619	LOAN ( 90% )
AI for pigs: purchase of boars	each	-	15	-	-	-	-	15	25,000	-	402	-	-	-	-	402	CSS ( 90% ), GON ( 10% )
Boar stations: operating costs	lumpsum	-	3	3	3	3	3	15	1,650,000	-	5,311	5,531	5,762	6,003	6,254	28,861	CSS ( 90% ), GON ( 10% )
<b>Subtotal</b>										-	14,371	5,531	5,762	6,003	6,254	37,921	
<b>d. Piglet distribution</b>																	
Distribution of cross-bred piglets /n	piglet	-	7,500	7,500	7,500	7,500	-	30,000	5,000	-	40,231	41,904	43,651	45,475	-	171,261	LOAN ( 50% ), BEN ( 50% )
<b>Subtotal</b>										6,501	68,113	54,456	49,413	51,478	6,254	236,215	
<b>2. Poultry Improvement</b>																	
<b>a. Backyard poultry</b>																	
Backyard poultry unit, chicks & equipment /o	package	-	5,000	5,000	5,000	5,000	-	20,000		-	-	-	-	-	-	-	LOAN ( 50% ), BEN ( 50% )
<b>3. Mithun development - existing herds</b>																	
Community mithun shelter/coral - materials, wood & labour	village	10	20	20	-	-	-	50	400,000	4,123	8,584	8,936	-	-	-	21,643	LOAN ( 50% ), BEN ( 50% )
Water supply to grazing areas and beneficiary labour	trough	40	80	80	-	-	-	200	120,000	4,948	10,300	10,723	-	-	-	25,971	LOAN ( 50% ), BEN ( 50% )
Fencing grazing areas - barbed wire, poles & labour	km	50	100	100	-	-	-	250	52,500	2,706	5,633	5,864	-	-	-	14,203	LOAN ( 50% ), BEN ( 50% )
Mineral block demonstration	village	10	20	20	-	-	-	50	50,000	515	1,073	1,117	-	-	-	2,705	LOAN ( 100% )
<b>Subtotal</b>										12,292	25,590	26,641	-	-	-	64,522	
<b>4. Strengthening Vet Section</b>																	
<b>a. Strengthening Vet Infrastructure</b>																	
Diagnostic kits for CSF	kits	5	5	5	5	5	5	30		-	-	-	-	-	-	-	CSS ( 90% ), GON ( 10% )
<b>5. Animal Health services</b>																	
<b>a. pig vaccination</b>																	
Pig vaccination /p	animal	50,000	100,000	200,000	200,000	200,000	200,000	950,000	42	2,163	4,506	9,386	9,778	10,186	10,613	46,633	CSS ( 90% ), GON ( 10% )
Mineral & vitamin supplements	village	377	377	377	377	-	-	1,508	5,000	1,942	2,022	2,106	2,194	-	-	8,265	CSS ( 90% ), GON ( 10% )
<b>Subtotal</b>										4,105	6,528	11,493	11,972	10,186	10,613	54,898	
<b>b. Poultry vaccination</b>																	
Poultry vaccination	1000 birds	500	1,000	1,100	1,100	1,100	1,100	5,900	1,000	515	1,073	1,229	1,280	1,334	1,390	6,821	CSS ( 90% ), GON ( 10% )
<b>Subtotal</b>										4,620	7,601	12,722	13,252	11,520	12,003	61,719	
<b>6. Feed and Fodder demonstrations</b>																	
Feed & fodder demonstration /q	lumpsum	350	300	-	-	-	-	650	45,000	16,224	14,483	-	-	-	-	30,708	LOAN ( 90% )
<b>7. Veterinary Field Assistant (VFA)</b>																	
Equipment and field materials for VFA	VFA	74	-	-	-	-	-	74	20,000	1,527	-	-	-	-	-	1,527	LOAN ( 90% )
Training of VFA /r	VFA	74	-	-	74	-	-	148	7,100	541	-	-	612	-	-	1,153	LOAN ( 100% )

Contd..

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Nagaland

India  
 FOCUS\_Nagaland State  
 Table 2.1. Value chain development

Detailed Costs	Unit	Quantities						Unit Cost (INR)	Totals Including Contingencies (INR '000)							Other Accounts		
		18/19	19/20	20/21	21/22	22/23	23/24		Total	18/19	19/20	20/21	21/22	22/23	23/24	Total	Disb. Acct.	Fin. Rule
<b>I. Investment Costs</b>																		
<b>10. Improvement to meat market chain</b>																		
Training on hygienic meat handling	youth	350	300	-	-	-	-	650	7,100	2,560	2,285	-	-	-	-	4,845	TRW_DA	LOAN ( 100% )
Equipment for demonstration shops	youth	350	300	-	-	-	-	650	10,000	3,625	3,222	-	-	-	-	6,846	EQUIP_DA	LOAN ( 80% )
Slaughter slab units	youth_unit	-	250	200	200	-	-	650	200,000	-	53,642	44,697	46,561	-	144,900	GSI_DA	CSS ( 90% ) , GON ( 10% )	
<b>Subtotal</b>										6,185	59,148	44,697	46,561	-	156,591			
11. Technical assistance /u	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	GRANT_DA	GRANT ( 100% )	
12. Support for other livestock and fish culture interventions	lumpsum	1	1	1	1	1	1	6	2,000,000	2,063	2,146	2,233	2,323	2,418	2,516	13,700	GSI_DA	CSS ( 90% ) , GON ( 10% )
<b>Subtotal</b>										86,106	212,310	169,760	121,764	75,421	31,198	696,558		
<b>Total Investment Costs</b>										101,146	281,602	271,112	225,885	158,592	93,142	1,131,480		
<b>II. Recurrent Costs</b>																		
<b>A. Salaries(Marketing section)</b>																		
<b>1. Salaries and allowances</b>																		
<b>(Marketing section)</b>																		
<b>a. Marketing section in</b>																		
<b>Agricultural Marketing Board</b>																		
Manager - Market Intelligence	pers_month	6	12	12	12	12	12	66	60,000	368	772	808	846	886	927	4,606	SAL_DA	LOAN ( 90% )
Manager - Market Policy & Research	pers_month	6	12	12	12	12	12	66	60,000	368	772	808	846	886	927	4,606	SAL_DA	LOAN ( 90% )
Manager - Market Linkage	pers_month	6	12	12	12	12	12	66	60,000	368	772	808	846	886	927	4,606	SAL_DA	LOAN ( 90% )
Marketing Assistants	pers_month	12	24	24	24	24	24	132	35,000	430	900	942	987	1,033	1,082	5,374	SAL_DA	LOAN ( 90% )
<b>Subtotal</b>										1,535	3,215	3,366	3,524	3,690	3,863	19,193		
<b>b. Operating costs</b>																		
Travel allowances	pers_month	30	60	60	60	60	60	330	5,000	155	322	335	349	364	379	1,904	OP_DA	LOAN ( 90% )
Office operating costs	year	1	1	1	1	1	1	6	60,000	62	64	67	70	73	75	411	OP_DA	LOAN ( 90% )
Vehicle operating cost	year	0.5	1	1	1	1	1	5.5	120,000	62	129	134	140	145	151	761	OP_DA	LOAN ( 90% )
<b>Subtotal</b>										278	515	536	558	582	606	3,075		
<b>Subtotal</b>										1,814	3,730	3,902	4,083	4,271	4,469	22,268		
<b>B. Salaries: Livestock</b>																		
<b>1. Salaries and allowances</b>																		
<b>(Livestock services)</b>																		
CAHW allowances	pers_year	650	650	-	-	-	-	1,300	12,000	7,983	8,359	-	-	-	-	16,342	SAL_DA	LOAN ( 90% )
VFA transportation allowances	VFA year	74	74	74	74	74	74	444	24,000	1,818	1,903	1,993	2,086	2,184	2,287	12,271	OP_DA	LOAN ( 90% )
<b>Subtotal</b>										9,801	10,262	1,993	2,086	2,184	2,287	28,613		
<b>C. Maintenance of Collection centres</b>																		
1. Collection centre/Common facility centre	annual	-	10	30	50	-	-	90	6,250	-	63	189	315	-	-	568	OP_DA	BEN ( 100% )
<b>Total Recurrent Costs</b>										11,615	14,055	6,084	6,484	6,456	6,756	51,449		
<b>Total</b>										112,761	295,657	277,196	232,369	165,048	99,898	1,182,929		

la 20 persons per FIG - 50 clusters - 4 villages - two FIGs in each village

lb 2 days training to each CRP

lc 3 sessions per FIG

ld cost towards setting up nurseries and supply of seedlings to farmers

le One centre per cluster of 4 villages; cost includes the cost design

and construction supervision

lf min 10,000 sq feet area; one centre for every 2 clusters

lg Including design, training and market linkage

lh private sector participation

li Details and costs included under TA to FAO in Component 3.1

lj Costs included under TA to FAO under Component 3.1

lk 5 days training + refresher. Including training

material, trainers resource persons etc.

ll cost-sharing basis

lm Includes refrigerator with solar unit,

maintenance costs, AI equipment for Boar station etc

ln one piglet per household

lo 20 birds per backyard unit; cost inclusive of materials etc

lp for foot&mouth diseases, classical, swine fever, deworming etc

lq Including demo on preparing improved feed

lr from banana stems, equipment, azolla tanks, etc

ls 5 days x 2

lt 50% of CAHW should be women

lu 5 days x 2

lv Costs included under TA for FAO in Component 3.1

**Table 2.2: Market Access Infrastructure**

India																		
FOCUS_Nagaland State																		
Table 2.2. Market Access Infrastructure																		
Detailed Costs																		
	Unit	Quantities							Unit Cost (INR)	Totals Including Contingencies (INR '000)							Other Accounts	
		18/19	19/20	20/21	21/22	22/23	23/24	Total		18/19	19/20	20/21	21/22	22/23	23/24	Total	Disb. Acct.	Fin. Rule
<b>I. Investment Costs</b>																		
<b>A. Market Access Infrastructure</b>																		
<b>1. Training &amp; capacity building of engineering staff of DOA</b>																		
Purchase of survey equipment	each	1	-	-	-	-	-	1	600,000	621	-	-	-	-	-	621	EQUIP_DA	LOAN ( 80% )
GPS for Kohima staff	each	3	-	-	-	-	-	3	30,000	93	-	-	-	-	-	93	EQUIP_DA	LOAN ( 80% )
Design software	set	1	-	-	-	-	-	1	700,000	722	-	-	-	-	-	722	GSI_DA	LOAN ( 90% )
Motor cycles /a	each	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	EQUIP_DA	LOAN ( 80% )
One 4 WD field vehicle	each	1	-	-	-	-	-	1	850,000	880	-	-	-	-	-	880	EQUIP_DA	LOAN ( 80% )
Training /b	pers_month	2	2	-	-	-	-	4	40,000	82	86	-	-	-	-	168	TRW_DA	LOAN ( 100% )
TA for Road design and supervision	pers_month	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	CON_DA	LOAN ( 85% )
<b>Subtotal</b>										2,399	86	-	-	-	-	2,485		
<b>2. Climate resilient Farm link roads</b>																		
Rehabilitation of earth roads /c	KM	-	50	50	50	50	-	200	2,191,000	-	111,067	111,067	111,067	111,067	-	444,267	CW_DA	CSS ( 90% ), GON ( 10% )
Surveys and quality control /d	lumpsum	-	300	-	-	-	-	300	5,000	-	1,610	-	-	-	-	1,610	CON_DA	LOAN ( 85% )
Gravelling of existing earth road with WBM /e	KM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	CW_DA	LOAN ( 85% )
Cross-drainage structures with protective works /f	each CDS	-	200	200	200	-	-	600	477,575	-	110,254	114,381	118,681	-	-	343,316	CW_DA	LOAN ( 85% )
<b>Subtotal</b>										-	222,930	225,448	229,748	111,067	-	789,193		
<b>3. Other rural infrastructure (Under Convergence)</b>																		
Construction of Channels for water harvesting	lumpsum	-	200	200	200	300	200	1,100	350,000	-	70,646	70,646	70,646	105,969	70,646	388,554	CW_DA	CONVERG ( 100% )
Complementary access works	lumpsum	0.1	0.2	0.2	0.2	0.2	0.1	1	500,000,000	50,462	100,923	100,923	100,923	100,923	50,462	504,615	CW_DA	CONVERG ( 100% )
<b>Subtotal</b>										50,462	171,569	171,569	171,569	206,892	121,108	893,169		
<b>Total Investment Costs</b>										52,861	394,585	397,017	401,317	317,959	121,108	1,684,847		
<b>II. Recurrent Costs</b>																		
<b>A. Operating Costs</b>																		
<b>1. Market access infrastructure</b>																		
Maintenance of earth roads	per km	-	-	50	100	150	200	500	10,000	-	-	505	1,009	1,514	2,018	5,046	OP_DA	GON ( 100% )
Maintenance of cross-drainage structures /g	each CDS	-	-	200	400	600	600	1,800	4,000	-	-	800	1,600	2,400	2,400	7,200	OP_DA	GOVT
<b>Total Recurrent Costs</b>										-	-	1,305	2,609	3,914	4,418	12,246		
<b>Total</b>										52,861	394,585	398,322	403,926	321,873	125,526	1,697,093		

<sup>a</sup> one each per district  
<sup>b</sup> on adopting climate resilient features and cost including construction of cross drainage and side drains  
<sup>c</sup> handling of total stations and design software  
<sup>d</sup> such as slab or pipe culverts for the existing road segments with climate resilient protective features  
<sup>e</sup> formation width of 5.5 m; cost inclusive of construction of drainage crossings  
<sup>f</sup> cost inclusive of survey and design and preparation of BOQ  
<sup>g</sup> Approximately 10% of the total cost of construction of gravel road  
<sup>h</sup> by involving the local community

**Table 3.1 Project Management and M&E and KM**

Detailed Costs																	
Unit	Quantities						Total	Unit Cost (INR)	Totals Including Contingencies (INR '000)							Other Accounts	
	18/19	19/20	20/21	21/22	22/23	23/24			18/19	19/20	20/21	21/22	22/23	23/24	Total	Disb. Acct.	Fin. Rule
<b>I. Investment Costs</b>																	
<b>A. Project Management</b>																	
<b>1. Vehicles PMU</b>																	
Vehicles 4WD - Premium	each	2	-	-	-	-	2	1,700,000	3,457	-	-	-	-	-	3,457	EQUIP_DA	LOAN ( 80% )
Vehicle 4WD - Budget	each	11	-	-	-	-	11	850,000	9,508	-	-	-	-	-	9,508	EQUIP_DA	LOAN ( 80% )
Multitility vehicle	each	1	-	-	-	-	1	1,800,000	1,864	-	-	-	-	-	1,864	EQUIP_DA	LOAN ( 80% )
Minibus	each	1	-	-	-	-	1	800,000	828	-	-	-	-	-	828	EQUIP_DA	LOAN ( 80% )
<b>Subtotal</b>									<b>15,658</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>15,658</b>		
<b>2. Vehicles DMU</b>																	
Vehicle 4WD - Budget	each	8	-	-	-	-	8	850,000	6,915	-	-	-	-	-	6,915	EQUIP_DA	LOAN ( 80% )
Motorcycle /a	each	40	-	-	40	-	80	75,000	3,051	-	-	3,051	-	-	6,101	EQUIP_DA	LOAN ( 80% )
<b>Subtotal</b>									<b>9,965</b>	<b>-</b>	<b>-</b>	<b>3,051</b>	<b>-</b>	<b>-</b>	<b>13,016</b>		
<b>3. Other equipments</b>																	
Video-conferencing facility - PMU and DMUs	set	1	-	-	-	-	1	1,200,000	1,243	-	-	-	-	-	1,243	EQUIP_DA	LOAN ( 80% )
<b>4. Office Equipment PMU</b>																	
Laptop computers	each	14	-	-	-	-	14	45,000	652	-	-	-	-	-	652	EQUIP_DA	LOAN ( 80% )
Desktop computers	each	4	-	-	-	-	4	35,000	145	-	-	-	-	-	145	EQUIP_DA	LOAN ( 80% )
Printers and scanners	each	6	-	-	-	-	6	10,000	62	-	-	-	-	-	62	EQUIP_DA	LOAN ( 80% )
Photocopy machines	each	1	-	-	-	-	1	150,000	155	-	-	-	-	-	155	EQUIP_DA	LOAN ( 80% )
Other equipments	lumpsum	1	-	-	-	-	1	500,000	518	-	-	-	-	-	518	EQUIP_DA	LOAN ( 80% )
Office furniture	lumpsum	1	1	-	-	-	2	500,000	518	537	-	-	-	-	1,055	EQUIP_DA	LOAN ( 80% )
Computer Peripherals /b	lumpsum	1	-	-	-	-	1	200,000	207	-	-	-	-	-	207	EQUIP_DA	LOAN ( 80% )
Tablets	lumpsum	60	-	-	-	-	60	12,000	746	-	-	-	-	-	746	EQUIP_DA	LOAN ( 80% )
<b>Subtotal</b>									<b>3,003</b>	<b>537</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>3,540</b>		
<b>5. Office Equipment DMU</b>																	
Laptop computers	unit	32	-	-	-	-	32	45,000	1,491	-	-	-	-	-	1,491	EQUIP_DA	LOAN ( 80% )
Desktop computers	set	8	-	-	-	-	8	35,000	290	-	-	-	-	-	290	EQUIP_DA	LOAN ( 80% )
Printers and scanners	set	8	-	-	-	-	8	10,000	83	-	-	-	-	-	83	EQUIP_DA	LOAN ( 80% )
Other equipments	lumpsum	8	-	-	-	-	8	100,000	828	-	-	-	-	-	828	EQUIP_DA	LOAN ( 80% )
Office furniture	set	8	-	-	-	-	8	200,000	1,657	-	-	-	-	-	1,657	EQUIP_DA	LOAN ( 80% )
Computer Peripherals /c	lumpsum	8	-	-	-	-	8	100,000	828	-	-	-	-	-	828	EQUIP_DA	LOAN ( 80% )
<b>Subtotal</b>									<b>5,178</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>5,178</b>		
<b>6. Registration and other expenses for the society</b>																	
	lumpsum	1	-	-	-	-	1	250,000	259	-	-	-	-	-	259	GSI_DA	LOAN ( 90% )
<b>7. Account &amp; Annual Audit</b>																	
Accounting software	lumpsum	9	9	9	9	9	54	20,000	186	193	201	209	218	226	1,233	GSI_DA	LOAN ( 90% )
Customisation of accounting software	lumpsum	1	-	-	-	-	1	600,000	619	-	-	-	-	-	619	GSI_DA	LOAN ( 90% )
Audit expenses	lumpsum	1	1	1	1	1	6	400,000	412	429	447	466	485	505	2,744	GSI_DA	LOAN ( 90% )
Internal Audit- External /d	lumpsum	9	9	9	9	9	54	200,000	1,856	1,931	2,010	2,092	2,177	2,267	12,334	GSI_DA	LOAN ( 90% )
<b>Subtotal</b>									<b>3,073</b>	<b>2,554</b>	<b>2,658</b>	<b>2,767</b>	<b>2,880</b>	<b>2,998</b>	<b>16,930</b>		
<b>Subtotal</b>									<b>38,379</b>	<b>3,091</b>	<b>2,658</b>	<b>5,817</b>	<b>2,880</b>	<b>2,998</b>	<b>55,824</b>		

Contd..

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Nagaland

Table 3.1. Project Management  
 Detailed Costs

Detailed Costs	Unit	Quantities						Unit Cost (INR)	Totals Including Contingencies (INR '000)						Other Accounts Fin. Rule		
		18/19	19/20	20/21	21/22	22/23	23/24		Total	18/19	19/20	20/21	21/22	22/23		23/24	Total
<b>I. Investment Costs</b>																	
<b>B. M&amp;E and Knowledge Management</b>																	
<b>1. Monitoring and Evaluation (M&amp;E)</b>																	
<b>a. Equipments</b>																	
Laptop computers	each	2	-	-	-	-	-	2	45,000	93	-	-	-	-	-	93	LOAN ( 80% )
Printer and scanner	each	1	-	-	-	-	-	1	35,000	36	-	-	-	-	-	36	LOAN ( 80% )
Other equipment- GPS etc.	lumpsum	0.5	0.5	-	-	-	-	1	200,000	104	107	-	-	-	-	211	LOAN ( 80% )
<b>Subtotal</b>										233	107	-	-	-	-	340	
<b>b. M&amp;E studies, wshops, surveys</b>																	
Baseline, mid-term and impact survey /e	study	1	-	-	1	-	1	3	-	-	-	-	-	-	-	-	GRANT ( 100% )
Sub-sector outcome surveys	survey	2	2	-	-	-	-	4	1,000,000	2,063	2,146	-	-	-	-	4,209	LOAN ( 85% )
Annual Outcome Survey	survey	1	1	1	1	1	1	6	1,000,000	1,031	1,073	1,117	1,162	1,210	1,259	6,852	LOAN ( 85% )
Case studies, Climate impact assessment study, other studies	lumpsum	-	2	2	2	2	2	10	1,500,000	-	3,219	3,350	3,486	3,629	3,778	17,462	LOAN ( 85% )
Climate Risk Assessment	lumpsum	-	1	1	1	1	1	5	500,000	-	537	558	581	605	630	2,910	LOAN ( 85% )
Enumerators for M&E unit surveys	district	8	8	8	8	8	8	48	187,500	1,547	1,610	1,675	1,743	1,814	1,889	10,278	LOAN ( 85% )
Project Completion review and workshop	lumpsum	-	-	-	-	-	1	1	2,500,000	-	-	-	-	-	3,159	3,159	LOAN ( 100% )
<b>Subtotal</b>										4,641	8,584	6,700	6,973	7,258	10,714	44,870	
c. M&E Consultants, agency /f	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	GRANT ( 100% )
d. MIS Development /g	lumpsum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	GRANT ( 100% )
<b>Subtotal</b>										4,874	8,692	6,700	6,973	7,258	10,714	45,210	
<b>2. Knowledge Management (KM)</b>																	
<b>a. Capacity Building and Knowledge sharing (ICAR)</b>																	
Workshop for dissemination of results	lumpsum	-	-	-	1	1	1	3	300,000	-	-	-	349	364	379	1,092	LOAN ( 100% )
Micro watershed management demonstrations /h	per district	-	8	8	8	8	-	24	400,000	-	3,433	3,576	3,725	-	-	10,734	LOAN ( 100% )
Technical backstopping	district	-	8	8	8	8	-	32	50,000	-	429	447	466	485	-	1,827	LOAN ( 100% )
Impact assessment of settled agriculture /i	lumpsum	1	-	-	1	-	1	3	600,000	618	-	-	698	-	758	2,075	LOAN ( 100% )
<b>Subtotal</b>										618	3,862	4,023	5,238	849	1,137	15,727	
<b>b. Capacity building &amp; knowledge sharing: ATARI</b>																	
Supply of improved planting material	village	-	200	200	250	-	-	650	10,000	-	2,146	2,235	2,910	-	-	7,291	LOAN ( 100% )
Action research with local institutions /j	per district	-	8	8	8	-	-	24	200,000	-	1,717	1,788	1,862	-	-	5,367	LOAN ( 100% )
Technical backstopping	district	-	8	8	8	8	-	32	20,000	-	172	179	186	194	-	731	LOAN ( 100% )
Training for Lead Farmers /k	person	-	50	150	72	-	-	272	1,500	-	80	251	126	-	-	458	LOAN ( 100% )
Demonstrations /l	demo	-	24	24	-	-	-	48	50,000	-	1,287	1,341	-	-	-	2,628	LOAN ( 100% )
<b>Subtotal</b>										-	5,402	5,794	5,084	194	-	16,474	
<b>c. Staff level training</b>																	
Monthly meetings at district level	meeting	48	96	96	96	96	96	528	8,000	396	824	858	894	931	970	4,873	LOAN ( 100% )
Quarterly meeting at state level	meeting	2	4	4	4	4	4	22	20,000	41	86	89	93	97	101	508	LOAN ( 100% )
Training in KM methods for sharing	batch	1	1	-	1	-	-	3	30,000	31	32	-	35	-	-	98	LOAN ( 100% )
<b>Subtotal</b>										468	942	948	1,022	1,028	1,071	5,479	
<b>d. Participants level</b>																	
Focus groups and participatory M&E	meetings	8	16	16	16	16	16	88	5,000	41	86	89	93	97	101	508	LOAN ( 100% )
Cluster level meetings - half-yearly	meetings	-	8	8	8	8	8	40	7,000	-	60	63	65	68	71	327	LOAN ( 100% )
Documenting lessons learnt	lumpsum	-	1	1	1	1	1	5	100,000	-	107	112	116	121	126	582	LOAN ( 85% )
Learning route - domestic	lumpsum	-	1	-	1	-	1	3	550,000	-	590	-	639	-	693	1,922	LOAN ( 85% )
Videos for farmer-to-farmer sharing: Equipment	set	-	1	-	-	-	-	1	150,000	-	161	-	-	-	-	161	LOAN ( 80% )
Videos for farmer-to-farmer sharing: Initial training	training	-	1	-	-	-	-	1	500,000	-	536	-	-	-	-	536	LOAN ( 100% )
Videos for farmer-to-farmer sharing: Follow-up training	lumpsum	-	-	0.3	0.3	0.3	0.1	1	4,000,000	-	-	1,341	1,397	1,455	505	4,698	LOAN ( 100% )
Videos for farmer-to-farmer sharing: Backstopping and support	lumpsum	-	-	0.3	0.3	0.3	0.1	1	1,000,000	-	-	335	349	363	126	1,172	LOAN ( 85% )
<b>Subtotal</b>										41	1,541	1,940	2,659	2,104	1,622	9,906	

India  
Fostering Climate Resilient Upland Farming Systems in the Northeast  
Design completion report – Appendices - Nagaland

Table 3.1. Project Management  
Detailed Costs

Unit	Quantities						Unit Cost (INR)	Totals Including Contingencies (INR '000)						Other Accounts Fin. Rule		
	18/19	19/20	20/21	21/22	22/23	23/24		Total	18/19	19/20	20/21	21/22	22/23		23/24	Total
<b>I. Investment Costs</b>																
<b>B. M&amp;E and Knowledge Management</b>																
<b>1. Monitoring and Evaluation (M&amp;E)</b>																
<b>a. Equipments</b>																
Laptop computers	each	2	-	-	-	-	2	45,000	93	-	-	-	-	-	93	LOAN ( 80% )
Printer and scanner	each	1	-	-	-	-	1	35,000	36	-	-	-	-	-	36	LOAN ( 80% )
Other equipment- GPS etc.	lumpsum	0.5	0.5	-	-	-	1	200,000	104	107	-	-	-	-	211	LOAN ( 80% )
<b>Subtotal</b>									233	107	-	-	-	-	340	
<b>b. M&amp;E studies, wshops, surveys</b>																
Baseline, mid-term and impact survey /e	study	1	-	-	1	-	1	3	-	-	-	-	-	-	-	GRANT ( 100% )
Sub-sector outcome surveys	survey	2	2	-	-	-	4	1,000,000	2,063	2,146	-	-	-	-	4,209	LOAN ( 85% )
Annual Outcome Survey	survey	1	1	1	1	1	1	1,000,000	1,031	1,073	1,117	1,162	1,210	1,259	6,852	LOAN ( 85% )
Case studies, Climate impact assessment study, other studies	lumpsum	-	2	2	2	2	2	1,500,000	-	3,219	3,350	3,486	3,629	3,778	17,462	LOAN ( 85% )
Climate Risk Assessment	lumpsum	-	1	1	1	1	1	500,000	-	537	558	581	605	630	2,910	LOAN ( 85% )
Enumerators for M&E unit surveys	district	8	8	8	8	8	8	187,500	1,547	1,610	1,675	1,743	1,814	1,889	10,278	LOAN ( 85% )
Project Completion review and workshop	lumpsum	-	-	-	-	-	1	2,500,000	-	-	-	-	-	3,159	3,159	LOAN ( 100% )
<b>Subtotal</b>									4,641	8,584	6,700	6,973	7,258	10,714	44,870	
c. M&E Consultants, agency /f	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	GRANT ( 100% )
d. MIS Development /g	lumpsum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	GRANT ( 100% )
<b>Subtotal</b>									4,674	8,692	6,700	6,973	7,258	10,714	45,210	
<b>2. Knowledge Management (KM)</b>																
<b>a. Capacity Building and Knowledge sharing (ICAR)</b>																
Workshop for dissemination of results	lumpsum	-	-	-	1	1	1	300,000	-	-	-	349	364	379	1,092	LOAN ( 100% )
Micro watershed management demonstrations /h	per district	-	8	8	8	-	-	400,000	-	3,433	3,576	3,725	-	-	10,734	LOAN ( 100% )
Technical backstopping	district	-	8	8	8	8	-	50,000	-	429	447	466	485	-	1,827	LOAN ( 100% )
Impact assessment of settled agriculture /i	lumpsum	1	-	-	1	-	1	600,000	618	-	-	698	-	758	2,075	LOAN ( 100% )
<b>Subtotal</b>									618	3,862	4,023	5,238	849	1,137	15,727	
<b>b. Capacity building &amp; knowledge sharing: ATARI</b>																
Supply of improved planting material	village	-	200	200	250	-	-	10,000	-	2,146	2,235	2,910	-	-	7,291	LOAN ( 100% )
Action research with local institutions /j	per district	-	8	8	8	-	-	200,000	-	1,717	1,788	1,862	-	-	5,367	LOAN ( 100% )
Technical backstopping	district	-	8	8	8	8	-	20,000	-	172	179	186	194	-	731	LOAN ( 100% )
Training for Lead Farmers /k	person	-	50	150	72	-	-	1,500	-	80	251	126	-	-	458	LOAN ( 100% )
Demonstrations /l	demo	-	24	24	-	-	-	50,000	-	1,287	1,341	-	-	-	2,628	LOAN ( 100% )
<b>Subtotal</b>									-	5,402	5,794	5,084	194	-	16,474	
<b>c. Staff level training</b>																
Monthly meetings at district level	meeting	48	96	96	96	96	96	8,000	396	824	858	894	931	970	4,873	LOAN ( 100% )
Quarterly meeting at state level	meeting	2	4	4	4	4	4	20,000	41	86	89	93	97	101	508	LOAN ( 100% )
Training in KM methods for sharing	batch	1	1	-	1	-	-	30,000	31	32	-	35	-	-	98	LOAN ( 100% )
<b>Subtotal</b>									468	942	948	1,022	1,028	1,071	5,479	
<b>d. Participants level</b>																
Focus groups and participatory M&E	meetings	8	16	16	16	16	16	5,000	41	86	89	93	97	101	508	LOAN ( 100% )
Cluster level meetings - half-yearly	meetings	-	8	8	8	8	8	7,000	-	60	63	65	68	71	327	LOAN ( 100% )
Documenting lessons learnt	lumpsum	-	1	1	1	1	1	100,000	-	107	112	116	121	126	582	LOAN ( 85% )
Learning route - domestic	lumpsum	-	1	-	1	-	1	550,000	-	590	-	639	-	693	1,922	LOAN ( 85% )
Videos for farmer-to-farmer sharing: Equipment	set	-	1	-	-	-	-	150,000	-	161	-	-	-	-	161	LOAN ( 80% )
Videos for farmer-to-farmer sharing: Initial training	training	-	1	-	-	-	-	500,000	-	536	-	-	-	-	536	LOAN ( 100% )
Videos for farmer-to-farmer sharing: Follow-up training	lumpsum	-	-	0.3	0.3	0.3	0.1	4,000,000	-	-	1,341	1,397	1,455	505	4,698	LOAN ( 100% )
Videos for farmer-to-farmer sharing: Backstopping and support	lumpsum	-	-	0.3	0.3	0.3	0.1	1,000,000	-	-	335	349	363	126	1,172	LOAN ( 85% )
<b>Subtotal</b>									41	1,541	1,940	2,659	2,104	1,622	9,906	

Contd....

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Nagaland

India  
 FOCUS\_Nagaland State  
 Table 3.1. Project Management

**Detailed Costs**

Unit	Quantities						Unit Cost (INR)	Totals Including Contingencies (INR '000)						Other Accounts Fin. Rule		
	18/19	19/20	20/21	21/22	22/23	23/24		18/19	19/20	20/21	21/22	22/23	23/24		Total	
<b>I. Investment Costs</b>																
<b>e. Dissemination and communication</b>																
Project start-up workshop	workshop	1	-	-	-	-	1	500,000	515	-	-	-	-	515	LOAN ( 90% )	
Village information kit	village	300	350	-	-	-	650	10,000	3,095	3,756	-	-	-	6,851	LOAN ( 90% )	
Posters and leaflets	lumpsum	-	1	1	1	1	5	80,000	-	86	89	93	101	465	LOAN ( 90% )	
Translation of technical materials	lumpsum	0.5	1	1	1	0.5	4.5	200,000	103	215	223	232	121	1,020	LOAN ( 85% )	
Printing of technical materials	lumpsum	-	1	1	1	1	5	600,000	-	644	670	697	725	3,491	LOAN ( 90% )	
Annual knowledge sharing events	event	-	1	1	1	1	5	500,000	-	536	559	582	606	2,915	LOAN ( 100% )	
Attending national events	person	-	5	5	5	5	25	30,000	-	161	168	175	182	190	875	LOAN ( 100% )
Editing and design of publications	lumpsum	-	1	1	1	1	5	500,000	-	537	558	581	605	2,910	LOAN ( 85% )	
Website design and operation	lumpsum	1	1	1	1	1	6	800,000	825	858	893	930	968	1,007	5,482	LOAN ( 85% )
Printing of communication materials	lumpsum	-	1	1	1	1	5	600,000	-	692	720	749	779	3,752	LOAN ( 90% )	
Communication Videos	lumpsum	-	1	1	1	0.5	4	500,000	-	537	558	581	302	2,292	LOAN ( 90% )	
<b>Subtotal</b>									<b>4,538</b>	<b>8,021</b>	<b>4,439</b>	<b>4,620</b>	<b>4,385</b>	<b>4,565</b>	<b>30,568</b>	
<b>Subtotal</b>									<b>5,665</b>	<b>19,768</b>	<b>17,143</b>	<b>18,623</b>	<b>8,561</b>	<b>8,396</b>	<b>78,155</b>	
<b>Subtotal</b>									<b>10,539</b>	<b>28,460</b>	<b>23,842</b>	<b>25,596</b>	<b>15,818</b>	<b>19,110</b>	<b>123,365</b>	
<b>Total Investment Costs</b>									<b>86,318</b>	<b>31,550</b>	<b>26,500</b>	<b>31,413</b>	<b>18,698</b>	<b>22,108</b>	<b>216,589</b>	
<b>II. Recurrent Costs</b>																
<b>A. Salaries and allowances (PMU)</b>																
1. Staff recruitment expenses	lumpsum	1	-	-	-	-	1	300,000	307	-	-	-	-	307	LOAN ( 100% )	
2. Audit Officer	pers_month	12	12	12	12	12	72	50,000	614	643	673	705	738	773	4,146	LOAN ( 90% )
<b>3. Project Management Staff</b>																
State Project Director	pers_month	12	12	12	12	12	72	170,000	2,088	2,186	2,289	2,396	2,509	2,627	14,095	GOVT
Dy Director - Agriculture	pers_month	12	12	12	12	12	72	70,000	860	900	942	987	1,033	1,082	5,804	GOVT
Dy Director - Horticulture	pers_month	12	12	12	12	12	72	70,000	860	900	942	987	1,033	1,082	5,804	GOVT
Dy Director - Animal Husbandry	pers_month	12	12	12	12	12	72	70,000	860	900	942	987	1,033	1,082	5,804	GOVT
Executive Engineer	pers_month	12	12	12	12	12	72	70,000	860	900	942	987	1,033	1,082	5,804	GOVT
Director - SWC	pers_month	12	12	12	12	12	72	70,000	860	900	942	987	1,033	1,082	5,804	GOVT
Procurement consultant	pers_month	10	8	6	2	2	28	150,000	1,535	1,286	1,010	352	369	-	4,552	LOAN ( 90% )
ACF Forests	pers_month	12	12	12	12	12	72	70,000	860	900	942	987	1,033	1,082	5,804	GOVT
Asst Registrar of Cooperation	pers_month	12	12	12	12	12	72	70,000	860	900	942	987	1,033	1,082	5,804	GOVT
Deputy Director, Fisheries	pers_month	12	12	12	12	12	72	70,000	860	900	942	987	1,033	1,082	5,804	GOVT
Deputy Director, Sericulture	pers_month	12	12	12	12	12	72	70,000	860	900	942	987	1,033	1,082	5,804	GOVT
Deputy Director, Land Resources	pers_month	12	12	12	12	12	72	70,000	860	900	942	987	1,033	1,082	5,804	GOVT
Project Support Specialist	pers_month	12	12	12	12	12	72	90,000	1,105	1,157	1,212	1,269	1,328	1,391	7,462	LOAN ( 90% )
Project Assistants	pers_month	24	24	24	24	24	144	25,000	614	643	673	705	738	773	4,146	LOAN ( 100% )
Finance and Accounts Manager	pers_month	12	12	12	12	12	72	100,000	1,228	1,286	1,346	1,410	1,476	1,545	8,291	LOAN ( 90% )
Accounts Officer	pers_month	12	12	12	12	12	72	50,000	614	643	673	705	738	773	4,146	LOAN ( 90% )
Accounts Assistant	pers_month	12	12	12	12	12	72	30,000	368	386	404	423	443	464	2,487	LOAN ( 90% )
Drivers /m	pers_month	36	36	36	36	36	216	18,000	663	694	727	761	797	834	4,477	LOAN ( 100% )
Grade IV staff	pers_month	24	24	24	24	24	144	15,000	368	386	404	423	443	464	2,487	GOVT
<b>Subtotal</b>									<b>17,183</b>	<b>17,669</b>	<b>18,162</b>	<b>18,311</b>	<b>19,172</b>	<b>19,687</b>	<b>110,183</b>	
4. Support to CSS operations /n	pers_month	24	48	48	48	48	216	30,000	737	1,543	1,616	1,692	1,771	-	7,358	LOAN ( 90% )

Contd..

India  
 Fostering Climate Resilient Upland Farming Systems in the Northeast  
 Design completion report – Appendices - Nagaland

India																		
FOCUS_Nagaland State																		
Table 3.1. Project Management																		
Detailed Costs																		
Unit	Quantities							Unit Cost (INR)	Totals Including Contingencies (INR '000)							Other Accounts		
	18/19	19/20	20/21	21/22	22/23	23/24	Total		18/19	19/20	20/21	21/22	22/23	23/24	Total	Disb. Acct.	Fin. Rule	
<b>II. Recurrent Costs</b>																		
<b>A. Salaries and allowances (DPMU)</b>																		
<b>5. District Management Staff- DMU</b>																		
District Project Manager - Joint Director Agriculture	pers_month	96	96	96	96	96	96	576	85,000	8,352	8,744	9,155	9,586	10,036	10,508	56,381	SAL_DA	GOVT
Project Director-ATMA	pers_month	96	96	96	96	96	96	576	70,000	6,878	7,201	7,540	7,894	8,265	8,653	46,431	SAL_DA	GOVT
Field Coordinator DD Agriculture	pers_month	96	96	96	96	96	96	576	70,000	6,878	7,201	7,540	7,894	8,265	8,653	46,431	SAL_DA	GOVT
District Vet Officer	pers_month	96	96	96	96	96	96	576	70,000	6,878	7,201	7,540	7,894	8,265	8,653	46,431	SAL_DA	GOVT
District Finance Manager	pers_month	48	48	48	48	48	48	288	50,000	2,456	2,572	2,693	2,819	2,952	3,091	16,583	SAL_DA	LOAN ( 90% )
Agriculture/Horti Officers /o	pers_month	480	480	480	480	480	480	2,880	45,000	22,108	23,147	24,235	25,374	26,566	27,815	149,243	SAL_DA	GOVT
Block, Circle Agri/AH Assistants	pers_month	720	720	720	720	720	720	4,320	30,000	22,108	23,147	24,235	25,374	26,566	27,815	149,243	SAL_DA	GOVT
Project assistants	pers_month	96	96	96	96	96	96	576	25,000	2,456	2,572	2,693	2,819	2,952	3,091	16,583	SAL_DA	LOAN ( 100% )
Drivers	pers_month	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SAL_DA	GOVT
<b>Subtotal</b>										78,114	81,785	85,629	89,653	93,867	98,279	527,326		
<b>Subtotal</b>										96,954	101,640	106,080	110,361	115,548	118,738	649,321		
<b>B. Operating costs</b>																		
<b>1. Operating costs - PMU</b>																		
Utilities	month	12	12	12	12	12	12	72	50,000	621	644	668	693	719	746	4,092	OP_DA	LOAN ( 90% )
Office operating expenses	month	12	12	12	12	12	12	72	60,000	746	773	802	832	863	895	4,910	OP_DA	LOAN ( 90% )
Fuel and vehicle maintenance	lumpsum	12	12	12	12	12	12	72	120,000	1,491	1,546	1,604	1,663	1,726	1,791	9,821	OP_DA	LOAN ( 90% )
Travel allowances	lumpsum	12	12	12	12	12	12	72	300,000	3,728	3,866	4,009	4,159	4,314	4,476	24,552	OP_DA	LOAN ( 90% )
<b>Subtotal</b>										6,587	6,830	7,083	7,347	7,622	7,908	43,376		
<b>2. Operating costs - DMU</b>																		
Utilities	month	96	96	96	96	96	96	576	20,000	1,988	2,062	2,138	2,218	2,301	2,387	13,095	OP_DA	LOAN ( 90% )
Office operating expenses	month	96	96	96	96	96	96	576	20,000	1,988	2,062	2,138	2,218	2,301	2,387	13,095	OP_DA	LOAN ( 90% )
Fuel and vehicle maintenance	lumpsum	96	96	96	96	96	96	576	20,000	1,988	2,062	2,138	2,218	2,301	2,387	13,095	OP_DA	LOAN ( 90% )
Travel allowances	lumpsum	96	96	96	96	96	96	576	175,000	17,398	18,041	18,710	19,407	20,133	20,889	114,577	OP_DA	LOAN ( 90% )
<b>Subtotal</b>										23,363	24,226	25,125	26,060	27,035	28,051	153,861		
<b>3. M&amp;E Staff</b>																		
<b>a. PMU Staff</b>																		
Manager Planning and M&E - PMU	pers_month	12	12	12	12	12	12	72	90,000	1,105	1,157	1,212	1,269	1,328	1,391	7,462	OP_DA	LOAN ( 90% )
Deputy Manager MIS - PMU	pers_month	12	12	12	12	12	12	72	80,000	983	1,029	1,077	1,128	1,181	1,236	6,633	OP_DA	LOAN ( 90% )
Compter Assistants - PMU	pers_month	24	24	24	24	24	24	144	30,000	737	772	808	846	886	927	4,975	OP_DA	LOAN ( 90% )
<b>Subtotal</b>										2,825	2,958	3,097	3,242	3,395	3,554	19,070		
b. Asst Manager (Planning, M&E and MIS) - DMUs	pers_month	48	48	48	48	48	48	288	50,000	2,474	2,575	2,681	2,791	2,906	3,026	16,452	OP_DA	LOAN ( 90% )
<b>Subtotal</b>										5,299	5,533	5,777	6,033	6,300	6,580	35,522		
<b>4. Knowledge Management Staff</b>																		
Manager - KM	pers_month	6	12	12	12	12	12	66	90,000	553	1,157	1,212	1,269	1,328	1,391	6,909	OP_DA	LOAN ( 90% )
Manager, Gender & CI	pers_month	6	12	12	12	12	12	66	90,000	557	1,159	1,206	1,256	1,308	1,362	6,847	OP_DA	LOAN ( 90% )
<b>Subtotal</b>										1,109	2,316	2,418	2,525	2,636	2,752	13,756		
5. M&E Operating expenses	lumpsum	1	1	1	1	1	1	6	200,000	207	215	223	231	240	249	1,364	OP_DA	LOAN ( 90% )
<b>Subtotal</b>										36,565	39,119	40,626	42,196	43,833	45,540	247,880		
<b>Total Recurrent Costs</b>										133,520	140,759	146,706	152,557	159,381	164,278	897,200		
<b>Total</b>										182,438	172,309	173,206	183,970	178,079	186,386	1,076,389		

la 5 motor cycles per district

lb LCD, screen etc.

lc LCD, screen etc)

ld Quarterly visits to handhold Audit Officer and Finance Manager

le costs included under TA to FAO

lf Costs provided under TA for FAO

lg Costs included under TA for FAO

lh 50 ha per district

li Including the baseline survey in the first year

lj One per district

lk 3 days of training

ll 3 demo per district and a two year support for each demo

lm For Minibus, multi-facility bus and PSS's vehicle

ln 2 staff each to DoH and DOA

lo 2 per district

## Appendix 10: Economic and financial analysis<sup>58</sup>

1 **FOCUS interventions:** The FOCUS has the following project interventions: (i) better jhum and conservation including building the capacity of participating households and support to village forestry; (ii) support to settled agriculture including support for existing orchards and enabling the landless to have access to land and land allotment and support to fish-farming etc; (iii) value chain development and providing market infrastructure and community mobilisation through FIGs and support to livestock facilities in particular setting up of pig-breeding units, distribution of piglets for fattening and poultry development along with staff and beneficiary training; (iv) upgrading and gravelling of existing farm to market roads; (v) project management and M&E and knowledge management. Production, household and subproject models were prepared based on these interventions and as contained in FOCUS detailed COSTAB.

2 **Approach and methodology:** Cost-benefit analysis method was used for carrying out the economic and financial analysis of FOCUS at final design. All investment costs are adjusted to current prices using the prevailing exchange rates and incremental benefits are estimated based on actual physical outputs and likely chances of building up of incremental benefits during the project life period as contained in PTA IFAD Guidelines for EFA. Prices were collected for all inputs and outputs as prevailing at nearby markets and adjusted to farm-gate prices using standard conversion factor. Data compiled by the Detailed Design Mission have been used as basic sources of reference and using these and updated data, both primary and secondary, type production models were developed: from these production models to higher level household models and then aggregated to subproject models for estimating the overall performance of the project. FARMOD software was used for the purpose. Outcome of FOCUS EFA at Final Design is briefly described below.

### A. Financial Analysis: Key Assumptions

3 There are facilities created under FOCUS for improving the productivity of crops, orchards and spices, livestock, fishery, forestry etc through better management practices and improving the access to inputs, markets and financial services. The most promising opportunities were with improved access to markets and social infrastructure facilities such as drinking water supply, sanitation, common facility centres etc. Other key aspects used under EFA are that

- The participating households respond to the introduction of new packages of practices and techniques; field observations showed that the households and communities would be able to adopt practices that are demonstrated to them.
- The participating households and the communities are willing to organise themselves in to viable FIGs through training and capacity building and would participate effectively in the project implementation.
- The target group farmers would ensure significant value-addition and employment along value-chain, and increase the incomes and employment of large number of poor people. For example, organised cultivation and adopting improved practices and marketing, primary processing, organised sale of products etc would bring significant benefits.
- By improving the market information systems, organising the target groups through FIGs and providing marketing support and other attendant facilities the participating households would be able to realise increased prices for their produce.
- The FOCUS project covers in all some 137,000 households and out of them 91,000 are Jhumias, 46,000 are wetland rice farmers and upland farmers; and among them 30,000 households are livestock holders etc.
- Average size of cultivated land is 1.0 ha in jhum plots, 0.5 ha under wetland rice cultivation.

---

<sup>58</sup> Farmod file reference: "Naga.mod"

- Under without project situation proxy value of labour has been assumed as follows: onion and pepper cultivation, piggery etc at 20 person-days.
- Hiring of labour is not common and it is therefore assumed that all labour requirements is met by the family as at present and “with project incremental labour” is very insignificant, say 7% over the existing labour inputs. Average financial wage rate of INR 270/day has been assumed both for male and female labour.

## a) Production Models

4 Following crop and activity models have been developed and used for the analysis. Table below shows a list of these models. These models are indicative and based on general data and information that were available from the secondary sources. These models may not reflect variations between regions or districts. These models are used for estimating project performance indicators in general. Likewise the yield levels have been assumed at very conservative thresholds. As prices between regions, districts and seasons varied significantly, average levels have been maintained including those of the farm wages.

Table 1: List of Production Models developed and used in EFA			
<u>Food crops a/</u> <ul style="list-style-type: none"> <li>• Jhum plot mixed crops</li> <li>• Rice paddy</li> <li>• Maize, beans</li> <li>• Sesame</li> <li>• Ginger, turmeric</li> <li>• Vegetables</li> <li>• Onion, garlic</li> </ul>	<u>Orchards a/</u> <ul style="list-style-type: none"> <li>• Banana</li> <li>• Pineapple</li> <li>• Orange</li> <li>• Cardamom</li> <li>• Black pepper</li> </ul> <u>Value chain spices</u> <ul style="list-style-type: none"> <li>• Chilli</li> <li>• Turmeric</li> <li>• Ginger</li> <li>• Cardamom</li> </ul>	<u>Livestock b/</u> <ul style="list-style-type: none"> <li>• Pig-fattening b/</li> <li>• Pig-breeding unit b/</li> </ul>	<u>Village Forestry</u> <ul style="list-style-type: none"> <li>• Community forestry a/</li> </ul> <u>Agro-processing</u> <ul style="list-style-type: none"> <li>• Turmeric &amp; Chilli processing unit b/</li> </ul>
<i>a/ One ha crop production models</i>		<i>b/ Single activity model</i>	<i>c/ One 1 ha model</i>

**(i) Jhum plot mixed crops model:** Jhum plot crops under without project situation (WOP) included paddy 70%, beans and maize 10% each, chilli and turmeric 5% each and sesame 2.5%. These are cultivated as mixed crops under rainfed conditions. Average productivity<sup>59</sup> under WOP situation was: paddy 854 kg/ha, beans 128 kg/ha, maize 208 kg/ha, chillis 51 kg/ha, sesame 19 kg/ha and turmeric 197kg/ha. Participating households were provided training and capacity building in improving the quality of production through supply inputs and other agronomic practices. As a result of these facilities overall productivity increased by over 20%.

**(ii) Jhum spices cultivation model:** Spices crops included are chilli (30% area), turmeric (40% area), ginger (20% area) and cardamom. Some sesame is also cultivated. FOCUS provided training, inputs including planting materials, technical support services and facilitated access to markets. Average productivity of these crops are 4t/ha for ginger or turmeric, and 4.25 t/ha for chilli and 150 kg dry cardamom. Productivity increases are in the range of 20 to 25%.

**(iii) Wetland rice cultivation model:** Under wetland condition, paddy is cultivated as sole crop and normally in valley bottom lands. With the provision of improved agronomic practices, training and supply of quality seeds, the productivity is envisaged to increase from 2.5 t/ha to 3.25 t/ha. Following paddy beans or onion (350 kg/ha), garlic (200 kg/ha) or vegetables (12

<sup>59</sup> Average sole crop productivity of these crops are paddy 1,220 kg/ha; beans 1,280 kg/ha, maize 2,080 kg/ha, chilli 1,120 kg/ha, sesame 750 kg/ha, turmeric 3,959 kg/ha, ginger 3,500 kg/ha, etc.

to 15 t/ha) are planted covering no more than 40% using available soil moisture and some irrigation facilities. Proxy labour of 20 person-days has been assumed under WOP situation for onion, beans, garlic or vegetables etc which are cultivated following paddy harvest.

**(iv) Orchard crop models:** Major orchard crops are banana, pine apple, black pepper, oranges and large cardamom. These crops are cultivated in jhum upland either as sole crop or inter-crops. With 1,600 suckers planted per ha, average yield of banana ranges between 8.5 t and 10.2 t/ha but the yield declines in later period. It is planted every 6 year. With 15,000 seedlings per ha, pine apple's yield ranges between 9 and 10 t/ha. It is replanted every 3 year. Black pepper is planted as inter-crops and pepper vines, some 560 per ha are planted in pits and the crop starts yielding in year 3. Average productivity is 250 kg/ha (dry) at full development. Proxy labour of 20 person-days has been assumed under WOP situation. Support is provided to existing orange orchards by improving orchard management practices. Limited quantities of organic manure, 3 t/ha is applied and some amount of PPC are also sprayed. Average yield at full development stage is 5.4 t/ha. Large cardamom with 2,000 seedlings per ha yields about 150 kg of dry cardamom from year 3. The crop is replanted every 8 year. This is grown under well-drained soils and as inter-crop.

**(v) Community forestry model:** The village forestry is managed by the respective village councils. For each village support is given for new planting of tree species, management of existing forests and also facilities for water development support. Each one ha model is supplied with 350 seedlings, training and facilities for operations and maintenance. Yields from village forestry are many: small timber about 6 to 15 t/ha, high value timber 19t/ha, fuel-wood about 5t/ha/year, fruits about 15 t/ha and fodder 0.5 t/ha but in different phases of development.

**(vi) Value chain spices models:** enhanced prices up to 15% are realised by the participating farmers due to project supported aggregation facilities, drying yard facilities, supply of quality planting materials, facilitating market access through cluster approach and CRP support, demonstration etc. Following crops are targeted for spices value chain: Chilli, Ginger and Cardamom in Nagaland

**(vii) Pig-breeding unit model:** Each unit consisted of 6 piglets and one boar and the stock replaced at every 5 year. With an average litter of 1.5 piglets/year/pig, the farmer is able to sell at least 66 cross-bred piglets every year. Feed is provided 1.5 kg/day for 60 days, of which 50% is locally made and 50% is concentrate. Mortality rate is reduced by xxx due to available services.

**(viii) Pig-fattening unit model:** Each farmer is provided with one cross-bred piglet and this is reared for fattening for 10 months. At the end of 10<sup>th</sup> month the pig is sold when it is 80kg or more. The piglet is fed at 3 kg of feed/day and also adequate medicine etc.

**(ix) Processing unit model:** The turmeric processing model with a capacity of producing 133,000 pockets of processed turmeric powder and each pocket weighing 100 gm. Similarly one chilli processing plant with an annual capacity of 90,000 pockets has also been assumed. The unit consists of a building, packaging machine, grinding machine, slicing machine etc and the costs included operating expenses, purchase of raw turmeric, marketing, salaries and other costs.

**5 Farm to market link road notional model:** This is a notional model to illustrate the benefits of farm to market link road. It has been assumed that on an average there are 136 households per km of road, each household transport about a ton of goods (both agricultural and non-agricultural goods) covering on an average distance of 5 km. Thus the average savings per km of improved road is INR 9,350 per km/year.

## b) Activity, Farm / Household Models

6 Using indicative production models, several Farm, Household and Activity Models were prepared using FARMOD software. The models broadly illustrated the project's impact on the incomes, and labour use of households adopting and/or adapting both on-farm and non-farm technology options. *These are indicative and assumed for assessing the overall Project Performance Indicators.* These are listed in Table 2 below.

Table 2: Summary Results of farm, household and activity model (Financial)						
Household, Farm or Activity Model (average area or unit)	Gross Income (INR)	Input cost (INR)	Labour (INR)	BCR (ratio)	FIRR (%)	NPV at 12% (INR)
Jhum cultivation (0.20 ha/hh)	7870	1040	a/	-	-	51,472
Wetland paddy (0.25 ha/hh)	23,958	192	13,575	3.65	-	35,152
Upland cultivation (0.25 ha/hh) b/	11,675	1688	4624	2.01	-	49,870
Spices cultivation (0.5 ha/hh)	29,688	400	4650	3.84	122%	117,531
Orchards ((0.2 ha/hh)	8,515	654	1,099	8.05	181%	37,403
Pig-breeding unit (1/hh)	354,600	28,870	41,040	1.28	41%	503,543
Pig-fattening unit (1/hh)	34,600	13,620	5,130	1.12	156%	27,226
Processing unit (1 unit)	7,944,500		c/ 6,382,610	1.2	81%	8,294,788
Community forestry (1 ha)	65,000	3,500	20,250	1.03	13%	7,662
Road benefits per 1 km, notional	9,350	0	0	-	-	69,839

a/ No incremental labour costs;  
b/ 50% area under improved jhum and 50% area under spices crops;  
c/ Annual operating costs

7 **Viability analysis:** Most of the household level interventions are barely financially viable but given the fact that labour, which is mostly contributed by the households, is excluded these interventions are seemed viable. Jhum cultivation including the spices (such as ginger, turmeric, chilli etc) cultivation are still at subsistence level and no significant trends in growth are foreseen. Value-chain thus does not seem to be triggering income increases in the short-run. Wet land rice cultivation and upland farming are clearly viable but its area and household coverage is much restricted. Among the livestock interventions, piggery is dominantly viable. It seems appeared to have been the key contributors to household incomes. Given the existing constraints of access to markets and communication, which are likely to continue in the long-term, emphasis on piggery-based, livestock could be better options in enhancing incomes of the rural households. The rural households thus have to cope with a combination of several of livelihood options: jhum food crops for household food security, jhum spices and orchards, wetland rice cultivation, pig-keeping etc for income earning.

8 **Incremental Household incomes:** Household incomes on account of various interventions under the project increases to INR 18,140 in year 3 and INR 26,640 in year 6. Family labour accounts the largest share of cost of production and to illustrate its impact on the gross margins for spices production and livestock production are compared below in Table-3

Table 3: Household incomes and "Gross margins" of Spices & Livestock				
Item	Year 1	Year 3	Year 6	Comments
Overall household incomes		18,140	26,640	Incremental
<u>Gross margins:</u>				
Spices cultivation a/	0	32,060	44,190	Labour income included
Spices cultivation	2,740	17,060	28,760	Labour income excluded
Livestock rearing		20,810	41,630	Labour income included
Livestock rearing		9,840	10,550	Labour income excluded

a/ large cardamom accounts for over 55% of gross margin

## c) Subproject Models

9 Emerging from farm, activity and household models, six subproject models were developed: these are (i) food crops subproject; (ii) spices and orchard crops subproject; (iii) village forestry

subproject; (iv) livestock & fishery subproject; (v) Processing unit subproject and (vi) Farm road subproject. These are briefly described below.

10 **Food crops subproject**<sup>60</sup>: This subproject included 91,000 jhum production households covering some 18,200 ha, 39,000 wetland rice cultivating households covering 9,750 ha and equal number of households covering 9,750 ha of upland cultivation participating in a phased manner from year 1 to year 4. Productivity increases are achieved due to adoption of better jhum management practices etc. The financial analysis showed that it has a NPV of INR 6,912.9 million discounted at 12%. Aggregate economic and financial results are presented in *Annex-2.1 & 2.2*.

11 **Spices and orchards subproject**: This subproject included 8,000 spices cultivating households under value chain covering 4,000 ha area and 91,000 households covering 18,200 ha under orchards cultivation participating in a phased manner from year 1 to year 4. Productivity increases are achieved due to better management practices and marketing support. The financial analysis showed that it has a NPV of INR 3,145.0 million discounted at 12%. Aggregate economic and financial results are presented in *Annex-2.3 and 2.4*.

12 **Community forestry subproject**: in all 13,000 ha area is planted with tree crops starting from year 2 through year 4. These forests are managed by the respective village communities. The financial analysis showed that it has a NPV of INR (-80.7) million discounted at 12%. Aggregate financial and economic results are presented in *Annex-2.5 and 2.6*.

13 **Piggery subproject**: In all 148 pig-breeding units participating in a phased manner over a 3 year period starting from year 1. Piglets are provided to 30,000 households in a phased manner starting from year 2. The financial analysis shows that this sub-project generates a NPV of INR 635.8 million discounted at 12%. Aggregate economic and financial results for this subproject are presented in *Annex-2.7 & 2.8*.

14 **Processing units subproject**: in all 15 turmeric and chilli processing units starting from year 4 are participating. This subproject generates a NPV of INR 72.9 million discounted at 12%. Aggregate economic and financial results for this subproject are presented in *Annex-2.9 & 2.10*.

15 **Farm road subproject**<sup>61</sup>: This is a notional model. In all 600 cross-drainage structures covering some 200 km of existing roads are constructed starting from year 2 through year 5. This subproject generates a NPV of INR 8.9 million discounted at 12%. Aggregate economic and financial results are presented in *Annex-2.11 & 2.12*.

16 Results of analysis of these subprojects where *direct* benefits in terms of incomes, production costs, labour and input etc are quantified are summarised in Table-4 below.

Table 4: Summary Results of Subprojects (Financial) in 000 INR at full development				
Subproject group	Gross income 1/	Inputs	Labour 2/	Net income 3/
1 Food crops	501,394	46,061	(618,900)	455,333
2 Spices & orchards	1,049,975	(58,815)	136,110	972,680
3 Community forestry	864,500	0	263,250	601,250
4 Livestock	1,086,041	584,587	346,274	155,180
5 Processing units	119,168	0	95,739	23,428
6 Farm to market road	1,870	0	0	9,088
<b>Total</b>	<b>3,622,948</b>			<b>2,216,959</b>
Average/household 4/	26.640			16.120
1/ incremental income at full development; 2/ Labour includes all family labour; 3/ Excluding labour costs				

17 **Other infrastructure benefits**: Other notional benefits that have not been quantified are (i) fencing the mithun buffalo villages to avoid damages to crop areas and it is estimated at 10% of crop

<sup>60</sup> For correct values of financial NPV for each subproject, Annex-A may please be referred

<sup>61</sup> Roads constructed with convergence funds have been excluded as no specific details with regard to quantities, locations, population covered etc were not available.

area in those villages where fencing is provided are reported to have been protected; (ii) slaughter slabs are provided in each village and this would provide hygienic supply of meat to the respective community and resulting health benefits have not been assessed; and (iii) extensive vaccination of pigs, poultry birds, sheep and goats and cattle ensure better animal health and reduce mortality significantly. These benefits have not been accounted for want of specific details. These interventions are supported under CSS parallel financing. Similarly for want of specific information, benefits of rural roads constructed with the support of convergence funds, common facility centres in the spices clusters, various facilities such as protection water resources under village forest conservation, water harvesting structures to the landless households, facilities for construction of water channels under convergence funding etc have not been quantified and taken into account.

## B. Economic analysis

### Objectives and Methodology

18 The objective of the economic analysis is to evaluate the expected contribution of the project to the economic development of the project area districts. The purpose of such analysis is to determine whether the economic benefits sufficiently justify the use of the scarce resources that the project has invested. The analysis included all incremental costs and incremental benefits that are quantifiable and associated with the project's investments in development. Target group households adopting and participating in the project interventions have been contributing to increased production, besides ensuring their increases in incomes.

19 The following assumptions underlie this economic analysis of the project.

- A twenty-year analysis period has been assumed, which included a 6 year project investment period.
- Farm goods moved freely within the project area in response to market signals.
- All farm inputs and outputs that are traded are valued at farm-gate prices as of July 2017.
- Economic investment costs are net of taxes and price contingencies, credit, etc. All costs directly associated with the incremental production are included in full, including incremental farm inputs and family and hired labour.
- Standard conversion factors (SCF) varying between 80% and 85% is applied to both traded and non-traded items for adjusting financial prices.
- The financial price of labour (INR 270) reflects seasonal variation in employment opportunities in the project area. The financial wage rate is thus taken to reflect the value of the marginal product of farm labour under “without the project”;
- The analysis includes only direct benefits and all other notional benefits from the infrastructure facilities, where details available have also been included;
- All costs and benefits are relating to investments made on targeted project area households and the resultants benefits;
- The analysis employs an Opportunity Cost of Capital (OCC) at 10<sup>62</sup>%.

### Costs - Benefits Streams and Analysis

20 The **project economic costs** were calculated from the financial project costs excluding price contingencies, subsidies, credit funds, taxes and duties. Recurrent costs for continued training support, operations and maintenance and periodic replacement of farm items and equipment have been included in full. Economic prices for inputs and output models were estimated by applying the conversion factors on the financial prices.

21 **Project Performance Indicators:** Cost-benefit analysis yields an overall IRR of 29%. The estimated NPV for a 10% discount rate is INR 6,593 million and the BCR of 1.78. A positive NPV under the current Opportunity Cost of Capital (OCC) of 10% indicates that the project investments are

---

<sup>62</sup> At present this is the long term bond rate in India

robust. A sensitivity analysis of the FOCUS is presented in Table-5 below and details in Annex-A to G and also in Annex-1.

Indicators	Base case	Cost Increased by		Benefits down by	
		10%	20%	10%	20%
NPV-Benefit & cost streams discounted at 10% INR million <sup>63</sup>	6,593	5,747	4,901	5,088	3,583
IRR-Net incremental benefits stream for a 20 year period <sup>64</sup>	29%	25%	22%	25%	21%
BCR-Cash flows discounted at 10% <sup>65</sup>	1.78	1.62	1.48	1.60	1.42

22 If benefits delayed by two years (in effect, if the project's production activities take longer to become established) then the IRR declines to 21% with a NPV of INR 4,821 million. Under extreme scenario of costs increased by 20% and benefits declined by 20% over the base-case, 15% IRR is obtained with a NPV of INR 1,891 million. Likewise, the sensitivity analysis of BCR indicates that the project is more sensitive to decline in project benefits than increases in costs. Switching values<sup>66</sup> indicate that the investments are worthy even if costs increased by 78% or the benefits declined by 44%. (Refer Annex-1.1 and 1.2)

23 Overall, the Sensitivity analysis indicated that the Project has been sensitive both to decreases in benefits and increases in costs. None the less, the project seems to be more sensitive to decline in benefits than increases in costs. Decrease in benefits may be brought about by a decline in output prices, or a failure in achieving projected yields or outputs.

### C. Benefits and Beneficiaries

24 **Beneficiaries:** The project covered over 137,000 households and these were benefited directly as detailed below. Number of beneficiary households by subproject and year are shown in Table 6 below.

Subproject households	Project year cumulative						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Cumulative
Food crops jhum agriculture hh a/	45,500	91,000	91,000	91,000	91,000	91,000	91,000
Spices & orchards jhum households b/		45,500	91,000	91,000	91,000	91,000	91,000
Community Forestry households c/	42,000	84,000	137,000	137,000	137,000	137,000	137,000
Livestock households	0	7500	15000	22,500	30,000	30,000	30,000
Processing units households d/	0	0	0	14,700	29,400	42,000	42,000
Farm to market link road households e/	0	9350	18,700	28,050	37,400	37,400	37,400
<b>Total outreach (# of households)</b>	<b>45,500</b>	<b>91,000</b>	<b>137,000</b>	<b>137,000</b>	<b>137,000</b>	<b>137,000</b>	<b>137,000</b>

a/ includes jhum households, wet land paddy households and upland farming households  
a/ These households concentrated in 50 spices clusters;  
b/ All 650 villages covered by community forestry programme  
c/ concentrated in 200 spices villages and 210 households per village;  
d/ assumed at 187 households/km of road provided with better CD structure

<sup>63</sup> The NPV is a very concise performance indicator of an investment project: it represents the present amount of the net benefits (i.e. incremental benefits less incremental costs) flow generated by the investment expressed in AFA (a single value with the same unit of measurement used in the accounting tables). The Net Present Value is the sum of a 20 year discounted net cash flows.

<sup>64</sup> IRR is defined as the discount rate that zeroes out the net present value of flows of costs and net present value of flows of benefits of an investment. The IRR was computed using incremental net benefits streams for 20 year period. As IRR rankings can be misleading, and given that the informational requirements for computing a proper NPV and IRR are the same except for the discount rate, it is always worth calculating the NPV of a project. There are many reasons in favour of the NPV decision rule (see Lev, 2007).

<sup>65</sup> BCR is independent of the size of the investment and it does not generate ambiguous cases and for this reason it can complement the NPV in ranking projects where budget constraints apply. Being a ratio, the indicator does not consider the total amount of net benefits and therefore the ranking can reward more projects that contribute less to the overall increase in public welfare

<sup>66</sup> Switching values are yet another measure of sensitivity analysis They demonstrate by how much a variable would have to fall (if it is a benefit) or rise (if it is a cost) to make it not worth undertaking an option.

25 **Benefits:** The immediate benefits from the project are increased productivity-through the introduction of improved management practices and improved access to markets. This response is expressed as increased household incomes, and improved food security. Almost all rural households, estimated over 137,000 seemed to have directly benefited by FOCUS.

26 **Environmental benefits:** Overall, the project is environmentally favourable with the planting and maintenance of 13,000 ha community forests along with water development facilities, 4,000 ha of jhum plots planted with annual and perennial spices, 32,500 ha of jhum fallow land planted with annual and perennial legumes to enhance soil fertility, some 60,000 ha of jhum and low land treated with various soil and water conservation measures such as contour bunds, trenches, 9,750 ha wetland treated with soil fertility enhancement measures etc. These measures would enhance organic carbon contents of soil. Under the project, farm to market roads are improved using the existing road alignments and no cutting or excavation of new road alignments proposed. In addition the proposed road improvement work would include adoption of climate resilient features such as protection of side slopes, construction of cross-drainage structures and side drains etc.

27 An attempt was made to use FAO's EX-ACT software in assessing the greenhouse gas emissions. The results are shown in *Annex-H* and accordingly  $tCO_2 eq$  is (-1.9) for biomass and (-1.0) for soils per year/ha.

28 **Other benefits:** There are additional benefits emerge from the Project's capacity building interventions. First, all participating households, beneficiaries' groups and FIGs and VCs benefited through institution building as these were capacitated and provided fund support for various social and economic developments. Secondly, women from the poor and very poor groups are participating in and managing their social and economic development and have better access to markets and inputs and marketing their products. Thirdly, the improvement of access to markets, upgrading of vet extension services at grassroots benefited a vast number of households, in particular the rural youth.

#### D. Risk and sustainability

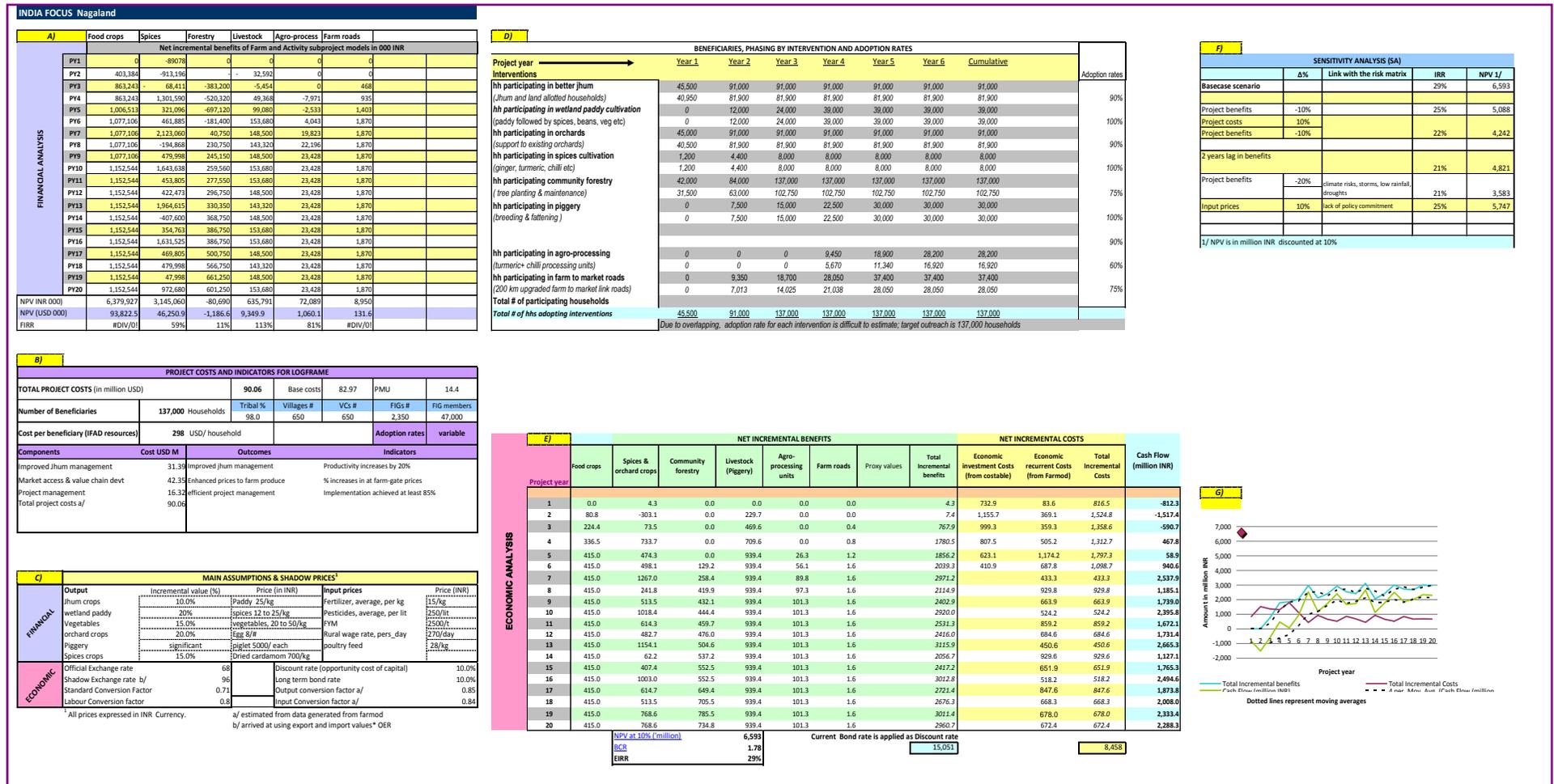
29 There were a number of risks associated with the project. These relate to farm technology, reluctance on the part of the farmers in continuing the demonstrated package of practices, inadequate extension support, inadequate market linkages and poor price margins, lack of input services and poor response from the private sector, poor coordination and institutional support. These issues and risks are listed below:

Table-8: Project Risks and Sustainability				
Risks	Risk description	Probability of occurrence	Mitigation measures	Comparative sensitivity analysis result (Proxy)
Institutional	Delay in technology transfer slowing down the uptake rates and production  Weak inputs services	High	Training and demonstrations of package of practices,	Benefits declined by 20%: IRR= 21% NPV= 3,583 million BCR= 1.42
	Lack of financial capacity of farmers to invest in enterprises and other occupations	High	Project supported facilities for supply of critical inputs and organisation of farmers into FIGs would address this issues	Decline in benefits by 10%: IRR=25% NPV=5,088 million BCR=1.60

**Table-8: Project Risks and Sustainability**

<b>Risks</b>	<b>Risk description</b>	<b>Probability of occurrence</b>	<b>Mitigation measures</b>	<b>Comparative sensitivity analysis result (Proxy)</b>
<b>Market</b>	Inadequate profit margins due to poor access, lack of transport and of market information  Lack of capacities of producer groups to negotiate fair deals with traders and suppliers	High to medium	Market information, improved technology advice.  Improving access to markets; training and capacity building and provision of market access infrastructure;	Decline in benefits and increases in cost by 10%: IRR= 22% NPV= 4,242 million BCR=1.46
	Lower market prices for commodities	Medium	Cluster approach to production and production of ready to market commodities	
<b>Policy</b>	Lack of commitment to investing in the welfare development and slowing down funds flow	Medium	The project investments were fully supported by GoM and adequate funds were committed;	Operating costs increase by 25%: IRR=21% NPV= 4,476 million BCR=1.42
<b>Others</b>	Remoteness and difficulty of access due to bad connectivity conditions	High to Medium	Promotion of products that combine high farmer margin for small volumes and are easy to transport; market access improvement	Decline in benefits by 25%: IRR= 19% NPV=2,830 million BCR=1.33
	Climate change risks of droughts, frosts, frequent storms, etc	High to Medium	Training farmers on climate change risks	

**ANNEX: EFA DATA FRAMEWORK, Annex-A updated**



## ANNEX-A: NET INCREMENTAL BENEFITS OF SUBPROJECTS, FINANCIAL, updated

A)	Food crops	Spices	Forestry	Livestock	Agro-process	Farm roads		
<b>FINANCIAL ANALYSIS</b>	<b>Net incremental benefits of Farm and Activity subproject models in 000 INR</b>							
	PY1	0	-89078	0	0	0	0	
	PY2	403,384	-913,196	-	- 32,592	0	0	
	PY3	863,243	- 68,411	-383,200	-5,454	0	468	
	PY4	863,243	1,301,590	-520,320	49,368	-7,971	935	
	PY5	1,006,513	321,096	-697,120	99,080	-2,533	1,403	
	PY6	1,077,106	461,885	-181,400	153,680	4,043	1,870	
	PY7	1,077,106	2,123,060	40,750	148,500	19,823	1,870	
	PY8	1,077,106	-194,868	230,750	143,320	22,196	1,870	
	PY9	1,077,106	479,998	245,150	148,500	23,428	1,870	
	PY10	1,152,544	1,643,638	259,560	153,680	23,428	1,870	
	PY11	1,152,544	453,805	277,550	153,680	23,428	1,870	
	PY12	1,152,544	422,473	296,750	148,500	23,428	1,870	
	PY13	1,152,544	1,964,615	330,350	143,320	23,428	1,870	
	PY14	1,152,544	-407,600	368,750	148,500	23,428	1,870	
	PY15	1,152,544	354,763	386,750	153,680	23,428	1,870	
	PY16	1,152,544	1,631,525	386,750	153,680	23,428	1,870	
	PY17	1,152,544	469,805	500,750	148,500	23,428	1,870	
	PY18	1,152,544	479,998	566,750	143,320	23,428	1,870	
	PY19	1,152,544	47,998	661,250	148,500	23,428	1,870	
	PY20	1,152,544	972,680	601,250	153,680	23,428	1,870	
NPV INR 000)	6,379,927	3,145,060	-80,690	635,791	72,089	8,950		
NPV (USD 000)	93,822.5	46,250.9	-1,186.6	9,349.9	1,060.1	131.6		
FIRR	#DIV/0!	59%	11%	113%	81%	#DIV/0!		

## ANNEX-B: PROJECT COSTS AND INDICATORS FOR LOGFRAME

<b>B)</b>						
<b>PROJECT COSTS AND INDICATORS FOR LOGFRAME</b>						
<b>TOTAL PROJECT COSTS</b> (in million USD)		<b>90.06</b>	Base costs	82.97	PMU	14.4
<b>Number of Beneficiaries</b>	<b>137,000</b> Households	Tribal %	Villages #	VCs #	FIGs #	FIG members
		98.0	650	650	2,350	47,000
<b>Cost per beneficiary (IFAD resources)</b>	<b>298</b> USD/ household				<b>Adoption rates</b>	<b>variable</b>
<b>Components</b>	<b>Cost USD M</b>	<b>Outcomes</b>		<b>Indicators</b>		
Improved Jhum management	31.39	Improved jhum management		Productivity increases by 20%		
Market access & value chain devt	42.35	Enhanced prices to farm produce		% increases in at farm-gate prices		
Project management	16.32	efficient project management		Implementation achieved at least 85%		
Total project costs a/	90.06					



## ANNEX-D BENEFICIARIES, PHASING BY INTERVENTION AND ADOPTION RATES

D)								
BENEFICIARIES, PHASING BY INTERVENTION AND ADOPTION RATES								
Project year →	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Cumulative	Adoption rates
<b>Interventions</b>								
<b>hh participating in better jhum</b> <i>(Jhum and land allotted households)</i>	45,500	91,000	91,000	91,000	91,000	91,000	91,000	90%
<b>hh participating in wetland paddy cultivation</b> <i>(paddy followed by spices, beans, veg etc)</i>	0	12,000	24,000	39,000	39,000	39,000	39,000	100%
<b>hh participating in orchards</b> <i>(support to existing orchards)</i>	45,000	91,000	91,000	91,000	91,000	91,000	91,000	90%
<b>hh participating in spices cultivation</b> <i>(ginger, turmeric, chilli etc)</i>	1,200	4,400	8,000	8,000	8,000	8,000	8,000	100%
<b>hh participating community forestry</b> <i>( tree planting &amp; maintenance)</i>	42,000	84,000	137,000	137,000	137,000	137,000	137,000	75%
<b>hh participating in piggery</b> <i>(breeding &amp; fattening )</i>	0	7,500	15,000	22,500	30,000	30,000	30,000	100%
	0	7,500	15,000	22,500	30,000	30,000	30,000	90%
<b>hh participating in agro-processing</b> <i>(turmeric+ chilli processing units)</i>	0	0	0	9,450	18,900	28,200	28,200	60%
<b>hh participating in farm to market roads</b> <i>(200 km upgraded farm to market link roads)</i>	0	9,350	18,700	28,050	37,400	37,400	37,400	75%
<b>hh participating in farm to market roads</b> <i>(200 km upgraded farm to market link roads)</i>	0	7,013	14,025	21,038	28,050	28,050	28,050	75%
<b>Total # of participating households</b>								
<b>Total # of hhs adopting interventions</b>	<u>45,500</u>	<u>91,000</u>	<u>137,000</u>	<u>137,000</u>	<u>137,000</u>	<u>137,000</u>	<u>137,000</u>	
Due to overlapping, adoption rate for each intervention is difficult to estimate; target outreach is 137,000 households								

## ANNEX-E: NET INCREMENTAL BENEFITS & IRR

E)	NET INCREMENTAL BENEFITS								NET INCREMENTAL COSTS			Cash Flow (million INR)
	Food crops	Spices & orchard crops	Community forestry	Livestock (Piggery)	Agro- processing units	Farm roads	Proxy values	Total Incremental benefits	Economic investment Costs (from costable)	Economic recurrent Costs (from Farmod)	Total Incremental Costs	
	Project year											
1	0.0	4.3	0.0	0.0	0.0	0.0	0.0	4.3	732.9	83.6	816.5	-812.3
2	80.8	-303.1	0.0	229.7	0.0	0.0	0.0	7.4	1,155.7	369.1	1,524.8	-1,517.4
3	224.4	73.5	0.0	469.6	0.0	0.4	0.4	767.9	999.3	359.3	1,358.6	-590.7
4	336.5	733.7	0.0	709.6	0.0	0.8	0.8	1780.5	807.5	505.2	1,312.7	467.8
5	415.0	474.3	0.0	939.4	26.3	1.2	1.2	1856.2	623.1	1,174.2	1,797.3	58.9
6	415.0	498.1	129.2	939.4	56.1	1.6	1.6	2039.3	410.9	687.8	1,098.7	940.6
7	415.0	1267.0	258.4	939.4	89.8	1.6	1.6	2971.2		433.3	433.3	2,537.9
8	415.0	241.8	419.9	939.4	97.3	1.6	1.6	2114.9		929.8	929.8	1,185.1
9	415.0	513.5	432.1	939.4	101.3	1.6	1.6	2402.9		663.9	663.9	1,739.0
10	415.0	1018.4	444.4	939.4	101.3	1.6	1.6	2920.0		524.2	524.2	2,395.8
11	415.0	614.3	459.7	939.4	101.3	1.6	1.6	2531.3		859.2	859.2	1,672.1
12	415.0	482.7	476.0	939.4	101.3	1.6	1.6	2416.0		684.6	684.6	1,731.4
13	415.0	1154.1	504.6	939.4	101.3	1.6	1.6	3115.9		450.6	450.6	2,665.3
14	415.0	62.2	537.2	939.4	101.3	1.6	1.6	2056.7		929.6	929.6	1,127.1
15	415.0	407.4	552.5	939.4	101.3	1.6	1.6	2417.2		651.9	651.9	1,765.3
16	415.0	1003.0	552.5	939.4	101.3	1.6	1.6	3012.8		518.2	518.2	2,494.6
17	415.0	614.7	649.4	939.4	101.3	1.6	1.6	2721.4		847.6	847.6	1,873.8
18	415.0	513.5	705.5	939.4	101.3	1.6	1.6	2676.3		668.3	668.3	2,008.0
19	415.0	768.6	785.5	939.4	101.3	1.6	1.6	3011.4		678.0	678.0	2,333.4
20	415.0	768.6	734.8	939.4	101.3	1.6	1.6	2960.7		672.4	672.4	2,288.3

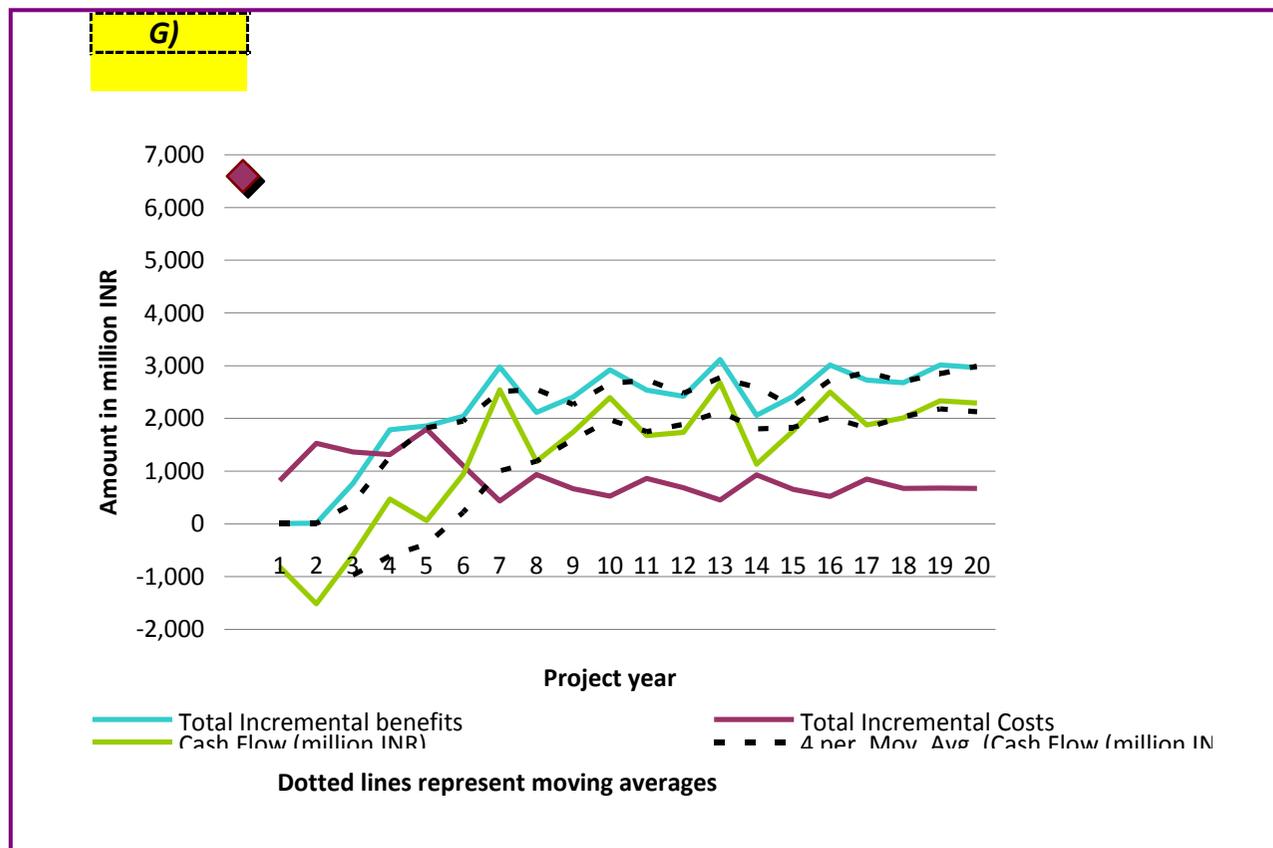
  

NPV at 10% ('million)	6,593	Current Bond rate is applied as Discount rate	
BCR	1.78		15,051
EIRR	29%		8,458

## ANNEX-F SENSITIVITY ANALYSIS

<b>F)</b>				
<b>SENSITIVITY ANALYSIS (SA)</b>				
	<b>Δ%</b>	<b>Link with the risk matrix</b>	<b>IRR</b>	<b>NPV 1/</b>
<b>Basecase scenario</b>			29%	6,593
Project benefits	-10%		25%	5,088
Project costs	10%			
Project benefits	-10%		22%	4,242
2 years lag in benefits			21%	4,821
Project benefits	-20%	climate risks, storms, low rainfall, droughts	21%	3,583
Input prices	10%	lack of policy commitment	25%	5,747
1/ NPV is in million INR discounted at 10%				

**ANNEX-G: GRAPH SHOWING INCREMENTAL BENEFITS, COSTS AND NET INCOME**



## ANNEX-H: RESULTS OF EX-ACT APPLICATIONS

The EX-Ante Carbon-balance Tool (EX-ACT)													
E	X	A	C	T	Start	Description	Land Use Change	Crop production	Grassland Livestock	Management Degradation	Coastal Wetlands	Inputs Investments	Fisheries Aquaculture
<b>Project Name</b>		India Nagaland FOCUS		<b>Climate</b>		Tropical Mountain (Moist)			<b>Duration of the Project (Years)</b>		20		
<b>Continent</b>		Asia (Indian subcontinent)		<b>Regional Soil Type</b>		LAC Soils			<b>Total area (ha)</b>		181272		
<b>Components of the project</b>		<b>Gross fluxes</b>		<b>Balance</b>		<b>Share per GHG of the Balance</b>					<b>Result per year</b>		<b>Balance</b>
		<b>Without</b>	<b>With</b>			<b>All GHG in tCO<sub>2</sub>eq</b>					<b>Without</b>	<b>With</b>	
		Positive = source / negative = sink		sink	sink	CO <sub>2</sub>	N <sub>2</sub> O	CH <sub>4</sub>					
						Biomass	Soil	Other					
<b>Land use changes</b>													
Deforestation		0	0	0	0	0	0	0	0	0	0	0	0
Afforestation		0	-3,039,632	-3,039,632	-2,354,090	-685,542	0	0	0	0	0	-151,982	-151,982
Other LUC		0	-1,865,530	-1,865,530	533,867	-2,399,397	0	0	0	0	0	-93,277	-93,277
<b>Agriculture</b>													
Annual		-1,331,719	-1,331,719	0	0	0	0	0	0	0	-66,586	-66,586	0
Perennial		-631,050	-6,127,450	-5,496,400	-4,954,950	-541,450	0	0	0	0	-31,553	-306,373	-274,820
Rice		0	0	0	0	0	0	0	0	0	0	0	0
<b>Grassland &amp; Livestocks</b>													
Grassland		0	0	0	0	0	0	0	0	0	0	0	0
Livestocks		0	95,079	95,079	0	0	12,204	82,875	0	0	0	4,754	4,754
<b>Degradation &amp; Management</b>		0	0	0	0	0	0	0	0	0	0	0	0
<b>Coastal wetlands</b>		0	0	0	0	0	0	0	0	0	0	0	0
<b>Inputs &amp; Investments</b>		0	0	0	0	0	0	0	0	0	0	0	0
<b>Fishery &amp; Aquaculture</b>		0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>		-1,962,769	-12,269,252	-10,306,483	-6,775,173	-3,626,389	0	12,204	82,875	0	-98,138	-613,463	-515,324
<b>Per hectare</b>		-11	-68	-57	-37.4	-20.0	0.0	0.1	0.5	0	-0.5	-3.4	-2.8
<b>Per hectare per year</b>		-0.5	-3.4	-2.8	-1.9	-1.0	0.0	0.0	0.0	0	-0.5	-3.4	-2.8

## PROJECT PERFORMANCE INDICATORS: FOCUS\_Mizoram

### ANNEX-1.1: PROJECT “INTERNAL RATE OF RETURN” & BENEFITS LAGGED BY 2 YEAR

ECONOMIC ANALYSIS																														
Country:	INDIA										Discount rate:DR	0.1	10%																	
Project:	FOCUS Nagaland																													
(amount in million INR)																														
	Project Year																													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20										
<b>Incremental benefits</b>																														
Incremental benefits	4.3	7.4	767.9	1780.5	1856.2	2039.3	2971.2	2114.9	2402.9	2920.0	2531.7	2416.0	3115.9	2056.7	2417.2	3012.8	2721.4	2676.3	3011.7	2960.7										
<b>Total Incremental benefits</b>	<b>4.3</b>	<b>7.4</b>	<b>767.9</b>	<b>1780.5</b>	<b>1856.2</b>	<b>2039.3</b>	<b>2971.2</b>	<b>2114.9</b>	<b>2402.9</b>	<b>2920.0</b>	<b>2531.7</b>	<b>2416.0</b>	<b>3115.9</b>	<b>2056.7</b>	<b>2417.2</b>	<b>3012.8</b>	<b>2721.4</b>	<b>2676.3</b>	<b>3011.7</b>	<b>2960.7</b>										
<b>Incremental costs</b>																														
Investment costs	732.9	1155.7	999.3	807.5	623.1	410.9																								
Production costs	83.6	369.1	359.3	505.2	1174.2	687.8	433.3	929.8	663.9	524.2	859.2	684.6	450.6	929.6	651.9	518.2	847.6	668.3	678.0	672.4										
<b>Incremental costs</b>	<b>816.6</b>	<b>1524.8</b>	<b>1358.6</b>	<b>1312.7</b>	<b>1797.4</b>	<b>1098.7</b>	<b>433.3</b>	<b>929.8</b>	<b>663.9</b>	<b>524.2</b>	<b>859.2</b>	<b>684.6</b>	<b>450.6</b>	<b>929.6</b>	<b>651.9</b>	<b>518.2</b>	<b>847.6</b>	<b>668.3</b>	<b>678.0</b>	<b>672.4</b>										
<b>Incremental net benefits</b>	<b>-812.3</b>	<b>-1517.3</b>	<b>-590.7</b>	<b>467.8</b>	<b>58.8</b>	<b>940.7</b>	<b>2537.9</b>	<b>1185.1</b>	<b>1739.0</b>	<b>2395.9</b>	<b>1672.5</b>	<b>1731.4</b>	<b>2665.3</b>	<b>1127.1</b>	<b>1765.3</b>	<b>2494.6</b>	<b>1873.8</b>	<b>2007.9</b>	<b>2333.7</b>	<b>2288.4</b>										
<b>Basecase results discounted:</b>	10%										<b>Benefits lagged by 2 year DR at</b>										10%									
NPV of benefit streams discounted at	10%	15,051											NPV of benefit streams discounted at	10%	13,279															
NPV of costs stream discounted at	10%	8,458											NPV of costs stream discounted at	10%	8,458															
NPV of project discounted at	10%	6,593											NPV of project discounted at	10%	4,821															
BCR- discounted benefits & costs at	10%	1.78											BCR- discounted benefits & costs at	10%	1.57															
IRR		29%											IRR		21%															

**ANNEX-1.2: SENSITIVITY TESTS: “SWITCHING VALUES” & BCR**

**Results of Sensitivity Analysis using 10% discount rate:**

Project Performance indicators		Costs increased by				Benefits down by				Both cost increase & benefits down			
		10%	15%	20%	25%	10%	15%	20%	25%	10%	15%	20%	25%
NPV of at discount rate of	10%	5,747	5,324	4,901	4,478	5,088	4,335	3,583	2,830	4,242	3,067	1,891	716
BCR at discount rate of	10%	1.62	1.55	1.48	1.42	1.60	1.51	1.42	1.33	1.46	1.32	1.19	1.07
IRR		25%	24%	22%	21%	25%	23%	21%	19%	22%	18%	15%	12%

**Switching Value Analysis:**

Switching Value:	Appraisal	Switching value	% change
Total Benefits at 10% DR	15,051	8,458	-44
Total Costs at 10% DR	8,458	15,051	78

### ANNEX-1.3: PROJECT INVESTMENT COSTS (ECONOMIC)

India							
FOCUS_Nagaland State							
Project Components by Year -- Base Costs							
	Base Cost (INR '000)						
	18/19	19/20	20/21	21/22	22/23	23/24	Total
<b>A. Improved Jhum Cultivation</b>							
1. Better Jhum and Conservation	444,628.1	459,686.3	224,040.9	211,629.7	127,110.0	58,860.0	1,525,955.1
2. Support to settled agriculture	77,206.2	155,183.7	132,511.3	49,016.5	-	-	413,917.7
<b>Subtotal</b>	<b>521,834.3</b>	<b>614,870.1</b>	<b>356,552.3</b>	<b>260,646.2</b>	<b>127,110.0</b>	<b>58,860.0</b>	<b>1,939,872.8</b>
<b>B. Market access and value chain development</b>							
1. Value chain development	110,100.2	275,743.1	247,505.6	203,102.0	147,376.4	91,747.5	1,075,574.8
2. Market Access Infrastructure	52,816.2	381,304.6	381,011.6	382,316.2	321,873.0	125,526.2	1,644,847.7
<b>Subtotal</b>	<b>162,916.4</b>	<b>657,047.7</b>	<b>628,517.2</b>	<b>585,418.2</b>	<b>469,249.4</b>	<b>217,273.7</b>	<b>2,720,422.5</b>
<b>C. Project Management</b>							
1. Project Management	216,434.4	160,190.0	154,423.7	157,039.7	146,480.9	146,850.7	981,419.4
<b>Subtotal</b>	<b>216,434.4</b>	<b>160,190.0</b>	<b>154,423.7</b>	<b>157,039.7</b>	<b>146,480.9</b>	<b>146,850.7</b>	<b>981,419.4</b>
<b>Total BASELINE COSTS</b>	<b>901,185.0</b>	<b>1,432,107.8</b>	<b>1,139,493.2</b>	<b>1,003,104.1</b>	<b>742,840.3</b>	<b>422,984.4</b>	<b>5,641,714.7</b>
Physical Contingencies	373.3	14,907.1	16,058.9	13,792.7	45.5	45.5	45,223.1
Subtotal Price Contingencies	17,042.2	74,705.0	93,447.3	109,072.1	78,448.9	64,575.7	437,291.2
<b>Total PROJECT COSTS (T)</b>	<b>918,600.5</b>	<b>1,521,719.9</b>	<b>1,248,999.4</b>	<b>1,125,968.8</b>	<b>821,334.7</b>	<b>487,605.6</b>	<b>6,124,229.0</b>
Taxes	26,639.8	54,030.0	57,326.3	52,605.8	13,992.7	12,136.3	216,730.9
<b>Calculation of Economic costs</b>							
Less inputs supplied 1/	141,995	237,290	98,895	156,750	105,750	-	740,680
Less taxes	26,639.8	54,030.0	57,326.3	52,605.8	13,992.7	12,136.3	216,730.9
Less price contingencies	17,042.2	74,705.0	93,447.3	109,072.1	78,448.9	64,575.7	437,291.2
<b>Subtotal (D)</b>	<b>185,677.0</b>	<b>366,025.1</b>	<b>249,668.6</b>	<b>318,427.9</b>	<b>198,191.6</b>	<b>76,711.9</b>	<b>1,394,702.1</b>
<b>Economic costs = (T-D)</b>	<b>732,923.6</b>	<b>1,155,694.9</b>	<b>999,330.8</b>	<b>807,540.9</b>	<b>623,143.1</b>	<b>410,893.7</b>	<b>4,729,526.9</b>
1/ Supply of seeds, seedlings, planting materials, livestock etc							

**ANNEX-1.4: PROJECT INCREMENTAL BENEFITS STREAMS & COSTS STREAMS, economic in million INR**

India IFAD Nagaland Final Design Project Summary ECONOMIC BUDGET (AGGREGATED) (In INR Million)																						
	WOP	WP	Increments																			
	18 to 20	20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>Main Production</b>																						
Food crops production	1,448.3	1,893.8	-	84.3	239.5	364.2	445.5	445.5	445.5	445.5	445.5	445.5	445.5	445.5	445.5	445.5	445.5	445.5	445.5	445.5	445.5	445.5
Orchards production	1,416.0	2,140.3	13.4	-290.2	72.0	712.7	443.7	455.7	1,222.7	197.4	469.1	974.0	570.4	442.4	1,124.5	41.3	376.9	960.6	570.4	469.1	724.3	724.3
Community forestry produce	-	734.8	-	-	-	-	-	129.2	258.4	419.9	432.1	444.4	459.7	476.0	504.6	537.2	552.5	552.5	649.4	705.5	785.8	734.8
Pig production	-	1,061.5	-	260.2	530.8	801.3	1,061.5	1,061.5	1,061.5	1,061.5	1,061.5	1,061.5	1,061.5	1,061.5	1,061.5	1,061.5	1,061.5	1,061.5	1,061.5	1,061.5	1,061.5	1,061.5
Processing units	-	101.3	-	-	-	-	26.3	56.1	89.8	97.3	101.3	101.3	101.3	101.3	101.3	101.3	101.3	101.3	101.3	101.3	101.3	101.3
Value chain incremental prices	9.6	48.8	-	1.9	6.8	15.8	25.4	37.2	39.2	39.2	39.2	39.2	39.2	35.2	24.5	15.8	25.4	37.2	39.2	39.2	39.2	39.2
Infrastructure benefits	-	1.6	-	-	0.4	0.8	1.2	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Proxy labour	147.4	-	-9.1	-48.7	-81.6	-114.3	-147.4	-147.4	-147.4	-147.4	-147.4	-147.4	-147.4	-147.4	-147.4	-147.4	-147.4	-147.4	-147.4	-147.4	-147.4	-147.4
<b>Sub-total Main Production</b>	<b>3,021.3</b>	<b>5,982.1</b>	<b>4.3</b>	<b>7.4</b>	<b>767.9</b>	<b>1,780.5</b>	<b>1,856.2</b>	<b>2,039.3</b>	<b>2,971.2</b>	<b>2,114.9</b>	<b>2,402.9</b>	<b>2,920.0</b>	<b>2,531.7</b>	<b>2,416.0</b>	<b>3,115.9</b>	<b>2,056.7</b>	<b>2,417.2</b>	<b>3,012.8</b>	<b>2,721.4</b>	<b>2,676.3</b>	<b>3,011.7</b>	<b>2,960.7</b>
<b>Production Cost</b>																						
<b>Investment</b>																						
<b>Purchased Inputs</b>																						
<b>Sub-Total Purchased Inputs</b>	285.4	777.0	15.0	274.0	348.3	429.6	673.7	512.4	389.4	609.8	497.4	431.4	576.4	515.4	393.8	605.4	492.9	425.4	564.9	501.8	497.4	491.7
<b>Labor</b>																						
Labour	22.7	23.6	-	-	0.3	0.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
<b>Sub-total Investment Costs</b>	<b>308.1</b>	<b>800.6</b>	<b>15.0</b>	<b>274.0</b>	<b>348.6</b>	<b>430.1</b>	<b>674.5</b>	<b>513.3</b>	<b>390.2</b>	<b>610.6</b>	<b>498.2</b>	<b>432.3</b>	<b>577.3</b>	<b>516.2</b>	<b>394.6</b>	<b>606.2</b>	<b>493.8</b>	<b>426.3</b>	<b>565.7</b>	<b>502.6</b>	<b>498.2</b>	<b>492.5</b>
<b>Operating</b>																						
<b>Purchased Inputs</b>																						
<b>Sub-Total Purchased Inputs</b>	14.6	93.1	-	-	-0.9	0.4	20.9	45.1	70.0	75.5	78.5	78.5	78.5	78.5	78.5	78.5	78.5	78.5	78.5	78.5	78.5	78.5
<b>Labor</b>																						
Labour	1,543.1	1,644.5	68.7	95.1	11.6	74.7	478.8	129.4	-26.9	243.8	87.3	13.4	203.4	89.9	-22.4	244.9	79.7	13.4	203.4	87.3	101.4	101.4
<b>Sub-total Operating Costs</b>	<b>1,557.7</b>	<b>1,737.6</b>	<b>68.7</b>	<b>95.1</b>	<b>10.7</b>	<b>75.0</b>	<b>499.7</b>	<b>174.5</b>	<b>43.1</b>	<b>319.2</b>	<b>165.7</b>	<b>91.9</b>	<b>281.9</b>	<b>168.4</b>	<b>56.0</b>	<b>323.4</b>	<b>158.1</b>	<b>91.9</b>	<b>281.9</b>	<b>165.7</b>	<b>179.8</b>	<b>179.8</b>
<b>Sub-Total Production Cost</b>	<b>1,865.8</b>	<b>2,538.2</b>	<b>83.6</b>	<b>369.1</b>	<b>359.3</b>	<b>505.2</b>	<b>1,174.2</b>	<b>687.8</b>	<b>433.3</b>	<b>929.8</b>	<b>663.9</b>	<b>524.2</b>	<b>859.2</b>	<b>684.6</b>	<b>450.6</b>	<b>929.6</b>	<b>651.9</b>	<b>518.2</b>	<b>847.6</b>	<b>668.3</b>	<b>678.0</b>	<b>672.4</b>
<b>Other Costs</b>																						
FOCUS investment costs	-	-	732.9	1,155.7	999.3	807.5	623.1	410.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>OUTFLOWS</b>	<b>1,865.8</b>	<b>2,538.2</b>	<b>816.6</b>	<b>1,524.8</b>	<b>1,358.6</b>	<b>1,312.7</b>	<b>1,797.4</b>	<b>1,098.7</b>	<b>433.3</b>	<b>929.8</b>	<b>663.9</b>	<b>524.2</b>	<b>859.2</b>	<b>684.6</b>	<b>450.6</b>	<b>929.6</b>	<b>651.9</b>	<b>518.2</b>	<b>847.6</b>	<b>668.3</b>	<b>678.0</b>	<b>672.4</b>
<b>Cash Flow</b>	<b>1,155.5</b>	<b>3,443.9</b>	<b>-812.3</b>	<b>-1,517</b>	<b>-590.7</b>	<b>467.8</b>	<b>58.8</b>	<b>940.7</b>	<b>2,537.9</b>	<b>1,185.1</b>	<b>1,739.0</b>	<b>2,395.9</b>	<b>1,672.5</b>	<b>1,731.4</b>	<b>2,665.3</b>	<b>1,127.1</b>	<b>1,765.3</b>	<b>2,494.6</b>	<b>1,873.8</b>	<b>2,007.9</b>	<b>2,333.7</b>	<b>2,288.4</b>

IRR = 28.9%, NPV = 6,592.92

## ANNEX-1.5: PROJECT INCREMENTAL LABOUR REQUIREMENT

India IFAD Nagaland Final Design Project Summary <b>LABOR BUDGET</b> (In Units)					
		Future			Percentage
	Unit	Present	Without	Future With	Change
		1	18	19	%
<b>Labor Requirements</b>					
Site/jungle clearance	pers_day	1,170,475	540,475	9,750	-98
Land Preparation	pers_day	1,305,125	1,201,625	772,600	-36
Planting	pers_day	842,575	212,575	252,625	19
Sow ing	pers_day	159,250	159,250	43,875	-72
Transplanting	pers_day	121,875	121,875	121,875	-
Manuring	pers_day	51,850	51,850	60,850	17
Nursery preparation	pers_day	24,375	24,375	24,375	-
Irrigating	pers_day	48,750	48,750	48,750	-
Pitting	pers_day	180,000	-	-	-
Staking	pers_day	-	-	195,000	-
Mulching	pers_day	-	-	40,000	-
Fencing	pers_day	52,800	52,800	52,800	-
Weeding	pers_day	610,350	610,350	341,250	-44
spraying	pers_day	123,000	123,000	123,000	-
Interculture	pers_day	587,100	407,100	424,650	4
Pruning	pers_day	22,500	22,500	90,000	300
Removal of basal Leaves	pers_day	-	85,500	85,500	-
Farm transportation	pers_day	424,560	784,560	587,035	-25
Harvesting	pers_day	1,556,425	1,961,425	1,781,075	-9
Shed construction	pers_day	-	-	60,296	-
Drying pepper	pers_day	-	-	67,500	-
Grading pepper	pers_day	-	-	22,500	-
Hut construction	pers_day	55,900	55,900	9,750	-83
Watch and ward	pers_day	785,425	785,425	2,423,950	209
Curing and processing	pers_day	-	-	20,000	-
Miscellaneous	pers_day	-	-	10,000	-
Maintenance	pers_day	-	-	67,500	-
<b>Sub-Total Labor Requirements</b>		<b>8,122,335</b>	<b>7,249,335</b>	<b>7,736,506</b>	<b>7</b>

### ANNEX-1.6: PROJECT PRODUCTION - TOTAL & INCREMENTAL

Project Summary					
PRODUCTION AND INPUTS (Detailed)					
(In Units)					
	Unit	Future			Percentage
		Present	Without	Future With	Change
		1	18	20	%
<b>Main Production</b>					
Paddy	ton	44,081	44,081	53,378	21
Naga chilli	ton	5,385	5,385	7,215	34
Maize, shelled	ton	4,800	4,800	5,077	6
Beans	ton	2,954	2,954	3,530	20
Sesame	ton	903	903	1,363	51
Ginger	ton	5,438	5,438	8,619	59
Onion	ton	-	-	614	-
Garlic	ton	263	263	351	33
Turmeric	ton	6,983	6,983	13,665	96
Vegetables	ton	4,680	4,680	7,020	50
Pine Apple	ton	-	39,600	45,900	16
Black pepper, dried	kg	-	-	1,125,000	-
Banana	ton	-	38,250	45,900	20
Citrus	ton	13,500	20,250	24,300	20
Large cardamom, dry	kg	-	-	300,000	-
Fruits	ton	-	-	195,000	-
Small timber	m3	-	-	-	-
High value timber	m3	-	-	247,000	-
Firewood	m3	-	-	-	-
Pastures & fodder	ton	-	-	6,500	-
Piglets	each	-	-	9,768	-
Fattened pig, 80 kg in Wt	animal	-	-	30,000	-
Turmeric powder bag	1000 bags	-	-	998	-
Sale of Chilli powder bags	each	-	-	862,500	-
Naga Chilli, incremental price	ton	-	-	4,250	-
Ginger, incremental price	ton	3,000	3,000	3,500	17
Cardamom, incremental price	kg	-	-	300,000	-
transport cost reduction	km	-	-	200	-
Proxy labour under WOP	pers_days	728,060	728,060	-	-

## ANNEX-1.7: PRICES ASSUMED IN EFA<sup>67</sup>

### Estimation of Economic Parity Prices for rice and Maize

Item	notes	Unit	Rice a/	Maize a/
FOB (constant 2015 prices)		USD/ton	423	159
(*) Quality Adjustment factor		%	75%	90%
(=) Quality adjusted FOB		USD/ton	317	143
(+) Transport and insurance		USD/ton	20	25
(+) Unloading costs		USD/ton	5	5
CIF at point of import (India)		USD/ton	342	173
INR/USD official exchange rate		INR/USD	68	68
<b>Import parity price at project boundary</b>		<b>INR/ton</b>	<b>23,263</b>	<b>11,783</b>
<b>(+) Import Tariffs and Duties</b>		<b>INR</b>	<b>16,749</b>	<b>8,484</b>
<b>(+) Transport and Marketing financial costs to Project area, of wh</b>		<b>INR/ton</b>	<b>8,002</b>	<b>4,053</b>
Tradable costs	50%		4,001	2,027
Adjust by SERI	1.0		4,001	2,027
Non tradable c <sub>i</sub>	40%		3,201	1,621
Labor	10%		800	405
Adjust by SWR	0.8		640	324
<b>(+) Transport and Marketing economic costs at project area</b>		<b>INR/ton</b>	<b>7,842</b>	<b>3,972</b>
<b>(+) Handling financial costs to Project area (of which)</b>		<b>INR/ton</b>	<b>233</b>	<b>118</b>
Tradable costs	50%		116	59
Adjust by SERI	1		116	59
Non tradable c <sub>i</sub>	40%		93	47
Labor	10%		23	12
Adjust by SWR	0.8		19	9
<b>(+) Handling economic costs</b>		<b>INR/ton</b>	<b>228</b>	<b>115</b>
<b>(=) Wholesale Market Economic Price at Project Area</b>		<b>INR/ton</b>	<b>31,333</b>	<b>15,871</b>
<b>(+) Marketing administration cost at wholesale</b>		<b>INR/ton</b>	<b>313</b>	<b>159</b>
<b>(=) Ex-Mill Price at wholesale Center</b>		<b>INR/ton</b>	<b>31,646</b>	<b>16,030</b>
(+ Transport and Admin. Cost To/From Farm		INR/ton	3,165	1,603
<b>(=) Economic Export Parity Price at farmgate</b>		<b>INR/ton</b>	<b>34,811</b>	<b>17,632</b>
		INR/kg	35	18

a/ World Bank commodity price data. Average (Jan-Dec 2016)

Rice, Thailand 5%

b/ includes insurance and unloading costs

<sup>67</sup> Data collected by

India		Prices assumed	
IFAD Mizoram Final Design		Economic	Financial
<b>ECONOMIC PRICES</b>			
(In INR)			
	Unit		
<b>Outputs</b>			
<b>Food crops production</b>			
Paddy /a	ton	21,000	25,000
Paddy improved	ton	25,200	30,000
Byproduct /b	ton	850	1,000
Mizo chilli	ton	17,000	20,000
Maize, shelled	ton	17,000	20,000
Beans	ton	42,500	50,000
Sesame	ton	17,000	20,000
Ginger	ton	21,250	25,000
Onion	ton	68,000	80,000
Garlic	ton	21,250	25,000
Turmeric	ton	8,500	10,000
High grade turmeric	ton	13,600	16,000
Dry turmeric	ton	255	300
Vegetables	ton	6,000	12,000
<b>Orchards production</b>			
Pine Apple	ton	15,000	30,000
Black pepper, dried	kg	255	300
Banana	ton	16,250	25,000
Citrus	ton	9,900	18,000
Large cardamom, dry	kg	595	700
<b>Village forestry produce</b>			
Fruits	ton	2,125	2,500
Small timber /c	m3	680	800
High value timber	m3	1,275	1,500
Firewood /d	m3	340	400
Pastures & fodder	ton	850	1,000
<b>Pig production</b>			
Piglets /e	each	4,250	5,000
Culled sow	sow	17,000	20,000
Culled boar	boar	17,000	20,000
Sow	each	17,000	20,000
Fattened pig, 80 kg in Wt	animal	34,000	40,000
<b>Poultry production</b>			
Eggs	each	7	8
Grower	each	340	400
Culled bird, hen or cockeral	each	425	500
Sale of Pullet	pullet	106	125
Sale of duck	each	510	600
<b>Fish production</b>			
Fish /f	kg	188	250
<b>Processing units</b>			
Turmeric powder bag	1000 bags	28,050	33,000
Sale of turmeric powder bags /g	1000#	28,050	33,000
Sale of Chilli powder bags	each	85	100
<b>Value chain incremental prices /h</b>			
Mizo Chilli, incremental price	ton	2,550	3,000
Ginger, incremental price	ton	3,188	3,750
High grade Turmeric, incremental price	ton	2,040	2,400
Cardamom, incremental price	kg	68	80
<b>Infrastructure benefits</b>			
Transport costs WOP	INR/ton/km	9	10
Transport costs WP	INR/ton/km	4	5
transport cost reduction /i	INR/km	2,890	3,400
Average transport per household /j	ton/hh/year	1	1
<b>Proxy labour</b>			
Proxy labour under WOP	pers_days	203	270

India IFAD Mizoram Final Design <b>ECONOMIC &amp; FINANCIAL PRICES</b> (In INR)		<b>Prices assumed</b>	
		<b>Economic</b>	<b>Financial</b>
		<b>Unit</b>	
<b>Inputs</b>			
<b>Seeds &amp; Planting materials</b>			
Paddy seed	Kg	30	30
Improved paddy seed	Kg	100	100
maize seed /k	Kg	90	90
Sesame	Kg	300	300
Beans	Kg	200	200
Mizo chilli seed	Kg	2,000	2,000
Ginger Planting materials	Kg	24	24
Turmeric planting materials	Kg	12	12
Garlic bulblets /l	Kg	20	20
Onion planting materials	Kg	450	450
Vegetable Seeds	ha	4,500	4,500
Citrus seedlings, grafted	each	50	50
Banana suckers /m	sucker	6	6
Cardamom sucker	each	10	10
Fingerlings /n	each	4	4
Pineapple suckers	each	3	3
Pepper cutting	#	10	10
Tree seedlings	each	50	50
Pasture seeds	ha	3,500	3,500
Sesbania seeds /o	Kg	50	50
<b>Agri tools &amp; materials</b>			
Azolla tank	set	3,400	4,000
Weeder	set	850	1,000
<b>Fertilisers</b>			
N Fertiliser	Kg	7	8
P Fertiliser	Kg	5	6
K Fertiliser	Kg	6	7
Urea	Kg	18	15
SSP	Kg	32	15
MOP	Kg	35	15
DAP	Kg	15	15
Organic Manure	ton	2,125	2,500
PP chemicals	lit	213	250
PP organic	litre	255	300
NPK	Kg	15	9
FYM	ton	2,125	2,500
<b>Piggery</b>			
Piglets, appx 8 kg in w t	each	4,250	5,000
Boar	boar	17,000	20,000
Adult sow /r	animal	17,000	20,000
Gilt /s	animal	6,800	8,000
Pig Stay /t	unit	2,975	3,500
Pig pen	pen	119,000	140,000
Pig housing	house	408,000	480,000
Equipment /u	unit	850	1,000
Insurance	animal/year	425	500
Medicines	animal	595	700
Medicines for piglets	piglet	170	200
Medicines and vaccines for piglets	piglet/year	170	200
Piglets mortality	piglet	4,250	5,000
Pig feed	kg	19	22
Local feed	kg	9	10

India		Prices assumed	
IFAD Mizoram Final Design			
<b>ECONOMIC &amp; FINANCIAL PRICES</b>		<u>Economic</u>	<u>Financial</u>
(In INR)			
		<u>Unit</u>	
<b>Inputs</b>			
<b>Poultry</b>			
Day old Chicks	chick	38	45
Vet services	bird/year	9	10
Hen	bird	255	300
Pullet supplied	bird	106	125
Pullets inducted	pullet	106	125
Cockeral	bird	255	300
Poultry shed /v	sq ft	70	82
Equipment	unit	6,800	8,000
Insurance	unit/year	493	580
Adult feed 110 gm/day	kg	24	28
Kitchen wastes	kg	4	5
Poultry concentrate	kg	26	30
Chick feed, 10 gm/day	kg	24	28
Grower feed, 50 gm/day	kg	24	28
Grower feed, 90 gm/day	kg	24	28
Mortality without project	adult	89	105
Mortality	bird	213	250
Mortality with project	adult	30	35
<b>Pond fishery</b>			
Making channels /w	pers_day	230	270
Construction of embankment /x	pers_day	230	270
Lime treatment /y	kg	26	30
Fingerlings /z	each	3	4
Fertilisers	kg	25	20
Manure	ton	850	1,000
Fish Feed /aa	kg	21	25
Tools & Equipment /bb	set	4,250	5,000
Maintenance	pers_day	230	270
<b>Turmeric processing unit</b>			
<b>(1000 bags/day capacity)</b>			
Purchase of fresh turmeric	ton	13,600	16,000
Packaging machine	set	127,500	150,000
Grinding machine	set	255,000	300,000
Slicing machine	set	127,500	150,000
Factory building	building	425,000	500,000
Other Tools	set	21,250	25,000
Packaging Bags (100 gm)	1000#	2,125	2,500
Other operating costs	year	212,500	250,000
Operation & maintenance	year	143,438	168,750
Management costs	year	176,970	208,200
Marketing costs	year	176,970	208,200
Factory operating labour /cc	pers_day	230	270
Utilities /dd	set	4,505	5,300
Labour /ee	pers_day	213	250
Transportation /ff	pers_day	213	250
<b>Chilli processing unit</b>			
Purchase of fresh chilli	ton	59,500	70,000
Packaging machine	set	127,500	150,000
Grinding machine	set	255,000	300,000
Slicing machine	set	127,500	150,000
Factory building	building	425,000	500,000
Other Tools	set	340,000	400,000
Packaging Bags (100 gm)	1000#	2,125	2,500
Other operating costs	year	212,500	250,000
Operation & maintenance	year	143,438	168,750
Management costs	year	176,970	208,200
Marketing costs	year	176,970	208,200
Factory operating labour /gg	pers_day	230	270
<b>Fencing</b>			
Fencing cropped area	lumpsum	1	1
<b>Village forestry</b>			
Land clearing /hh	pers_day	230	270
Seedling	each 100	43	50
Planting /ii	pers_day	230	270
Gap filling /jj	pers_day	230	270
Annual maintenance /kk	pers_day	230	270
Harvesting	pers_day	230	270
<b>Labor</b>	pers_day	216	270

## Annex-1.8: Activities supported by FOCUS

CROPPING PATTERNS/ACTIVITY LEVELS (In Units)		April -- March													
		Without Project		With Project						Increments					
		Unit	1 to 20	1	2	3	4	5	6 to 20	1	2	3	4	5	6 to 20
Cropping Intensity	Percent	63	63	63	63	63	63	63	-	-	-	-	-	-	
<b>Cropping Pattern</b>															
<b>New Technology</b>															
Jhum cultivation	ha	-	-	10,725	21,450	23,075	23,075	23,075	-	10,725	21,450	23,075	23,075	23,075	
Wetland Rice	ha	-	-	-	3,000	6,000	9,750	9,750	-	-	3,000	6,000	9,750	9,750	
Onion	ha	-	-	-	540	1,080	1,755	1,755	-	-	540	1,080	1,755	1,755	
Garlic	ha	-	-	-	540	1,080	1,755	1,755	-	-	540	1,080	1,755	1,755	
Vegetables	ha	-	-	-	120	240	390	390	-	-	120	240	390	390	
Jhum Spices cultivation	ha	-	-	1,625	3,250	4,875	4,875	4,875	-	1,625	3,250	4,875	4,875	4,875	
Large cardamom	ha	-	-	300	1,100	2,000	2,000	2,000	-	300	1,100	2,000	2,000	2,000	
Naga Chilli	ha	-	-	150	550	1,000	1,000	1,000	-	150	550	1,000	1,000	1,000	
Ginger	ha	-	-	150	550	1,000	1,000	1,000	-	150	550	1,000	1,000	1,000	
Chilli	ha	-	-	150	550	1,000	1,000	1,000	-	150	550	1,000	1,000	1,000	
Ginger	ha	-	-	150	550	1,000	1,000	1,000	-	150	550	1,000	1,000	1,000	
Large Cardamom	ha	-	-	300	1,100	2,000	2,000	2,000	-	300	1,100	2,000	2,000	2,000	
Banana	ha	-	2,250	4,500	4,500	4,500	4,500	4,500	2,250	4,500	4,500	4,500	4,500	4,500	
Pine Apple	ha	-	2,250	4,500	4,500	4,500	4,500	4,500	2,250	4,500	4,500	4,500	4,500	4,500	
Oranges	ha	-	2,250	4,500	4,500	4,500	4,500	4,500	2,250	4,500	4,500	4,500	4,500	4,500	
Black Pepper	ha	-	2,250	4,500	4,500	4,500	4,500	4,500	2,250	4,500	4,500	4,500	4,500	4,500	
<b>Sub-total New Technology</b>		-	9,000	31,550	51,300	62,350	67,600	67,600	9,000	31,550	51,300	62,350	67,600	67,600	
<b>Total Cropped Area</b>		67,600	67,600	67,600	67,600	67,600	67,600	67,600	-	-	-	-	-	-	
<b>Activity Pattern</b>															
<b>New Technology</b>															
Community forestry	ha	-	-	-	4,000	8,000	13,000	13,000	-	-	4,000	8,000	13,000	13,000	
Pig breeding, small-scale	#	-	-	37	111	148	148	148	-	37	111	148	148	148	
Pig fattening	#	-	-	7,500	15,000	22,500	30,000	30,000	-	7,500	15,000	22,500	30,000	30,000	
Chilli processing plant	#	-	-	-	-	3	5	8	-	-	-	3	5	8	
Turmeric processing plant	#	-	-	-	-	3	5	8	-	-	-	3	5	8	
Farm to market road CD structures	KM	-	-	-	50	100	150	200	-	-	50	100	150	200	

## 2.0 SUBPROJECT MODELS

### ANNEX-2.1: Jhum Food crops production, economic budget

India IFAD Nagaland Final Design Crop-based households Subproject Model <b>ECONOMIC BUDGET (AGGREGATED)</b> (In INR '000)	April -- March										
	Without Project	With Project					Increments				
	1 to 20	1	2	3	4	5 to 20	1	2	3	4	5 to 20
<b>Main Production</b>											
Food crops production	1,325,045	1,325,045	1,405,861	1,551,673	1,665,889	1,747,133	-	80,816	226,627	340,843	422,088
Proxy labour	7,108	7,108	7,108	4,921	2,734	-	-	-	-2,187	-4,374	-7,108
<b>Sub-total Main Production</b>	<b>1,332,153</b>	<b>1,332,153</b>	<b>1,412,969</b>	<b>1,556,593</b>	<b>1,668,622</b>	<b>1,747,133</b>	<b>-</b>	<b>80,816</b>	<b>224,440</b>	<b>336,469</b>	<b>414,980</b>
<b>Production Cost</b>											
<b>Investment</b>											
<b>Purchased Inputs</b>											
Seeds & Planting materials	166,090	166,090	180,711	195,380	209,140	209,200	-	14,621	29,290	43,050	43,111
Fertilisers	2,486	2,486	2,486	2,996	3,506	4,144	-	-	510	1,020	1,658
<b>Sub-Total Purchased Inputs</b>	<b>168,576</b>	<b>168,576</b>	<b>183,197</b>	<b>198,376</b>	<b>212,646</b>	<b>213,344</b>	<b>-</b>	<b>14,621</b>	<b>29,800</b>	<b>44,070</b>	<b>44,768</b>
<b>Labor</b>											
Labour	22,745	22,745	22,745	23,004	23,263	23,587	-	-	259	518	842
<b>Sub-total Investment Costs</b>	<b>191,321</b>	<b>191,321</b>	<b>205,942</b>	<b>221,380</b>	<b>235,909</b>	<b>236,931</b>	<b>-</b>	<b>14,621</b>	<b>30,060</b>	<b>44,588</b>	<b>45,611</b>
<b>Operating</b>											
<b>Purchased Inputs</b>											
Seeds & Planting materials	14,625	14,625	14,625	13,725	12,825	11,700	-	-	-900	-1,800	-2,925
<b>Labor</b>											
Labour	1,053,548	1,053,548	795,422	554,274	537,205	558,427	-	-258,125	-499,273	-516,343	-495,121
<b>Sub-total Operating Costs</b>	<b>1,068,173</b>	<b>1,068,173</b>	<b>810,047</b>	<b>567,999</b>	<b>550,030</b>	<b>570,127</b>	<b>-</b>	<b>-258,125</b>	<b>-500,173</b>	<b>-518,143</b>	<b>-498,046</b>
<b>Sub-Total Production Cost</b>	<b>1,259,493</b>	<b>1,259,493</b>	<b>1,015,989</b>	<b>789,380</b>	<b>785,939</b>	<b>807,058</b>	<b>-</b>	<b>-243,504</b>	<b>-470,114</b>	<b>-473,554</b>	<b>-452,435</b>
<b>OUTFLOWS</b>	<b>1,259,493</b>	<b>1,259,493</b>	<b>1,015,989</b>	<b>789,380</b>	<b>785,939</b>	<b>807,058</b>	<b>-</b>	<b>-243,504</b>	<b>-470,114</b>	<b>-473,554</b>	<b>-452,435</b>
<b>Cash Flow</b>	<b>72,660</b>	<b>72,660</b>	<b>396,980</b>	<b>767,214</b>	<b>882,683</b>	<b>940,075</b>	<b>-</b>	<b>324,320</b>	<b>694,554</b>	<b>810,023</b>	<b>867,415</b>

IRR = None, NPV = 5,978,322.89

## ANNEX-2.2: Jhum Food crops production, financial budget

India IFAD Nagaland Final Design Crop-based households Subproject Model FINANCIAL BUDGET (AGGREGATED) (In INR '000)														
	April -- March													
	Without Project		With Project						Increments					
	1 to 19	20	1	2	3	4	5	6 to 20	2	3	4	5	6 to 19	20
<b>Main Production</b>														
Food crops production	1,594,967	1,594,967	1,594,967	1,690,315	1,866,349	2,004,981	2,105,838	2,105,838	95,349	271,382	410,015	510,871	510,871	510,871
Proxy labour	9,477	9,477	9,477	9,477	6,561	3,645	-	-	-	-2,916	-5,832	-9,477	-9,477	-9,477
<b>Sub-total Main Production</b>	<b>1,604,444</b>	<b>1,604,444</b>	<b>1,604,444</b>	<b>1,699,792</b>	<b>1,872,910</b>	<b>2,008,626</b>	<b>2,105,838</b>	<b>2,105,838</b>	<b>95,349</b>	<b>268,466</b>	<b>404,183</b>	<b>501,394</b>	<b>501,394</b>	<b>501,394</b>
<b>Production Cost</b>														
<b>Investment</b>														
<b>Purchased Inputs</b>														
Seeds & Planting materials	166,090	166,090	166,090	180,711	195,380	209,140	209,200	209,200	14,621	29,290	43,050	43,111	43,111	43,111
Fertilisers	2,925	2,925	2,925	2,925	3,525	4,125	4,875	4,875	-	600	1,200	1,950	1,950	1,950
<b>Sub-Total Purchased Inputs</b>	<b>169,015</b>	<b>169,015</b>	<b>169,015</b>	<b>183,636</b>	<b>198,905</b>	<b>213,265</b>	<b>214,075</b>	<b>214,075</b>	<b>14,621</b>	<b>29,890</b>	<b>44,250</b>	<b>45,061</b>	<b>45,061</b>	<b>45,061</b>
<b>Hired Labor</b>														
Labour	28,431	28,431	28,431	28,431	28,755	29,079	29,484	29,484	-	324	648	1,053	1,053	1,053
<b>Sub-total Investment Costs</b>	<b>197,446</b>	<b>197,446</b>	<b>197,446</b>	<b>212,067</b>	<b>227,660</b>	<b>242,344</b>	<b>243,559</b>	<b>243,559</b>	<b>14,621</b>	<b>30,214</b>	<b>44,898</b>	<b>46,114</b>	<b>46,114</b>	<b>46,114</b>
<b>Operating</b>														
<b>Purchased Inputs</b>														
Seeds & Planting materials	14,625	14,625	14,625	14,625	13,725	12,825	11,700	11,700	-	-900	-1,800	-2,925	-2,925	-2,925
<b>Hired Labor</b>														
Labour	1,316,934	1,316,934	1,316,934	994,278	692,843	671,506	698,034	698,034	-322,657	-624,092	-645,428	-618,901	-618,901	-618,901
<b>Sub-total Operating Costs</b>	<b>1,331,559</b>	<b>1,331,559</b>	<b>1,331,559</b>	<b>1,008,903</b>	<b>706,568</b>	<b>684,331</b>	<b>709,734</b>	<b>709,734</b>	<b>-322,657</b>	<b>-624,992</b>	<b>-647,228</b>	<b>-621,826</b>	<b>-621,826</b>	<b>-621,826</b>
<b>Sub-Total Production Cost</b>	<b>1,529,005</b>	<b>1,529,005</b>	<b>1,529,005</b>	<b>1,220,969</b>	<b>934,228</b>	<b>926,675</b>	<b>953,293</b>	<b>953,293</b>	<b>-308,036</b>	<b>-594,777</b>	<b>-602,330</b>	<b>-575,712</b>	<b>-575,712</b>	<b>-575,712</b>
<b>OUTFLOWS</b>	<b>1,529,005</b>	<b>1,529,005</b>	<b>1,529,005</b>	<b>1,220,969</b>	<b>934,228</b>	<b>926,675</b>	<b>953,293</b>	<b>953,293</b>	<b>-308,036</b>	<b>-594,777</b>	<b>-602,330</b>	<b>-575,712</b>	<b>-575,712</b>	<b>-575,712</b>
<b>Cash Flow Before Financing</b>	<b>75,439</b>	<b>75,439</b>	<b>75,439</b>	<b>478,823</b>	<b>938,682</b>	<b>1,081,951</b>	<b>1,152,544</b>	<b>1,152,544</b>	<b>403,384</b>	<b>863,243</b>	<b>1,006,513</b>	<b>1,077,106</b>	<b>1,077,106</b>	<b>1,077,106</b>

IRR = None, NPV = 7,750,637.32

Cash-flow values before financing have only been carried forward to Annex-A above

### ANNEX-2.3: Spices and orchard households subproject; economic budget

India IFAD Nagaland Final Design Spices & orchards households Subproject I <b>ECONOMIC BUDGET (AGGREGATED)</b> (In INR '000)													
	WP											Increments	
	19 to 20	1	2	3	4	5	6	7	8	9	10	15	19 to 20
<b>Main Production</b>													
Spices	146,625	-	3,506	12,856	23,375	23,375	23,375	23,375	23,375	23,375	23,375	23,375	23,375
Orchards production	2,140,320	13,365	-290,205	72,000	712,680	443,733	455,745	1,222,658	197,445	469,133	974,033	376,908	724,283
Value chain incremental prices	48,769	-	1,865	6,837	15,778	25,373	37,198	39,206	39,206	39,206	39,206	25,373	39,206
Proxy labour	-	-9,113	-18,225	-18,225	-18,225	-18,225	-18,225	-18,225	-18,225	-18,225	-18,225	-18,225	-18,225
<b>Sub-total Main Production</b>	<b>2,335,714</b>	<b>4,253</b>	<b>-303,059</b>	<b>73,468</b>	<b>733,608</b>	<b>474,255</b>	<b>498,093</b>	<b>1,267,014</b>	<b>241,801</b>	<b>513,489</b>	<b>1,018,389</b>	<b>407,430</b>	<b>768,639</b>
<b>Production Cost</b>													
<b>Investment</b>													
Seeds & Planting materials	26,000	12,600	126,600	16,000	-49,500	67,500	-	-108,000	108,000	-	-61,500	-	-
Agri tools & materials	-	-	-27,387	-54,774	-54,774	-54,774	-54,774	-54,774	-54,774	-54,774	-54,774	-54,774	-54,774
Fertilisers	38,250	2,391	4,781	4,781	4,781	4,781	4,781	4,781	4,781	4,781	4,781	4,781	4,781
Fencing	2,550	-	-	-	-	-	-	-	-	-	-	-	-
<b>Sub-total Investment Costs</b>	<b>66,800</b>	<b>14,991</b>	<b>103,994</b>	<b>-33,993</b>	<b>-99,493</b>	<b>17,507</b>	<b>-49,993</b>	<b>-157,993</b>	<b>58,007</b>	<b>-49,993</b>	<b>-111,493</b>	<b>-49,993</b>	<b>-49,993</b>
<b>Operating</b>													
Labour	598,452	68,652	261,048	97,436	10,070	197,700	94,794	-19,416	251,286	94,794	20,922	87,162	108,888
<b>Sub-Total Production Cost</b>	<b>665,252</b>	<b>83,643</b>	<b>365,042</b>	<b>63,443</b>	<b>-89,423</b>	<b>215,207</b>	<b>44,801</b>	<b>-177,409</b>	<b>309,293</b>	<b>44,801</b>	<b>-90,571</b>	<b>37,169</b>	<b>58,895</b>
<b>OUTFLOWS</b>	<b>665,252</b>	<b>83,643</b>	<b>365,042</b>	<b>63,443</b>	<b>-89,423</b>	<b>215,207</b>	<b>44,801</b>	<b>-177,409</b>	<b>309,293</b>	<b>44,801</b>	<b>-90,571</b>	<b>37,169</b>	<b>58,895</b>
<b>Cash Flow</b>	<b>1,670,462</b>	<b>-79,390</b>	<b>-668,101</b>	<b>10,025</b>	<b>823,031</b>	<b>259,048</b>	<b>453,292</b>	<b>1,444,423</b>	<b>-67,492</b>	<b>468,688</b>	<b>1,108,960</b>	<b>370,261</b>	<b>709,744</b>

IRR = 52.1%, NPV = 2,990,081.37

## ANNEX-2.4: Spices and orchards households subproject, financial budget

India IFAD Nagaland Final Design Spices & orchards households Subproject I <b>FINANCIAL BUDGET (AGGREGATED)</b> (In INR '000)													
	WP										Increments		
	20	1	2	3	4	5	6	7	8	9	10	15	20
<b>Main Production</b>													
Spices	172,500	-	4,125	15,125	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500
Orchards production	3,509,400	24,300	-468,900	11,700	1,184,100	543,850	474,600	1,882,650	119,100	490,350	1,500,150	381,850	1,000,650
Value chain incremental prices	57,375	-	2,194	8,044	18,563	29,850	43,763	46,125	46,125	46,125	46,125	29,850	46,125
Proxy labour	-	-12,150	-24,300	-24,300	-24,300	-24,300	-24,300	-24,300	-24,300	-24,300	-24,300	-24,300	-24,300
<b>Sub-total Main Production</b>	<b>3,739,275</b>	<b>12,150</b>	<b>-486,881</b>	<b>10,569</b>	<b>1,205,863</b>	<b>576,900</b>	<b>521,563</b>	<b>1,931,975</b>	<b>168,425</b>	<b>539,675</b>	<b>1,549,475</b>	<b>414,900</b>	<b>1,049,975</b>
<b>Production Cost</b>													
<b>Investment</b>													
Seeds & Planting materials	26,000	12,600	126,600	16,000	-49,500	67,500	-	-108,000	108,000	-	-61,500	-	-
Agri tools & materials	-	-	-32,220	-64,440	-64,440	-64,440	-64,440	-64,440	-64,440	-64,440	-64,440	-64,440	-64,440
Fertilisers	45,000	2,813	5,625	5,625	5,625	5,625	5,625	5,625	5,625	5,625	5,625	5,625	5,625
Fencing	3,000	-	-	-	-	-	-	-	-	-	-	-	-
<b>Sub-total Investment Costs</b>	<b>74,000</b>	<b>15,413</b>	<b>100,005</b>	<b>-42,815</b>	<b>-108,315</b>	<b>8,685</b>	<b>-58,815</b>	<b>-166,815</b>	<b>49,185</b>	<b>-58,815</b>	<b>-120,315</b>	<b>-58,815</b>	<b>-58,815</b>
<b>Operating</b>													
Labour	748,065	85,815	326,310	121,795	12,588	247,125	118,493	-24,270	314,108	118,493	26,153	108,953	136,110
<b>Sub-Total Production Cost</b>	<b>822,065</b>	<b>101,228</b>	<b>426,315</b>	<b>78,980</b>	<b>-95,728</b>	<b>255,810</b>	<b>59,678</b>	<b>-191,085</b>	<b>363,293</b>	<b>59,678</b>	<b>-94,163</b>	<b>50,138</b>	<b>77,295</b>
<b>OUTFLOWS</b>	<b>822,065</b>	<b>101,228</b>	<b>426,315</b>	<b>78,980</b>	<b>-95,728</b>	<b>255,810</b>	<b>59,678</b>	<b>-191,085</b>	<b>363,293</b>	<b>59,678</b>	<b>-94,163</b>	<b>50,138</b>	<b>77,295</b>
<b>Cash Flow Before Financing</b>	<b>2,917,210</b>	<b>-89,078</b>	<b>-913,196</b>	<b>-68,411</b>	<b>1,301,590</b>	<b>321,090</b>	<b>461,885</b>	<b>2,123,060</b>	<b>-194,868</b>	<b>479,998</b>	<b>1,643,638</b>	<b>364,763</b>	<b>972,680</b>

IRR = 113.0%, NPV = 4,608,075.96

Cash-flow values before financing have only been carried forward to Annex-A above

## ANNEX-2.5: Community forestry subproject, economic budget

India																			
IFAD Nagaland Final Design																			
Community forestry benefits Subproj																			
<b>ECONOMIC BUDGET (AGGREGATE)</b>																			
(In INR '000)																			
	WP	Increments																	
	20	3	4	5	6	7	8	9	10	11	12	13	14	15 to 16	17	18	19	20	
<b>Main Production</b>																			
Community forestry produce	734,825	-	-	-	129,200	258,400	419,900	432,140	444,380	459,680	476,000	504,560	537,200	552,500	649,400	705,500	785,825	734,825	
<b>Production Cost</b>																			
<b>Investment</b>																			
community forestry	-	59,500	71,400	86,275	14,875	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Operating</b>																			
Labour	210,600	250,560	349,056	476,496	252,720	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600
<b>Sub-Total Production Cost</b>	210,600	310,060	420,456	562,771	267,595	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600
<b>OUTFLOWS</b>	210,600	310,060	420,456	562,771	267,595	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600	210,600
<b>Cash Flow</b>	524,225	-310,060	-420,456	-562,771	-138,395	47,800	209,300	221,540	233,780	249,080	265,400	293,960	326,600	341,900	438,800	494,900	575,225	524,225	

IRR = 12.4%, NPV = 205,647.05

## ANNEX-2.6: Community forestry subproject, financial budget

India IFAD Nagaland Final Design Community forestry benefits Subproject Mo																			
<b>FINANCIAL BUDGET (AGGREGATED)</b>																			
(In INR '000)																			
	WP	Increments																	
	20	3	4	5	6	7	8	9	10	11	12	13	14	15 to 16	17	18	19	20	
<b>Main Production</b>																			
Community forestry produce	864,500	-	-	-	152,000	304,000	494,000	508,400	522,800	540,800	560,000	593,600	632,000	650,000	764,000	830,000	924,500	864,500	
<b>Production Cost</b>																			
<b>Investment</b>																			
community forestry	-	70,000	84,000	101,500	17,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Operating</b>																			
Labour	263,250	313,200	436,320	595,620	315,900	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250
<b>Sub-Total Production Cost</b>	263,250	383,200	520,320	697,120	333,400	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250
<b>OUTFLOWS</b>	263,250	383,200	520,320	697,120	333,400	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250	263,250
<b>Cash Flow Before Financing</b>	601,250	-383,200	-520,320	-697,120	-181,400	40,750	230,750	245,150	259,550	277,550	296,750	330,350	368,750	386,750	500,750	566,750	661,250	601,250	
NPV = 1,617,714.47																			

Cash-flow values before financing have only been carried forward to Annex-A above

## ANNEX-2.7: Livestock subproject, economic budget

India IFAD Nagaland Final Design Livestock households Subproject Mo													
ECONOMIC BUDGET (AGGREGATE) (In INR '000)	Without	Increments											
	Project	WP	2	3	4	5	6	7	8	9	10 to 11	15 to 16	20
	1 to 20	20											
<b>Main Production</b>													
Pig production	-	1,061,514	260,189	530,757	801,325	1,061,514	1,061,514	1,061,514	1,061,514	1,061,514	1,061,514	1,061,514	1,061,514
Proxy labour	122,099	-	-30,525	-61,200	-91,724	-122,099	-122,099	-122,099	-122,099	-122,099	-122,099	-122,099	-122,099
<b>Sub-total Main Production</b>	122,099	1,061,514	229,664	469,557	709,600	939,415	939,415	939,415	939,415	939,415	939,415	939,415	939,415
<b>Production Cost</b>													
<b>Investment</b>													
Piggery	-	496,899	155,379	293,012	409,032	520,487	498,174	502,577	506,980	502,577	498,174	498,174	496,899
<b>Operating</b>													
Labour	-	277,019	92,159	162,852	231,883	299,699	277,019	277,019	277,019	277,019	277,019	277,019	277,019
<b>Sub-Total Production Cost</b>	-	773,918	247,538	455,863	640,915	820,186	775,193	779,596	783,999	779,596	775,193	775,193	773,918
<b>OUTFLOWS</b>	-	773,918	247,538	455,863	640,915	820,186	775,193	779,596	783,999	779,596	775,193	775,193	773,918
<b>Cash Flow</b>	122,099	287,596	-17,873	13,694	68,685	119,229	164,221	159,818	155,415	159,818	164,221	164,221	165,496

IRR = 212.2%, NPV = 875,709.40

## ANNEX-2.8: Livestock subproject, financial budget

India IFAD Nagaland Final Design Livestock households Subproject Mo												
<b>FINANCIAL BUDGET (AGGREGATE)</b>												
(In INR '000)												
	WP									Increments		
	20	2	3	4	5	6	7	8	9	10	15	20
<b>Main Production</b>												
Pig production	1,248,840	306,105	624,420	942,735	1,248,840	1,248,840	1,248,840	1,248,840	1,248,840	1,248,840	1,248,840	1,248,840
Proxy labour	-	-40,700	-81,599	-122,299	-162,799	-162,799	-162,799	-162,799	-162,799	-162,799	-162,799	-162,799
<b>Sub-total Main Production</b>	<b>1,248,840</b>	<b>265,405</b>	<b>542,821</b>	<b>820,436</b>	<b>1,086,041</b>							
<b>Production Cost</b>												
<b>Investment</b>												
Piggery	584,587	182,799	344,719	481,214	612,337	586,087	591,267	596,447	591,267	586,087	586,087	584,587
<b>Operating</b>												
Labour	346,274	115,198	203,565	289,854	374,624	346,274	346,274	346,274	346,274	346,274	346,274	346,274
<b>Sub-Total Production Cost</b>	<b>930,861</b>	<b>297,997</b>	<b>548,284</b>	<b>771,068</b>	<b>986,961</b>	<b>932,361</b>	<b>937,541</b>	<b>942,721</b>	<b>937,541</b>	<b>932,361</b>	<b>932,361</b>	<b>930,861</b>
<b>OUTFLOWS</b>	<b>930,861</b>	<b>297,997</b>	<b>548,284</b>	<b>771,068</b>	<b>986,961</b>	<b>932,361</b>	<b>937,541</b>	<b>942,721</b>	<b>937,541</b>	<b>932,361</b>	<b>932,361</b>	<b>930,861</b>
<b>Cash Flow Before Financing</b>	<b>317,979</b>	<b>-32,592</b>	<b>-5,464</b>	<b>49,368</b>	<b>99,080</b>	<b>153,680</b>	<b>148,500</b>	<b>143,320</b>	<b>148,500</b>	<b>153,680</b>	<b>153,680</b>	<b>155,180</b>

IRR = None, NPV = 1,824,241.30

Cash-flow values before financing have only been carried forward to Annex-A above

## ANNEX-2.9: Processing units subproject; economic budget

India IFAD Nagaland Final Design Processing unit benefits Subproject Model <b>ECONOMIC BUDGET (AGGREGATED)</b> (In INR '000)		April -- March													
		With Project							Increments						
		4	5	6	7	8	9 to 20	1 to 3	4	5	6	7	8	9 to 20	
<b>Main Production</b>															
Processing units		-	26,327	56,053	89,817	97,255	101,292	-	-	26,327	56,053	89,817	97,255	101,292	
<b>Production Cost</b>															
<b>Investment</b>															
Turmeric processing unit (1000 bags/day capacity)		3,772	3,772	3,772	-	-	-	-	3,772	3,772	3,772	-	-	-	
Chilli processing unit		850	850	850	-	-	-	-	850	850	850	-	-	-	
<b>Sub-total Investment Costs</b>		4,622	4,622	4,622	-	-	-	-	4,622	4,622	4,622	-	-	-	
<b>Operating</b>															
Turmeric processing unit (1000 bags/day capacity)		1,410	11,214	21,071	29,652	29,837	29,970	-	1,410	11,214	21,071	29,652	29,837	29,970	
Chilli processing unit		744	12,644	26,924	43,316	48,552	51,408	-	744	12,644	26,924	43,316	48,552	51,408	
<b>Sub-total Operating Costs</b>		2,154	23,858	47,995	72,968	78,389	81,378	-	2,154	23,858	47,995	72,968	78,389	81,378	
<b>Sub-Total Production Cost</b>		6,775	28,480	52,617	72,968	78,389	81,378	-	6,775	28,480	52,617	72,968	78,389	81,378	
<b>OUTFLOWS</b>		6,775	28,480	52,617	72,968	78,389	81,378	-	6,775	28,480	52,617	72,968	78,389	81,378	
<b>Cash Flow</b>		-6,775	-2,153	3,436	16,850	18,865	19,914	-	-6,775	-2,153	3,436	16,850	18,865	19,914	

IRR = 80.8%, NPV = 76,722.36

## ANNEX-2.10: Processing units subproject; financial budget

India IFAD Nagaland Final Design Processing unit benefits Subproject Model <b>FINANCIAL BUDGET (AGGREGATED)</b> (In INR '000)		April -- March													
		With Project							Increments						
		4	5	6	7	8	9 to 20	1 to 3	4	5	6	7	8	9 to 20	
<b>Main Production</b>															
Processing units		-	30,973	65,945	105,668	114,418	119,168	-	-	30,973	65,945	105,668	114,418	119,168	
<b>Production Cost</b>															
<b>Investment</b>															
Turmeric processing unit (1000 bags/day capacity)		4,438	4,438	4,438	-	-	-	-	4,438	4,438	4,438	-	-	-	
Chilli processing unit		1,000	1,000	1,000	-	-	-	-	1,000	1,000	1,000	-	-	-	
<b>Sub-total Investment Costs</b>		5,438	5,438	5,438	-	-	-	-	5,438	5,438	5,438	-	-	-	
<b>Operating</b>															
Turmeric processing unit (1000 bags/day capacity)		1,659	13,193	24,790	34,884	35,103	35,259	-	1,659	13,193	24,790	34,884	35,103	35,259	
Chilli processing unit		875	14,875	31,675	50,960	57,120	60,480	-	875	14,875	31,675	50,960	57,120	60,480	
<b>Sub-total Operating Costs</b>		2,534	28,068	56,465	85,844	92,223	95,739	-	2,534	28,068	56,465	85,844	92,223	95,739	
<b>Sub-Total Production Cost</b>		7,971	33,505	61,902	85,844	92,223	95,739	-	7,971	33,505	61,902	85,844	92,223	95,739	
<b>OUTFLOWS</b>		7,971	33,505	61,902	85,844	92,223	95,739	-	7,971	33,505	61,902	85,844	92,223	95,739	
<b>Cash Flow Before Financing</b>		-7,971	-2,533	4,043	19,823	22,195	23,428	-	-7,971	-2,533	4,043	19,823	22,195	23,428	
IRR = 31.7%, NPV = 62,048.04															

*Cash-flow values before financing have only been carried forward to Annex-A above*

### ANNEX-2.11: Farm roads benefits subproject, economic budget

India IFAD Nagaland Final Design Farm roads benefits Subproject Model												
April -- March												
ECONOMIC BUDGET (AGGREGATED) (In INR '000)	Without Project						With Project					
							Increments					
	1 to 20	1 to 2	3	4	5	6 to 20	1 to 2	3	4	5	6 to 20	
<b>Main Production</b>												
Infrastructure benefits	-	-	397	795	1,192	1,590	-	397	795	1,192	1,590	
<b>Cash Flow</b>	-	-	397	795	1,192	1,590	-	397	795	1,192	1,590	

IRR = None, NPV = 9,088.45

### ANNEX-2.12: Farm roads benefits subproject, financial budget

India IFAD Nagaland Final Design Farm roads benefits Subproject Model												
April -- March												
FINANCIAL BUDGET (AGGREGATED) (In INR '000)	Without Project						With Project					
							Increments					
	1 to 20	1 to 2	3	4	5	6 to 20	1 to 2	3	4	5	6 to 20	
<b>Main Production</b>												
Infrastructure benefits	-	-	468	935	1,403	1,870	-	468	935	1,403	1,870	
<b>Cash Flow Before Financing</b>	-	-	468	935	1,403	1,870	-	468	935	1,403	1,870	
<b>Cash Flow After Financing</b>	-	-	468	935	1,403	1,870	-	468	935	1,403	1,870	
<b>Farm Family Benefits After Financing</b>	-	-	468	935	1,403	1,870	-	468	935	1,403	1,870	

IRR = None, NPV = 10,692.29

## ANNEX-3: AREA, ACTIVITY AND HOUSEHOLD PRODUCTION MODELS

### Annex-3.1 Financial budget of 0.2 ha Jhum crops; household model

India IFAD Nagaland Final Design Jhum crops Crop (0.2 ha) <b>FINANCIAL BUDGET (DETAILED)</b> (In INR)								
	April -- March							
	hout Project		With Project			Increments		
	1 to 19	20	1	2 to 19	20	1	2 to 19	20
<b>Main Production</b>								
Paddy	4,270	4,270	4,700	4,700	4,700	430	430	430
Maize, shelled	832	832	880	880	880	48	48	48
Beans	1,280	1,280	1,530	1,530	1,530	250	250	250
Naga chilli	200	200	230	230	230	30	30	30
Turmeric	394	394	450	450	450	56	56	56
Sesame	72	72	80	80	80	8	8	8
<b>Sub-total Main Production</b>	<b>7,048</b>	<b>7,048</b>	<b>7,870</b>	<b>7,870</b>	<b>7,870</b>	<b>822</b>	<b>822</b>	<b>822</b>
<b>Production Cost</b>								
<b>Investment</b>								
Paddy seed	420	420	420	420	420	-	-	-
maize seed	162	162	162	162	162	-	-	-
Sesame	38	38	38	38	38	-	-	-
Beans	100	100	100	100	100	-	-	-
Naga chilli seed	-	-	20	20	20	20	20	20
Turmeric planting materials	300	300	300	300	300	-	-	-
<b>Sub-total Investment Costs</b>	<b>1,020</b>	<b>1,020</b>	<b>1,040</b>	<b>1,040</b>	<b>1,040</b>	<b>20</b>	<b>20</b>	<b>20</b>
<b>Operating</b>								
Site/jungle clearance	1,242	1,242	-	-	-	-1,242	-1,242	-1,242
Land Preparation	1,242	1,242	-	-	-	-1,242	-1,242	-1,242
Sow ing	270	270	-	-	-	-270	-270	-270
Weeding	972	972	-	-	-	-972	-972	-972
Farm transportation	540	540	-	-	-	-540	-540	-540
Harvesting	1,782	1,782	-	-	-	-1,782	-1,782	-1,782
Hut construction	108	108	-	-	-	-108	-108	-108
<b>Sub-total Operating Costs</b>	<b>6,156</b>	<b>6,156</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-6,156</b>	<b>-6,156</b>	<b>-6,156</b>
<b>Sub-Total Production Cost</b>	<b>7,176</b>	<b>7,176</b>	<b>1,040</b>	<b>1,040</b>	<b>1,040</b>	<b>-6,136</b>	<b>-6,136</b>	<b>-6,136</b>
<b>OUTFLOWS</b>	<b>7,176</b>	<b>7,176</b>	<b>1,040</b>	<b>1,040</b>	<b>1,040</b>	<b>-6,136</b>	<b>-6,136</b>	<b>-6,136</b>
<b>Cash Flow Before Financing</b>	<b>-128</b>	<b>-128</b>	<b>6,831</b>	<b>6,831</b>	<b>6,831</b>	<b>6,958</b>	<b>6,958</b>	<b>6,958</b>

IRR = None, NPV = 56,814.86

### Annex-3.2 Financial budget of 0.5 ha of Jhum spices, household model

India  
 IFAD Nagaland Final Design  
 Jhum spices crop  
**FINANCIAL BUDGET (DETAILED)**  
 (In INR)

	WOP	WP	Increments											
	20	20	1	2	3	4 to 7	8	9	10	11	12	13	14 to 19	20
<b>Main Production</b>														
Naga chilli	8,750	10,625	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875
Ginger	9,375	10,938	1,563	1,563	1,563	1,563	1,563	1,563	1,563	1,563	1,563	1,563	1,563	1,563
Large cardamom, dry	-	26,250	-	-	21,875	26,250	26,250	26,250	26,250	-	-	21,875	26,250	26,250
<b>Sub-total Main Production</b>	<b>18,125</b>	<b>47,813</b>	<b>3,438</b>	<b>3,438</b>	<b>25,313</b>	<b>29,688</b>	<b>29,688</b>	<b>29,688</b>	<b>29,688</b>	<b>3,438</b>	<b>3,438</b>	<b>25,313</b>	<b>29,688</b>	<b>29,688</b>
<b>Production Cost</b>														
<b>Investment</b>														
Naga chilli seed	250	250	-	-	-	-	-	-	-	-	-	-	-	-
Ginger Planting materials	3,000	3,000	-	-	-	-	-	-	-	-	-	-	-	-
Cardamom sucker	-	-	5,000	-	-	-	-	5,000	-	-	-	-	-	-
Fencing cropped area	375	375	-	-	-	-	-	-	-	-	-	-	-	-
<b>Sub-total Investment Costs</b>	<b>3,625</b>	<b>3,625</b>	<b>5,000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>5,000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Operating</b>														
Land Preparation	5,400	5,400	4,050	-	-	-	-	-	-	4,050	-	-	-	-
Planting	1,350	1,350	1,350	-	-	-	-	-	-	1,350	-	-	-	-
Manuring	338	338	-	-	-	-	-	-	-	-	-	-	-	-
Mulching	-	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350	1,350
Interculture	2,025	2,025	-	-	-	-	-	-	-	-	-	-	-	-
Farm transportation	1,350	1,350	-	-	-	-	-	-	-	-	-	-	-	-
Harvesting	1,350	3,713	338	338	2,363	2,363	2,363	2,363	2,363	338	338	2,363	2,363	2,363
Watch and ward	1,350	1,350	-	-	-	-	-	-	-	-	-	-	-	-
Curing and processing	-	625	-	-	625	625	625	625	625	-	-	625	625	625
Miscellaneous	-	313	313	313	313	313	313	313	313	313	313	313	313	313
<b>Sub-total Operating Costs</b>	<b>13,163</b>	<b>17,813</b>	<b>7,400</b>	<b>2,000</b>	<b>4,650</b>	<b>4,650</b>	<b>4,650</b>	<b>4,650</b>	<b>4,650</b>	<b>7,400</b>	<b>2,000</b>	<b>4,650</b>	<b>4,650</b>	<b>4,650</b>
<b>Sub-Total Production Cost</b>	<b>16,788</b>	<b>21,438</b>	<b>12,400</b>	<b>2,000</b>	<b>4,650</b>	<b>4,650</b>	<b>4,650</b>	<b>4,650</b>	<b>4,650</b>	<b>7,400</b>	<b>2,000</b>	<b>4,650</b>	<b>4,650</b>	<b>4,650</b>
<b>OUTFLOWS</b>	<b>16,788</b>	<b>21,438</b>	<b>12,400</b>	<b>2,000</b>	<b>4,650</b>	<b>4,650</b>	<b>4,650</b>	<b>4,650</b>	<b>4,650</b>	<b>7,400</b>	<b>2,000</b>	<b>4,650</b>	<b>4,650</b>	<b>4,650</b>
<b>Cash Flow Before Financing</b>	<b>1,338</b>	<b>26,375</b>	<b>-8,963</b>	<b>1,438</b>	<b>20,663</b>	<b>25,038</b>	<b>25,038</b>	<b>20,038</b>	<b>25,038</b>	<b>-3,963</b>	<b>1,438</b>	<b>20,663</b>	<b>25,038</b>	<b>25,038</b>

IRR = 98.7%, NPV = 113,885.37

### Annex-3.3 Wetland Paddy 0.25 ha household model

India IFAD Nagaland Final Design Wetland rice crop <b>FINANCIAL BUDGET (DETAILED)</b> (In INR)		April -- March								
		Without Project			With Project			Increments		
		1 to 19	20	1	2 to 19	20	1	2 to 19	20	
<b>Main Production</b>										
Paddy	15,625	15,625	20,313	20,313	20,313	4,688	4,688	4,688		
Onion	-	-	1,260	1,260	1,260	1,260	1,260	1,260		
Vegetables	1,440	1,440	2,160	2,160	2,160	720	720	720		
Garlic	169	169	225	225	225	56	56	56		
Proxy labour under WOP	243	243	-	-	-	-243	-243	-243		
<b>Sub-total Main Production</b>	<b>17,477</b>	<b>17,477</b>	<b>23,958</b>	<b>23,958</b>	<b>23,958</b>	<b>6,481</b>	<b>6,481</b>	<b>6,481</b>		
<b>Production Cost</b>										
<b>Investment</b>										
<b>Purchased Inputs</b>										
Garlic bulblets	18	18	18	18	18	-	-	-		
Onion planting materials	-	-	4	4	4	4	4	4		
Vegetable Seeds	45	45	45	45	45	-	-	-		
Organic Manure	75	75	125	125	125	50	50	50		
<b>Sub-Total Purchased Inputs</b>	<b>138</b>	<b>138</b>	<b>192</b>	<b>192</b>	<b>192</b>	<b>54</b>	<b>54</b>	<b>54</b>		
<b>Labor</b>										
<b>Sub-Total Labor investment</b>	<b>729</b>	<b>729</b>	<b>756</b>	<b>756</b>	<b>756</b>	<b>27</b>	<b>27</b>	<b>27</b>		
<b>Sub-total Investment Costs</b>	<b>867</b>	<b>867</b>	<b>948</b>	<b>948</b>	<b>948</b>	<b>81</b>	<b>81</b>	<b>81</b>		
<b>Operating</b>										
<b>Purchased Inputs</b>										
Paddy seed	375	375	300	300	300	-75	-75	-75		
<b>Labor operating</b>										
<b>Sub-Total Hired Labor</b>	<b>11,506</b>	<b>11,506</b>	<b>13,275</b>	<b>13,275</b>	<b>13,275</b>	<b>1,769</b>	<b>1,769</b>	<b>1,769</b>		
<b>Sub-total Operating Costs</b>	<b>11,881</b>	<b>11,881</b>	<b>13,575</b>	<b>13,575</b>	<b>13,575</b>	<b>1,694</b>	<b>1,694</b>	<b>1,694</b>		
<b>Sub-Total Production Cost</b>	<b>12,748</b>	<b>12,748</b>	<b>14,523</b>	<b>14,523</b>	<b>14,523</b>	<b>1,775</b>	<b>1,775</b>	<b>1,775</b>		
<b>OUTFLOWS</b>	<b>12,748</b>	<b>12,748</b>	<b>14,523</b>	<b>14,523</b>	<b>14,523</b>	<b>1,775</b>	<b>1,775</b>	<b>1,775</b>		
<b>Cash Flow Before Financing</b>	<b>4,729</b>	<b>4,729</b>	<b>9,435</b>	<b>9,435</b>	<b>9,435</b>	<b>4,706</b>	<b>4,706</b>	<b>4,706</b>		

IRR = None, NPV = 33,752.24

### Annex-3.4: Upland cultivation 0.25 ha of household model

	April -- March								
	Without Project			With Project			Increments		
	1 to 19	20	1	2 to 19	20	1	2 to 19	20	
India IFAD Nagaland Final Design Upland household crop <b>FINANCIAL BUDGET (DETAILED)</b> (In INR)									
<b>Main Production</b>									
Paddy	2,669	2,669	2,938	2,938	2,938	269	269	269	
Maize, shelled	520	520	550	550	550	30	30	30	
Beans	800	800	956	956	956	156	156	156	
Naga chilli	500	500	984	984	984	484	484	484	
Ginger	1,563	1,563	3,281	3,281	3,281	1,719	1,719	1,719	
Turmeric	871	871	2,454	2,454	2,454	1,583	1,583	1,583	
Sesame	295	295	513	513	513	218	218	218	
<b>Sub-total Main Production</b>	<b>7,218</b>	<b>7,218</b>	<b>11,675</b>	<b>11,675</b>	<b>11,675</b>	<b>4,458</b>	<b>4,458</b>	<b>4,458</b>	
<b>Production Cost</b>									
<b>Investment</b>									
Paddy seed	263	263	263	263	263	-	-	-	
maize seed	101	101	101	101	101	-	-	-	
Sesame	47	47	70	70	70	23	23	23	
Beans	63	63	63	63	63	-	-	-	
Naga chilli seed	31	31	88	88	88	56	56	56	
Ginger Planting materials	375	375	600	600	600	225	225	225	
Turmeric planting materials	938	938	1,688	1,688	1,688	750	750	750	
<b>Sub-total Investment Costs</b>	<b>1,817</b>	<b>1,817</b>	<b>2,872</b>	<b>2,872</b>	<b>2,872</b>	<b>1,055</b>	<b>1,055</b>	<b>1,055</b>	
<b>Operating</b>									
Site/jungle clearance	776	776	-	-	-	-776	-776	-776	
Land Preparation	1,451	1,451	675	675	675	-776	-776	-776	
Sow ing	338	338	169	169	169	-169	-169	-169	
Transplanting	844	844	844	844	844	-	-	-	
Nursery preparation	169	169	169	169	169	-	-	-	
Weeding	1,283	1,283	1,013	1,013	1,013	-270	-270	-270	
Farm transportation	675	675	338	338	338	-338	-338	-338	
Harvesting	2,228	2,228	1,350	1,350	1,350	-878	-878	-878	
Hut construction	135	135	68	68	68	-68	-68	-68	
<b>Sub-total Operating Costs</b>	<b>7,898</b>	<b>7,898</b>	<b>4,624</b>	<b>4,624</b>	<b>4,624</b>	<b>-3,274</b>	<b>-3,274</b>	<b>-3,274</b>	
<b>Sub-Total Production Cost</b>	<b>9,714</b>	<b>9,714</b>	<b>7,495</b>	<b>7,495</b>	<b>7,495</b>	<b>-2,219</b>	<b>-2,219</b>	<b>-2,219</b>	
<b>OUTFLOWS</b>	<b>9,714</b>	<b>9,714</b>	<b>7,495</b>	<b>7,495</b>	<b>7,495</b>	<b>-2,219</b>	<b>-2,219</b>	<b>-2,219</b>	
<b>Cash Flow Before Financing</b>	<b>-2,497</b>	<b>-2,497</b>	<b>4,180</b>	<b>4,180</b>	<b>4,180</b>	<b>6,677</b>	<b>6,677</b>	<b>6,677</b>	

IRR = None, NPV = 51,621.47

### Annex-3.5: Financial budget of 0.2 ha orchard household model

India IFAD Nagaland Final Design Orchards plantation FINANCIAL BUDGET (DETAILED) (In INR)																					
	WOP	WP	Increments																		
	20	20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18 to 19	20
<b>Main Production</b>																					
Pine Apple	13,200	15,300	-	660	2,100	-	660	2,100	-	660	2,100	-	660	2,100	-	660	2,100	-	660	2,100	2,100
Black pepper, dried	-	3,750	-	-	2,250	2,850	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750
Banana	10,625	12,750	-	2,125	2,125	2,125	2,125	2,125	-	2,125	2,125	2,125	2,125	2,125	-	2,125	2,125	2,125	2,125	2,125	2,125
Citrus	4,050	4,860	540	630	720	810	810	810	810	810	810	810	810	810	810	810	810	810	810	810	810
Proxy labour under WOP	270	-	-270	-270	-270	-270	-270	-270	-270	-270	-270	-270	-270	-270	-270	-270	-270	-270	-270	-270	-270
<b>Sub-total Main Production</b>	<b>28,145</b>	<b>36,660</b>	<b>270</b>	<b>3,145</b>	<b>6,925</b>	<b>5,515</b>	<b>7,075</b>	<b>8,515</b>	<b>4,290</b>	<b>7,075</b>	<b>8,515</b>	<b>6,415</b>	<b>7,075</b>	<b>8,515</b>	<b>4,290</b>	<b>7,075</b>	<b>8,515</b>	<b>6,415</b>	<b>7,075</b>	<b>8,515</b>	<b>8,515</b>
<b>Production Cost</b>																					
<b>Investment</b>																					
Banana suckers	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pineapple suckers	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pepper cutting	-	-	280	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Agri Tools	145	-	-	-145	-145	-145	-145	-145	-145	-145	-145	-145	-145	-145	-145	-145	-145	-145	-145	-145	-145
Agri Tools	180	-	-	-180	-180	-180	-180	-180	-180	-180	-180	-180	-180	-180	-180	-180	-180	-180	-180	-180	-180
Agri Tools	392	-	-	-392	-392	-392	-392	-392	-392	-392	-392	-392	-392	-392	-392	-392	-392	-392	-392	-392	-392
Organic Manure	313	375	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63
PP chemicals	125	125	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Sub-total Investment Costs</b>	<b>1,154</b>	<b>500</b>	<b>343</b>	<b>-654</b>																	
<b>Operating</b>																					
Site/jungle clearance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Land Preparation	-	95	1,013	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95
Planting	-	68	675	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
Manuring	108	135	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
Pitting	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Staking	-	-	-	1,350	135	68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fencing	135	135	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
spraying	135	135	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Interculture	878	878	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pruning	68	270	68	68	68	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203
Removal of basal Leaves	257	257	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Farm transportation	1,215	1,283	-	-	41	54	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
Harvesting	1,485	1,688	-	-	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203
Drying pepper	-	188	-	-	63	125	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188
Grading pepper	-	63	-	-	38	50	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63
Watch and ward	1,350	1,350	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maintenance	-	188	125	125	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188
<b>Sub-total Operating Costs</b>	<b>5,630</b>	<b>6,729</b>	<b>1,907</b>	<b>1,732</b>	<b>922</b>	<b>1,078</b>	<b>1,099</b>														
<b>Sub-Total Production Cost</b>	<b>6,783</b>	<b>7,229</b>	<b>2,250</b>	<b>1,078</b>	<b>269</b>	<b>425</b>	<b>446</b>														
<b>OUTFLOWS</b>	<b>6,783</b>	<b>7,229</b>	<b>2,250</b>	<b>1,078</b>	<b>269</b>	<b>425</b>	<b>446</b>														
<b>Cash Flow Before Financing</b>	<b>21,362</b>	<b>29,432</b>	<b>-1,980</b>	<b>2,067</b>	<b>6,657</b>	<b>5,091</b>	<b>6,630</b>	<b>8,070</b>	<b>3,845</b>	<b>6,630</b>	<b>8,070</b>	<b>5,970</b>	<b>6,630</b>	<b>8,070</b>	<b>3,845</b>	<b>6,630</b>	<b>8,070</b>	<b>5,970</b>	<b>6,630</b>	<b>8,070</b>	<b>8,070</b>

IRR = 139.4%, NPV = 37,007.70

### Annex-3.6 Community forestry 1.0 ha financial model

India IFAD Nagaland Final Design Community forestry plantation										
										April -- March
<b>FINANCIAL BUDGET (DETAILED)</b>										
(In INR)										
With Project										
	1	2	3	4 to 6	7 to 9	10	11 to 14	15	16 to 19	20
<b>Main Production</b>										
Fruits	-	-	-	37,500	37,500	37,500	37,500	37,500	37,500	37,500
Small timber	-	-	-	-	-	4,800	12,000	12,000	-	-
High value timber	-	-	-	-	-	-	-	28,500	28,500	28,500
Firewood	-	-	-	-	3,600	3,600	-	-	-	-
Pastures & fodder	-	-	-	500	500	500	500	500	500	500
<b>Sub-total Main Production</b>	-	-	-	38,000	41,600	46,400	50,000	78,500	66,500	66,500
<b>Production Cost</b>										
<b>Investment</b>										
Seedling	17,500	3,500	-	-	-	-	-	-	-	-
<b>Operating</b>										
Site/jungle clearance	18,900	-	-	-	-	-	-	-	-	-
Planting	18,900	3,780	-	-	-	-	-	-	-	-
Staking	-	2,700	4,050	4,050	4,050	4,050	4,050	4,050	4,050	4,050
Mulching	5,400	2,700	-	-	-	-	-	-	-	-
Harvesting	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100
Watch and ward	27,000	13,500	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100
<b>Sub-total Operating Costs</b>	78,300	30,780	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250
<b>Sub-Total Production Cost</b>	95,800	34,280	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250
<b>OUTFLOWS</b>	95,800	34,280	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250
<b>Cash Flow Before Financing</b>	-95,800	-34,280	-20,250	17,750	21,350	26,150	29,750	58,250	46,250	46,250
IRR = 11.2%, NPV = -9,660.96										

### Annex-3.7: Pig-breeding, one unit (6piglets + 1 boar); financial budget

India  
 IFAD Nagaland Final Design  
 Pig-breeding, small-scale activity  
**FINANCIAL BUDGET (DETAILED)**  
 (In INR)

	Without Project		Increments											
	1 to 20	WP	1	2 to 4	5	6	7 to 9	10	11	12 to 14	15	16	17 to 19	20
<b>Main Production</b>														
Piglets	-	330,000	165,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000
Proxy labour under WOP	5,400	-	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400	-5,400
<b>Sub-total Main Production</b>	<b>5,400</b>	<b>330,000</b>	<b>159,600</b>	<b>324,600</b>										
<b>Production Cost</b>														
<b>Investment</b>														
Boar	-	-	20,000	-	-	20,000	-	-	20,000	-	-	20,000	-	-
Adult sow	-	-	120,000	-	-	120,000	-	-	120,000	-	-	120,000	-	-
Pig pen	-	-	140,000	-	-	-	-	-	-	-	-	-	-	-
Equipment	-	-	6,000	-	-	-	-	-	-	-	-	-	-	-
Insurance	-	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500
Medicines	-	4,900	4,900	4,900	4,900	4,900	4,900	4,900	4,900	4,900	4,900	4,900	4,900	4,900
Medicines and vaccines for piglets	-	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400
Piglets mortality	-	30,000	15,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
Pig feed	-	63,514	63,514	63,514	63,514	63,514	63,514	63,514	63,514	63,514	63,514	63,514	63,514	63,514
Local feed	-	28,870	28,870	28,870	28,870	28,870	28,870	28,870	28,870	28,870	28,870	28,870	28,870	28,870
<b>Sub-total Investment Costs</b>	<b>-</b>	<b>145,184</b>	<b>416,184</b>	<b>145,184</b>	<b>145,184</b>	<b>285,184</b>	<b>145,184</b>	<b>145,184</b>	<b>285,184</b>	<b>145,184</b>	<b>145,184</b>	<b>285,184</b>	<b>145,184</b>	<b>145,184</b>
<b>Operating</b>														
Shed construction	-	540	8,100	540	540	540	540	540	540	540	540	540	540	540
Watch and ward	-	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500
<b>Sub-total Operating Costs</b>	<b>-</b>	<b>41,040</b>	<b>48,600</b>	<b>41,040</b>										
<b>Sub-Total Production Cost</b>	<b>-</b>	<b>186,224</b>	<b>464,784</b>	<b>186,224</b>	<b>186,224</b>	<b>326,224</b>	<b>186,224</b>	<b>186,224</b>	<b>326,224</b>	<b>186,224</b>	<b>186,224</b>	<b>326,224</b>	<b>186,224</b>	<b>186,224</b>
<b>OUTFLOWS</b>	<b>-</b>	<b>186,224</b>	<b>464,784</b>	<b>186,224</b>	<b>186,224</b>	<b>326,224</b>	<b>186,224</b>	<b>186,224</b>	<b>326,224</b>	<b>186,224</b>	<b>186,224</b>	<b>326,224</b>	<b>186,224</b>	<b>186,224</b>
<b>Cash Flow Before Financing</b>	<b>5,400</b>	<b>143,776</b>	<b>-305,184</b>	<b>138,376</b>	<b>138,376</b>	<b>-1,624</b>	<b>138,376</b>	<b>138,376</b>	<b>-1,624</b>	<b>138,376</b>	<b>138,376</b>	<b>-1,624</b>	<b>138,376</b>	<b>138,376</b>

IRR = 23.6%, NPV = 340,496.34

### Annex-3.8 Pig-fattening unit (one piglet) financial budget household model

India IFAD Mizoram Final Design Pig fattening activity FINANCIAL BUDGET (DETAILED) (In INR)											
April -- March											
	Without Project	With Project					Increments				
	1 to 20	1	2 to 17	18	19	20	1	2 to 17	18	19	20
<b>Main Production</b>											
Fattened pig, 80 kg in Wt	-	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000
Proxy labour under WOP	5,400	-	-	-	-	-	-5,400	-5,400	-5,400	-5,400	-5,400
<b>Sub-total Main Production</b>	5,400	40,000	40,000	40,000	40,000	40,000	34,600	34,600	34,600	34,600	34,600
<b>Production Cost</b>											
<b>Investment</b>											
Piglets, appx 8 kg in w t	-	5,000	5,000	5,000	5,000	-	5,000	5,000	5,000	5,000	-
Pig Stay	-	3,500	-	-	-	-	3,500	-	-	-	-
Insurance	-	500	500	500	500	500	500	500	500	500	500
Medicines for piglets	-	200	200	200	-	-	200	200	200	-	-
Pig feed	-	9,020	9,020	9,020	9,020	9,020	9,020	9,020	9,020	9,020	9,020
Local feed	-	4,100	4,100	4,100	4,100	4,100	4,100	4,100	4,100	4,100	4,100
<b>Sub-total Investment Costs</b>	-	22,320	18,820	18,820	18,620	13,620	22,320	18,820	18,820	18,620	13,620
<b>Operating</b>											
Shed construction	-	4,320	540	540	540	540	4,320	540	540	540	540
Watch and ward	-	4,590	4,590	4,590	4,590	4,590	4,590	4,590	4,590	4,590	4,590
<b>Sub-total Operating Costs</b>	-	8,910	5,130	5,130	5,130	5,130	8,910	5,130	5,130	5,130	5,130
<b>Sub-Total Production Cost</b>	-	31,230	23,950	23,950	23,750	18,750	31,230	23,950	23,950	23,750	18,750
<b>OUTFLOWS</b>	-	31,230	23,950	23,950	23,750	18,750	31,230	23,950	23,950	23,750	18,750
<b>Cash Flow Before Financing</b>	5,400	8,770	16,050	16,050	16,250	21,250	3,370	10,650	10,650	10,850	15,850

IRR = 51.8%, NPV = 54,778.23

### Annex-3.9: Spices value chain benefits 0.5 ha household model

India IFAD Nagaland Final Design Spices value chain crop <b>FINANCIAL BUDGET (DETAILED)</b> (In INR)		April -- March												
		Without Project	With Project						Increments					
		1 to 20	1 to 2	3	4 to 10	11 to 12	13	14 to 20	1 to 2	3	4 to 10	11 to 12	13	14 to 20
<b>Main Production</b>														
	Naga Chilli, incremental price	-	1,594	1,594	1,594	1,594	1,594	1,594	1,594	1,594	1,594	1,594	1,594	1,594
	Ginger, incremental price	1,406	1,641	1,641	1,641	1,641	1,641	1,641	234	234	234	234	234	234
	Cardamom, incremental price	-	-	3,281	3,938	-	3,281	3,938	-	3,281	3,938	-	3,281	3,938
	<b>Sub-total Main Production</b>	<b>1,406</b>	<b>3,234</b>	<b>6,516</b>	<b>7,172</b>	<b>3,234</b>	<b>6,516</b>	<b>7,172</b>	<b>1,828</b>	<b>5,109</b>	<b>5,766</b>	<b>1,828</b>	<b>5,109</b>	<b>5,766</b>
	<b>Cash Flow Before Financing</b>	<b>1,406</b>	<b>3,234</b>	<b>6,516</b>	<b>7,172</b>	<b>3,234</b>	<b>6,516</b>	<b>7,172</b>	<b>1,828</b>	<b>5,109</b>	<b>5,766</b>	<b>1,828</b>	<b>5,109</b>	<b>5,766</b>

IRR = None, NPV = 33,651.34

### Annex-3.10: Agro-processing model one unit (50% turmeric and 50% chilli)

India IFAD Nagaland Final Design Agro-processing unit activity <b>FINANCIAL BUDGET (DETAILED)</b> (In INR)		April -- March									
		With Project					Increments				
		1	2	3	4 to 19	20	1	2	3	4 to 19	20
<b>Main Production</b>											
Turmeric powder bag	-	2,194,500	2,194,500	2,194,500	2,194,500	-	2,194,500	2,194,500	2,194,500	2,194,500	
Sale of Chilli powder bags	-	4,000,000	4,800,000	5,750,000	5,750,000	-	4,000,000	4,800,000	5,750,000	5,750,000	
<b>Sub-total Main Production</b>	-	6,194,500	6,994,500	7,944,500	7,944,500	-	6,194,500	6,994,500	7,944,500	7,944,500	
<b>Production Cost</b>											
<b>Investment</b>											
Grinding machine	300,000	-	-	-	-	300,000	-	-	-	-	
Slicing machine	75,000	-	-	-	-	75,000	-	-	-	-	
Factory building	500,000	-	-	-	-	500,000	-	-	-	-	
Other Tools	12,500	-	-	-	-	12,500	-	-	-	-	
Other Tools	200,000	-	-	-	-	200,000	-	-	-	-	
<b>Sub-total Investment Costs</b>	1,087,500	-	-	-	-	1,087,500	-	-	-	-	
<b>Operating</b>											
Purchase of fresh turmeric	-	640,000	640,000	640,000	640,000	-	640,000	640,000	640,000	640,000	
Packaging Bags (100 gm)	75,000	278,750	291,250	322,500	322,500	75,000	278,750	291,250	322,500	322,500	
Other operating costs	75,000	250,000	250,000	250,000	250,000	75,000	250,000	250,000	250,000	250,000	
Operation & maintenance	50,625	168,750	168,750	168,750	168,750	50,625	168,750	168,750	168,750	168,750	
Management costs	104,100	208,200	208,200	208,200	208,200	104,100	208,200	208,200	208,200	208,200	
Marketing costs	-	208,200	208,200	208,200	208,200	-	208,200	208,200	208,200	208,200	
Factory operating labour	27,000	552,960	552,960	552,960	552,960	27,000	552,960	552,960	552,960	552,960	
Purchase of fresh chilli	175,000	2,800,000	3,360,000	4,032,000	4,032,000	175,000	2,800,000	3,360,000	4,032,000	4,032,000	
<b>Sub-total Operating Costs</b>	506,725	5,106,860	5,679,360	6,382,610	6,382,610	506,725	5,106,860	5,679,360	6,382,610	6,382,610	
<b>Sub-Total Production Cost</b>	1,594,225	5,106,860	5,679,360	6,382,610	6,382,610	1,594,225	5,106,860	5,679,360	6,382,610	6,382,610	
<b>OUTFLOWS</b>											
	1,594,225	5,106,860	5,679,360	6,382,610	6,382,610	1,594,225	5,106,860	5,679,360	6,382,610	6,382,610	
<b>Cash Flow Before Financing</b>	-1,594,225	1,087,640	1,315,140	1,561,890	1,561,890	-1,594,225	1,087,640	1,315,140	1,561,890	1,561,890	

IRR = 18.7%, NPV = 3,439,803.66

### Annex-3.11 Farm to market road: 3 cross-drainage structures in one KM

India IFAD Nagaland Final Design Farm road benefits activity <b>FINANCIAL BUDGET (DETAILED)</b> (In INR) /a	April -- March		
	Without	With	Increments
	Project	Project	
	1 to 20	1 to 20	1 to 20
<b>Main Production</b>			
transport cost reduction	-	9,350	9,350
<b>Cash Flow Before Financing</b>	-	9,350	9,350
<b>Cash Flow After Financing</b>	-	9,350	9,350
<b>Farm Family Benefits After Financing</b>	-	9,350	9,350

IRR = None, NPV = 69,839.30  
 \a 3 CDS per km; 187 households per km

## Annex-4 PRODUCTION MODELS

### Annex-4.1 Jhum mixed crops (one ha)

Financial budget				Yield and inputs			
<b>FINANCIAL BUDGET</b> (In INR Per ha) /a				India IFAD Nagaland Final Design Jhum cultivation crop			
	<b>Existing</b>	<b>New</b>		<b>April -- March</b>			
	<b>Technology</b>	<b>Technology</b>		<b>Existing</b>	<b>New</b>		
	<b>1 to 20</b>	<b>1 to 20</b>	<b>Increments</b>	<b>Technology</b>			<b>Increments</b>
			<b>1 to 20</b>	<b>Unit</b>	<b>1 to 20</b>	<b>1 to 20</b>	<b>1 to 20</b>
<b>Revenue</b>				<b>Main Production</b>			
Paddy	21,350	23,500	2,150	Paddy	ton	0.9	0.9
Maize, shelled	4,160	4,400	240	Maize, shelled	ton	0.2	0.2
Sesame	360	400	40	Sesame	unit	0.0	0.0
Naga chilli	1,000	1,150	150	Naga chilli	unit	0.1	0.1
Turmeric	1,970	2,250	280	Turmeric	unit	0.2	0.2
Beans	6,400	7,650	1,250	Beans	ton	0.1	0.2
<b>Sub-total Revenue</b>	<b>35,240</b>	<b>39,350</b>	<b>4,110</b>	<b>Investment</b>			
<b>Input costs</b>				Paddy seed	Kg	70.0	70.0
Paddy seed	2,100	2,100	-	maize seed	Kg	9.0	9.0
maize seed	810	810	-	Sesame	Kg	0.6	0.6
Sesame	188	188	-	Beans	Kg	2.5	2.5
Beans	500	500	-	Turmeric planting materials	Kg	125.0	125.0
Turmeric planting materials	1,500	1,500	-	Naga chilli seed	Kg	-	0.1
Naga chilli seed	-	100	100	<b>Operating</b>			
<b>Sub-total Input costs</b>	<b>5,098</b>	<b>5,198</b>	<b>100</b>	Site/jungle clearance	pers_day	23.0	-
<b>Income (Before Labor Costs)</b>	<b>30,143</b>	<b>34,153</b>	<b>4,010</b>	Hut construction	pers_day	2.0	-
<b>Labor costs</b>				Land Preparation	pers_day	23.0	-
Site/jungle clearance	6,210	-	-6,210	Sow ing	pers_day	5.0	-
Hut construction	540	-	-540	Weeding	pers_day	18.0	-
Land Preparation	6,210	-	-6,210	Harvesting	pers_day	33.0	-
Sow ing	1,350	-	-1,350	Farm transportation	pers_day	10.0	-
Weeding	4,860	-	-4,860				
Harvesting	8,910	-	-8,910				
Farm transportation	2,700	-	-2,700				
<b>Sub-total Labor costs</b>	<b>30,780</b>	<b>-</b>	<b>-30,780</b>				
<b>Income (After Labor Costs)</b>	<b>-638</b>	<b>34,153</b>	<b>34,790</b>				
a One ha: 70% paddy, 10% maize & beans each, 5% chilli & turmeric each sesame 2.5							

## Annex-4.2 Jhum spices (one ha)

Financial budget				Yield and inputs			
Jhum Spices cultivation crop <b>FINANCIAL BUDGET</b> (In INR Per ha) /a				IFAD Nagaland Final Design Jhum Spices cultivation crop <b>YIELDS AND INPUTS</b> (Per ha) /a			
	<b>April -- March</b> Existing      New Technology    Technology    Increments 1 to 20      1 to 20      1 to 20				<b>April -- March</b> Existing      New Technology    Technology    Increments 1 to 20      1 to 20      1 to 20		
<b>Revenue</b>				<b>Unit</b>			
Naga chilli	3,000	6,720	3,720	ton	0.2	0.3	0.2
Turmeric	5,000	17,380	12,380	ton	0.5	1.7	1.2
Ginger	12,500	26,250	13,750	ton	0.5	1.1	0.6
Sesame	2,000	3,700	1,700	ton	0.1	0.2	0.1
<b>Sub-total Revenue</b>	<b>22,500</b>	<b>54,050</b>	<b>31,550</b>				
<b>Input costs</b>							
Sesame	188	375	188				
Turmeric planting materials	6,000	12,000	6,000	Kg	0.6	1.3	0.6
Naga chilli seed	250	600	350	Kg	500.0	1,000.0	500.0
Ginger Planting materials	3,000	4,800	1,800	Kg	0.1	0.3	0.2
<b>Sub-total Input costs</b>	<b>9,438</b>	<b>17,775</b>	<b>8,338</b>	Kg	125.0	200.0	75.0
<b>Income (Before Labor Costs)</b>	<b>13,063</b>	<b>36,275</b>	<b>23,213</b>				
<b>Labor costs</b>							
Nursery preparation	1,350	1,350	-	pers_day	5.0	5.0	-
Hut construction	540	540	-	pers_day	2.0	2.0	-
Land Preparation	5,400	5,400	-	pers_day	20.0	20.0	-
Transplanting	6,750	6,750	-	pers_day	25.0	25.0	-
Sow ing	1,350	1,350	-	pers_day	5.0	5.0	-
Weeding	5,400	8,100	2,700	pers_day	20.0	30.0	10.0
Harvesting	8,910	10,800	1,890	pers_day	33.0	40.0	7.0
Farm transportation	2,700	2,700	-	pers_day	10.0	10.0	-
<b>Sub-total Labor costs</b>	<b>32,400</b>	<b>36,990</b>	<b>4,590</b>				
<b>Income (After Labor Costs)</b>	<b>-19,338</b>	<b>-715</b>	<b>18,623</b>				
/a one ha area; 30% area under chilli, 20% ginger and 40% turmeric							

### Annex-4.3 Wetland rice (one ha)

Financial budget				Yield and inputs				
India IFAD Mizoram Final Design Wetland Rice crop <b>FINANCIAL BUDGET</b> (In INR Per ha) /a				Wetland Rice crop <b>YIELDS AND INPUTS</b> (Per ha) /a				
	<b>April -- March</b>			<b>April -- March</b>				
	<b>Existing</b>	<b>New</b>		<b>Existing</b>	<b>New</b>			
	<b>Technology</b>			<b>Technology</b>				
	<b>1 to 20</b>	<b>1 to 20</b>	<b>Increments</b>	<b>1 to 20</b>	<b>1 to 20</b>	<b>Increments</b>		
	<b>1 to 20</b>	<b>1 to 20</b>	<b>1 to 20</b>	<b>1 to 20</b>	<b>1 to 20</b>	<b>1 to 20</b>		
Revenue	62,500	81,250	18,750	Yields	ton	2.5	3.3	0.8
<b>Input costs</b>				<b>Operating</b>				
Paddy seed	1,500	1,200	-300	<b>Inputs</b>				
<b>Income (Before Labor Costs)</b>	61,000	80,050	19,050	Paddy seed	Kg	50.0	40.0	-10.0
<b>Labor costs</b>				<b>Labor</b>				
Land Preparation	9,450	9,450	-	Land Preparation	pers_day	35.0	35.0	-
Planting	4,050	4,050	-	Planting	pers_day	15.0	15.0	-
Weeding	2,700	5,400	2,700	Weeding	pers_day	10.0	20.0	10.0
spraying	2,160	2,160	-	spraying	pers_day	8.0	8.0	-
Irrigating	1,350	1,350	-	Irrigating	pers_day	5.0	5.0	-
Harvesting	13,500	13,500	-	Harvesting	pers_day	50.0	50.0	-
Farm transportation	1,350	1,350	-	Farm transportation	pers_day	5.0	5.0	-
Watch and ward	6,750	6,750	-	Watch and ward	pers_day	25.0	25.0	-
<b>Sub-total Labor costs</b>	41,310	44,010	2,700					
<b>Income (After Labor Costs)</b>	19,690	36,040	16,350					

#### Annex-4.4 Ginger crop (one ha)

Financial budget				Yield and inputs				
Ginger Crop <b>FINANCIAL BUDGET</b> (In INR Per ha) /a				Ginger Crop <b>YIELDS AND INPUTS</b> (Per ha) /a				
	April -- March Existing      New Technology    Technology    Increments 1 to 20      1 to 20      1 to 20				April -- March Existing      New Technology    Technology    Increments 1 to 20      1 to 20      1 to 20			
Revenue	75,000	87,500	12,500					
<b>Input costs</b>				<b>Unit</b>				
Ginger Planting materials	24,000	24,000	-	Yields	ton	3.0	3.5	0.5
<b>Income (Before Labor Costs)</b>	51,000	63,500	12,500	<b>Investment</b>				
<b>Labor costs</b>				Ginger Planting materials	Kg	1,000.0	1,000.0	-
Planting	5,400	5,400	-	<b>Operating</b>				
Land Preparation	21,600	21,600	-	Planting	pers_day	20.0	20.0	-
Interculture	8,100	8,100	-	Land Preparation	pers_day	80.0	80.0	-
Harvesting	5,400	6,750	1,350	Interculture	pers_day	30.0	30.0	-
Farm transportation	5,400	5,400	-	Harvesting	pers_day	20.0	25.0	5.0
Watch and ward	5,400	5,400	-	Farm transportation	pers_day	20.0	20.0	-
<b>Sub-total Labor costs</b>	51,300	52,650	1,350	Watch and ward	pers_day	20.0	20.0	-
<b>Income (After Labor Costs)</b>	-300	10,850	11,150					





### Annex-4.7 Turmeric crop (one ha)

Financial budget				Yield and inputs			
Turmeric Crop				Turmeric Crop			
<b>FINANCIAL BUDGET</b>				<b>YIELDS AND INPUTS</b>			
(In INR Per ha)				(Per ha)			
	April -- March				April -- March		
	Existing	New			Existing	New	
	Technology	Technology	Increments		Technology	Technology	Increments
	1 to 20	1 to 20	1 to 20		1 to 20	1 to 20	1 to 20
Revenue	35,000	40,000	5,000	Unit			
<b>Input costs</b>				Yields	ton	3.5	4.0
Turmeric planting materials	30,000	30,000	-	<b>Investment</b>			
<b>Income (Before Labor Costs)</b>	5,000	10,000	5,000	Turmeric planting materials	Kg	2,500.0	2,500.0
<b>Labor costs</b>				<b>Operating</b>			
Planting	5,400	5,400	-	Planting	pers_day	20.0	20.0
Land Preparation	21,600	21,600	-	Land Preparation	pers_day	80.0	80.0
Interculture	6,750	8,100	1,350	Interculture	pers_day	25.0	30.0
Harvesting	5,400	6,750	1,350	Harvesting	pers_day	20.0	25.0
Farm transportation	4,050	5,400	1,350	Farm transportation	pers_day	15.0	20.0
Watch and ward	5,400	5,400	-	Watch and ward	pers_day	20.0	20.0
<b>Sub-total Labor costs</b>	48,600	52,650	4,050				
<b>Income (After Labor Costs)</b>	-43,600	-42,650	950				

### Annex-4.8 Onion crop (one ha)

Financial budget				Yield and inputs			
Onion Crop <b>FINANCIAL BUDGET</b> (In INR Per ha)				Onion Crop <b>YIELDS AND INPUTS</b> (Per ha)			
	April -- March Existing      New Technology    Technology    Increments 1 to 20      1 to 20      1 to 20				April -- March Existing      New Technology    Technology    Increments 1 to 20      1 to 20      1 to 20		
				Unit			
<b>Revenue</b>							
Onion	-	28,000	28,000	ton	-	0.4	0.4
Proxy labour under WOP	5,400	-	-5,400	pers_days	20.0	-	-20.0
<b>Sub-total Revenue</b>	5,400	28,000	22,600				
<b>Input costs</b>							
Onion planting materials	-	90	90	Kg	-	0.2	0.2
<b>Income (Before Labor Costs)</b>	5,400	27,910	22,510				
<b>Labor costs</b>							
Land Preparation	-	10,800	10,800	pers_day	-	40.0	40.0
Planting	-	2,700	2,700	pers_day	-	10.0	10.0
Interculture	-	2,700	2,700	pers_day	-	10.0	10.0
Harvesting	-	2,700	2,700	pers_day	-	10.0	10.0
Farm transportation	-	1,350	1,350	pers_day	-	5.0	5.0
Watch and ward	-	2,700	2,700	pers_day	-	10.0	10.0
<b>Sub-total Labor costs</b>	-	22,950	22,950				
<b>Income (After Labor Costs)</b>	5,400	4,960	-440				

### Annex-4.9 Banana crop (one ha)

Financial budget							Yield and inputs							
Banana Plantation <b>FINANCIAL BUDGET</b> (In INR Per ha) /a							Banana Plantation <b>YIELDS AND INPUTS</b> (Per ha) /a							
	Existing Technology							Existing Technology						
	1	2 to 6	7	8 to 12	13	14 to 20	Unit	1	2 to 6	7	8 to 12	13	14 to 20	
Revenue	-	212,500	-	212,500	-	212,500	ton	-	8.5	-	8.5	-	8.5	
<b>Input costs</b>							<b>Investment</b>							
Banana suckers	18,000	-	18,000	-	18,000	-	Banana suckers	sucker	3,000.0	-	3,000.0	-	3,000.0	-
Agri Tools	3,600	3,600	3,600	3,600	3,600	3,600	Agri Tools	set	1.0	1.0	1.0	1.0	1.0	
<b>Sub-total Input costs</b>	<b>21,600</b>	<b>3,600</b>	<b>21,600</b>	<b>3,600</b>	<b>21,600</b>	<b>3,600</b>	<b>Operating</b>							
<b>Income (Before Labor Costs)</b>	<b>-21,600</b>	<b>208,900</b>	<b>-21,600</b>	<b>208,900</b>	<b>-21,600</b>	<b>208,900</b>	Site/jungle clearance	pers_day	40.0	-	40.0	-	40.0	-
<b>Labor costs</b>							Land Preparation	pers_day	23.0	-	23.0	-	23.0	-
Site/jungle clearance	10,800	-	10,800	-	10,800	-	Pitting	pers_day	40.0	-	40.0	-	40.0	-
Land Preparation	6,210	-	6,210	-	6,210	-	Planting	pers_day	40.0	-	40.0	-	40.0	-
Pitting	10,800	-	10,800	-	10,800	-	Interculture	pers_day	45.0	45.0	45.0	45.0	45.0	45.0
Planting	10,800	-	10,800	-	10,800	-	Harvesting	pers_day	-	30.0	-	30.0	-	30.0
Interculture	12,150	12,150	12,150	12,150	12,150	12,150	Farm transportation	pers_day	-	30.0	-	30.0	-	30.0
Harvesting	-	8,100	-	8,100	-	8,100	Watch and ward	pers_day	50.0	50.0	50.0	50.0	50.0	50.0
Farm transportation	-	8,100	-	8,100	-	8,100								
Watch and ward	13,500	13,500	13,500	13,500	13,500	13,500								
<b>Sub-total Labor costs</b>	<b>64,260</b>	<b>41,850</b>	<b>64,260</b>	<b>41,850</b>	<b>64,260</b>	<b>41,850</b>								
<b>Income (After Labor Costs)</b>	<b>-85,860</b>	<b>167,050</b>	<b>-85,860</b>	<b>167,050</b>	<b>-85,860</b>	<b>167,050</b>								

## Annex-4.10 Pineapple crop (one ha)

FINANCIAL BUDGET (In INR Per ha) /a	Existing Technology																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18 to 20	
Revenue	-	66,000	264,000	-	66,000	264,000	-	66,000	264,000	-	66,000	264,000	-	66,000	264,000	-	66,000	264,000	
<b>Input costs</b>																			
Pineapple suckers	30,000	-	-	30,000	-	-	30,000	-	-	30,000	-	-	30,000	-	-	30,000	-	-	
Agri Tools	7,830	7,830	7,830	7,830	7,830	7,830	7,830	7,830	7,830	7,830	7,830	7,830	7,830	7,830	7,830	7,830	7,830	7,830	
<b>Sub-total Input costs</b>	<b>37,830</b>	<b>7,830</b>	<b>7,830</b>	<b>37,830</b>	<b>7,830</b>	<b>7,830</b>	<b>37,830</b>	<b>7,830</b>	<b>7,830</b>	<b>37,830</b>	<b>7,830</b>	<b>7,830</b>	<b>37,830</b>	<b>7,830</b>	<b>7,830</b>	<b>37,830</b>	<b>7,830</b>	<b>7,830</b>	
<b>Income (Before Labor Costs)</b>	<b>-37,830</b>	<b>58,170</b>	<b>256,170</b>	<b>-37,830</b>	<b>58,170</b>	<b>256,170</b>	<b>-37,830</b>	<b>58,170</b>	<b>256,170</b>	<b>-37,830</b>	<b>58,170</b>	<b>256,170</b>	<b>-37,830</b>	<b>58,170</b>	<b>256,170</b>	<b>-37,830</b>	<b>58,170</b>	<b>256,170</b>	
<b>Labor costs</b>																			
Site/jungle clearance	27,000	-	-	27,000	-	-	27,000	-	-	27,000	-	-	27,000	-	-	27,000	-	-	
Removal of basal Leaves	-	2,700	5,130	-	2,700	5,130	-	2,700	5,130	-	2,700	5,130	-	2,700	5,130	-	2,700	5,130	
Planting	27,000	-	-	27,000	-	-	27,000	-	-	27,000	-	-	27,000	-	-	27,000	-	-	
Interculture	13,500	2,700	2,700	13,500	2,700	2,700	13,500	2,700	2,700	13,500	2,700	2,700	13,500	2,700	2,700	13,500	2,700	2,700	
Harvesting	-	5,400	10,800	-	5,400	10,800	-	5,400	10,800	-	5,400	10,800	-	5,400	10,800	-	5,400	10,800	
Farm transportation	-	2,700	5,400	8,100	10,800	10,800	10,800	10,800	10,800	10,800	10,800	10,800	10,800	10,800	10,800	10,800	10,800	10,800	
Watch and ward	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750	
<b>Sub-total Labor costs</b>	<b>74,250</b>	<b>20,250</b>	<b>30,780</b>	<b>82,350</b>	<b>28,350</b>	<b>36,180</b>	<b>85,050</b>	<b>28,350</b>	<b>36,180</b>										
<b>Income (After Labor Costs)</b>	<b>-112,080</b>	<b>37,920</b>	<b>225,390</b>	<b>-120,180</b>	<b>29,820</b>	<b>219,990</b>	<b>-122,880</b>	<b>29,820</b>	<b>219,990</b>										

YIELDS AND INPUTS (Per ha) /a	Unit	Existing Technology																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18 to 20
Yields	ton	-	2.2	8.8	-	2.2	8.8	-	2.2	8.8	-	2.2	8.8	-	2.2	8.8	-	2.2	8.8
<b>Investment</b>																			
Pineapple suckers	each	10,000.0	-	-	10,000.0	-	-	10,000.0	-	-	10,000.0	-	-	10,000.0	-	-	10,000.0	-	-
Agri Tools	set	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
<b>Operating</b>																			
Site/jungle clearance	pers_day	100.0	-	-	100.0	-	-	100.0	-	-	100.0	-	-	100.0	-	-	100.0	-	-
Removal of basal Leaves	pers_day	-	10.0	19.0	-	10.0	19.0	-	10.0	19.0	-	10.0	19.0	-	10.0	19.0	-	10.0	19.0
Planting	pers_day	100.0	-	-	100.0	-	-	100.0	-	-	100.0	-	-	100.0	-	-	100.0	-	-
Interculture	pers_day	50.0	10.0	10.0	50.0	10.0	10.0	50.0	10.0	10.0	50.0	10.0	10.0	50.0	10.0	10.0	50.0	10.0	10.0
Harvesting	pers_day	-	20.0	40.0	-	20.0	40.0	-	20.0	40.0	-	20.0	40.0	-	20.0	40.0	-	20.0	40.0
Farm transportation	pers_day	-	10.0	20.0	30.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Watch and ward	pers_day	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0

## Annex-4.11 Oranges crop (one ha) existing orchard

Oranges, existing Plantation FINANCIAL BUDGET (In INR Per ha) /a		April -- March							
		Existing Technology				New Technology			
		1	2	3	4 to 20	1	2	3	4 to 20
Revenue		54,000	63,000	72,000	81,000	64,800	75,600	86,400	97,200
<b>Input costs</b>									
Agri Tools		2,890	2,890	2,890	2,890	2,890	-	-	-
Organic Manure		7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500
PP chemicals		2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
<b>Sub-total Input costs</b>		<b>12,890</b>	<b>12,890</b>	<b>12,890</b>	<b>12,890</b>	<b>12,890</b>	<b>10,000</b>	<b>10,000</b>	<b>10,000</b>
<b>Income (Before Labor Costs)</b>		<b>41,110</b>	<b>50,110</b>	<b>59,110</b>	<b>68,110</b>	<b>51,910</b>	<b>65,600</b>	<b>76,400</b>	<b>87,200</b>
<b>Labor costs</b>									
Fencing		13,500	2,700	2,700	2,700	13,500	2,700	2,700	2,700
Manuring		2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700
spraying		2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700
Interculture		2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700
Pruning		2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700
Harvesting		5,400	10,800	10,800	10,800	5,400	10,800	10,800	10,800
Farm transportation		2,700	5,400	5,400	5,400	2,700	5,400	5,400	5,400
Watch and ward		6,750	6,750	6,750	6,750	6,750	6,750	6,750	6,750
<b>Sub-total Labor costs</b>		<b>39,150</b>	<b>36,450</b>	<b>36,450</b>	<b>36,450</b>	<b>39,150</b>	<b>36,450</b>	<b>36,450</b>	<b>36,450</b>
<b>Income (After Labor Costs)</b>		<b>1,960</b>	<b>13,660</b>	<b>22,660</b>	<b>31,660</b>	<b>12,760</b>	<b>29,150</b>	<b>39,950</b>	<b>50,750</b>

Oranges, existing Plantation YIELDS AND INPUTS (Per ha) /a		April -- March							
		Existing Technology				New Technology			
		Unit	1	2	3	4 to 20	1	2	3
Yields	ton	3.0	3.5	4.0	4.5	3.6	4.2	4.8	5.4
<b>Investment</b>									
Agri Tools	set	1.0	1.0	1.0	1.0	1.0	-	-	-
Organic Manure	ton	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
PP chemicals	lit	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
<b>Operating</b>									
Fencing	pers_day	50.0	10.0	10.0	10.0	50.0	10.0	10.0	10.0
Manuring	pers_day	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
spraying	pers_day	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Interculture	pers_day	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Pruning	pers_day	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Harvesting	pers_day	20.0	40.0	40.0	40.0	20.0	40.0	40.0	40.0
Farm transportation	pers_day	10.0	20.0	20.0	20.0	10.0	20.0	20.0	20.0
Watch and ward	pers_day	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0

### Annex-4.12 Black pepper crop (one ha)

Financial budget						Yield and inputs					
Black Pepper Plantation <b>FINANCIAL BUDGET</b> (In INR Per ha) /a						Black Pepper Plantation <b>YIELDS AND INPUTS</b> (Per ha) /a					
<b>April -- March</b>						<b>April -- March</b>					
<b>New Technology</b>						<b>New Technology</b>					
	1	2	3	4	5 to 20	Unit	1	2	3	4	5 to 20
<b>Revenue</b>											
Black pepper, dried	-	-	45,000	57,000	75,000	kg	-	-	150.0	190.0	250.0
Proxy labour under WOP	-	-	-	-	-	pers_days	-	-	-	-	-
<b>Sub-total Revenue</b>	-	-	45,000	57,000	75,000						
<b>Input costs</b>											
Pepper cutting	5,600	-	-	-	-	#	560.0	-	-	-	-
<b>Income (Before Labor Costs)</b>	-5,600	-	45,000	57,000	75,000						
<b>Labor costs</b>											
Land Preparation	20,250	1,890	1,890	1,890	1,890	pers_day	75.0	7.0	7.0	7.0	7.0
Planting	13,500	1,350	1,350	1,350	1,350	pers_day	50.0	5.0	5.0	5.0	5.0
Staking	-	27,000	2,700	1,350	-	pers_day	-	100.0	10.0	5.0	-
Pruning	-	-	-	2,700	2,700	pers_day	-	-	-	10.0	10.0
Maintenance	2,500	2,500	3,750	3,750	3,750	pers_day	10.0	10.0	15.0	15.0	15.0
Harvesting	-	-	4,050	4,050	4,050	pers_day	-	-	15.0	15.0	15.0
Farm transportation	-	-	810	1,080	1,350	pers_day	-	-	3.0	4.0	5.0
Drying pepper	-	-	1,250	2,500	3,750	pers_day	-	-	5.0	10.0	15.0
Grading pepper	-	-	750	1,000	1,250	pers_day	-	-	3.0	4.0	5.0
<b>Sub-total Labor costs</b>	36,250	32,740	16,550	19,670	20,090						
<b>Income (After Labor Costs)</b>	-41,850	-32,740	28,450	37,330	54,910						

### Annex-4.13 Large cardamom (one ha)

Large cardamom plantation <b>FINANCIAL BUDGET</b> (In INR Per ha) /a		April -- March									
		New Technology									
		1	2	3	4 to 8	9	10	11	12	13	14 to 20
Revenue	-	-	87,500	105,000	105,000	105,000	-	-	87,500	105,000	
<b>Input costs</b>											
Cardamom sucker	20,000	-	-	-	20,000	-	-	-	-	-	-
<b>Income (Before Labor Costs)</b>	-20,000	-	87,500	105,000	85,000	105,000	-	-	87,500	105,000	
<b>Labor costs</b>											
Land Preparation	16,200	-	-	-	-	-	16,200	-	-	-	-
Planting	5,400	-	-	-	-	-	5,400	-	-	-	-
Mulching	5,400	5,400	5,400	5,400	5,400	5,400	5,400	5,400	5,400	5,400	
Harvesting	-	-	8,100	8,100	8,100	8,100	-	-	8,100	8,100	
Curing and processing	-	-	2,500	2,500	2,500	2,500	-	-	2,500	2,500	
Miscellaneous	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	
<b>Sub-total Labor costs</b>	28,250	6,650	17,250	17,250	17,250	17,250	28,250	6,650	17,250	17,250	
<b>Income (After Labor Costs)</b>	-48,250	-6,650	70,250	87,750	67,750	87,750	-28,250	-6,650	70,250	87,750	

Large cardamom plantation <b>YIELDS AND INPUTS</b> (Per ha) /a		April -- March									
		New Technology									
		Unit	1	2	3	4 to 8	9	10	11	12	13
Yields	kg	-	-	125.0	150.0	150.0	150.0	-	-	125.0	150.0
<b>Investment</b>											
Cardamom sucker	each	2,000.0	-	-	-	2,000.0	-	-	-	-	-
<b>Operating</b>											
Land Preparation	pers_day	60.0	-	-	-	-	-	60.0	-	-	-
Planting	pers_day	20.0	-	-	-	-	-	20.0	-	-	-
Mulching	pers_day	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Harvesting	pers_day	-	-	30.0	30.0	30.0	30.0	-	-	30.0	30.0
Curing and processing	pers_day	-	-	10.0	10.0	10.0	10.0	-	-	10.0	10.0
Miscellaneous	pers_day	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0

### Annex-4.14 Pig-fattening model (one piglet)

Financial budget						Yield and inputs						
IFAD Nagaland Final Design Pig fattening Activity <b>FINANCIAL BUDGET</b> (In INR) /a						IFAD Nagaland Final Design Pig fattening Activity <b>YIELDS AND INPUTS /a</b>						
<b>April -- March</b>						<b>April -- March</b>						
		<b>Existing</b>		<b>New Technology</b>				<b>Existing</b>		<b>New Technology</b>		
		<b>Technology</b>	<b>Technology</b>				<b>Technology</b>	<b>Technology</b>				
		<b>1 to 20</b>	<b>1</b>	<b>2 to 18</b>	<b>19</b>	<b>20</b>	<b>Unit</b>	<b>1 to 20</b>	<b>1</b>	<b>2 to 18</b>	<b>19</b>	<b>20</b>
<b>Revenue</b>						<b>Main Production</b>						
Fattened pig, 80 kg in Wt						Fattened pig, 80 kg in Wt						
Proxy labour under WOP						Proxy labour under WOP						
<b>Sub-total Revenue</b>						<b>Investment</b>						
<b>Input costs</b>						Piglets, appx 8 kg in w t						
Piglets, appx 8 kg in w t						Pig Stay						
Pig Stay						Pig feed						
Pig feed						Local feed						
Local feed						Insurance						
Insurance						Medicines for piglets						
Medicines for piglets						<b>Operating</b>						
<b>Sub-total Input costs</b>						Shed construction						
<b>Income (Before Labor Co</b>						Watch and ward						
<b>Labor costs</b>												
Shed construction												
Watch and ward												
<b>Sub-total Labor costs</b>												
<b>Income (After Labor Cos</b>												

### Annex-4.15 Pig-breeding model (6 piglets + one boar)

Pig breeding, small-scale Act FINANCIAL BUDGET (In INR) /a		April -- March								
		Existing Technology		New Technology						
		1 to 20	1	2 to 5	6	7 to 10	11	12 to 15	16	17 to 20
<b>Revenue</b>										
Piglets	-	165,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000	330,000
Proxy labour under WOP	5,400	-	-	-	-	-	-	-	-	-
<b>Sub-total Revenue</b>	<b>5,400</b>	<b>165,000</b>	<b>330,000</b>							
<b>Input costs</b>										
Adult sow	-	120,000	-	120,000	-	120,000	-	120,000	-	-
Boar	-	20,000	-	20,000	-	20,000	-	20,000	-	-
Pig pen	-	140,000	-	-	-	-	-	-	-	-
Pig feed	-	63,514	63,514	63,514	63,514	63,514	63,514	63,514	63,514	63,514
Local feed	-	28,870	28,870	28,870	28,870	28,870	28,870	28,870	28,870	28,870
Equipment	-	6,000	-	-	-	-	-	-	-	-
Insurance	-	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500
Medicines	-	4,900	4,900	4,900	4,900	4,900	4,900	4,900	4,900	4,900
Medicines and vaccines f	-	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400
Piglets mortality	-	15,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
<b>Sub-total Input costs</b>	<b>-</b>	<b>416,184</b>	<b>145,184</b>	<b>285,184</b>	<b>145,184</b>	<b>285,184</b>	<b>145,184</b>	<b>285,184</b>	<b>145,184</b>	<b>145,184</b>
<b>Income (Before Labor Costs)</b>	<b>5,400</b>	<b>-251,184</b>	<b>184,816</b>	<b>44,816</b>	<b>184,816</b>	<b>44,816</b>	<b>184,816</b>	<b>44,816</b>	<b>184,816</b>	<b>184,816</b>
<b>Labor costs</b>										
Shed construction	-	8,100	540	540	540	540	540	540	540	540
Watch and ward	-	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500
<b>Sub-total Labor costs</b>	<b>-</b>	<b>48,600</b>	<b>41,040</b>							
<b>Income (After Labor Costs)</b>	<b>5,400</b>	<b>-299,784</b>	<b>143,776</b>	<b>3,776</b>	<b>143,776</b>	<b>3,776</b>	<b>143,776</b>	<b>3,776</b>	<b>143,776</b>	<b>143,776</b>

Pig breeding, small-scale Act YIELDS AND INPUTS /a		Existing Technology								
		Existing Technology		New Technology						
		Unit	1 to 20	1	2 to 5	6	7 to 10	11	12 to 15	16
<b>Main Production</b>										
Piglets	each	-	33.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0
Proxy labour under WOP	pers_days	20.0	-	-	-	-	-	-	-	-
<b>Investment</b>										
Adult sow	animal	-	6.0	-	6.0	-	6.0	-	6.0	-
Boar	boar	-	1.0	-	1.0	-	1.0	-	1.0	-
Pig pen	pen	-	1.0	-	-	-	-	-	-	-
Pig feed	kg	-	2,887.0	2,887.0	2,887.0	2,887.0	2,887.0	2,887.0	2,887.0	2,887.0
Local feed	kg	-	2,887.0	2,887.0	2,887.0	2,887.0	2,887.0	2,887.0	2,887.0	2,887.0
Equipment	unit	-	6.0	-	-	-	-	-	-	-
Insurance	animal/year	-	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Medicines	animal	-	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Medicines and vaccines f	piglet/year	-	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0
Piglets mortality	piglet	-	3.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
<b>Operating</b>										
Shed construction	pers_day	-	30.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Watch and ward	pers_day	-	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0

### Annex-4.16 Community forestry model (one ha)

Village forestry Plantation FINANCIAL BUDGET (In INR) /a		April -- March									
		Existing Technology			New Technology						
		1 to 20	1	2	3	4 to 6	7 to 9	10	11 to 14	15	16 to 20
<b>Revenue</b>											
Small timber	-	-	-	-	-	-	4,800	12,000	12,000	-	-
High value timber	-	-	-	-	-	-	-	-	28,500	28,500	-
Firewood	-	-	-	-	-	3,600	3,600	-	-	-	-
Pastures & fodder	-	-	-	-	500	500	500	500	500	500	500
Fruits	-	-	-	-	37,500	37,500	37,500	37,500	37,500	37,500	37,500
<b>Sub-total Revenue</b>	-	-	-	-	38,000	41,600	46,400	50,000	78,500	66,500	-
<b>Input costs</b>											
Seedling	-	17,500	3,500	-	-	-	-	-	-	-	-
<b>Income (Before Labor Costs)</b>	-	-17,500	-3,500	-	38,000	41,600	46,400	50,000	78,500	66,500	-
<b>Labor costs</b>											
Site/jungle clearance	-	18,900	-	-	-	-	-	-	-	-	-
Planting	-	18,900	3,780	-	-	-	-	-	-	-	-
Staking	-	-	2,700	4,050	4,050	4,050	4,050	4,050	4,050	4,050	4,050
Mulching	-	5,400	2,700	-	-	-	-	-	-	-	-
Harvesting	-	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100
Watch and ward	-	27,000	13,500	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100
<b>Sub-total Labor costs</b>	-	78,300	30,780	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250
<b>Income (After Labor Costs)</b>	-	-95,800	-34,280	-20,250	17,750	21,350	26,150	29,750	58,250	46,250	-

Village forestry Plantation YIELDS AND INPUTS /a		Existing Technology									
		Existing Technology			New Technology						
		Unit	1 to 20	1	2	3	4 to 6	7 to 9	10	11 to 14	15
<b>Main Production</b>											
Small timber	m3	-	-	-	-	-	-	6.0	15.0	15.0	-
High value timber	m3	-	-	-	-	-	-	-	-	19.0	19.0
Firewood	m3	-	-	-	-	-	9.0	9.0	-	-	-
Pastures & fodder	ton	-	-	-	-	0.5	0.5	0.5	0.5	0.5	0.5
Fruits	ton	-	-	-	-	15.0	15.0	15.0	15.0	15.0	15.0
<b>Investment</b>											
Seedling	each 100	-	350.0	70.0	-	-	-	-	-	-	-
<b>Operating</b>											
Labour	pers_day	-	290.0	114.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0





## Appendix 11: Compliance with IFAD policies

1. IFAD’s Strategic Framework provides the overall goal and objectives of the Fund and its key policy guidelines provide the parameters of project design and implementation. The Country Strategic Opportunities Programme (COSOP) for India (2011-2016<sup>68</sup>) aims at promoting sustainable and climate variability-resilient agriculture in rain fed smallholdings. The design of FOCUS builds on IFAD’s relevant policies and frameworks particularly the 2016-2025 Strategic Frameworks, the targeting and gender mainstreaming policy, the Environment and Natural Resources Management Strategy, the climate change strategy, the Policy to improve access to Land and security of Tenure, Scaling up Framework and the Knowledge Management Strategy. The below table delineates how the design responds to IFAD’s key policies and strategies pertinent to the project.

IFAD POLICY/ STRATEGY	COMPLIANCE
IFAD’s Strategic Framework (2016-2025)	<p>IFAD’s Strategic Framework (2016-2025) reiterates its unique mandate of improving rural food security and nutrition through remunerative, sustainable and resilient livelihoods and to enable rural poor overcome poverty. The Framework identifies five principles of engagement namely targeting, empowerment, gender equality, innovation, learning and scaling up and partnerships which are all relevant to the FOCUS project.</p> <p>The overall goal of the project is to increase household agricultural income of rural highland communities in Nagaland and Mizoram and enhance their resilience to climate change. The project’s development objective is to increase the environmental sustainability and profitability of farming systems practiced by highland farmers. The project will improve the resilience and productivity of farming systems by increasing the resilience of crop and livestock production systems to climate change; strengthen the market linkages and sales of key agricultural and horticultural crops and livestock</p>
India COSOP 2011-16	<p>The COSOP has two strategic objectives: (1) Increased access to agricultural technologies and natural resources and (2) Increased access to financial services and value chains. The COSOP ascertains IFAD’s focus on the poorest, most marginalized and remote of the rural poor in rainfed areas with special emphasis on (i) tribal communities, (ii) smallholder farmers; (iii) the landless; (iv) women; and (v) unemployed youth.</p> <p>FOCUS adheres to both the strategic objectives of the COSOP with its emphasis on climate resilient agriculture and value chain development. The project is being implemented in the states of Mizoram and Nagaland which have more than 95% tribal population. There is a clear focus on small holder farmers, women, landless and youth.</p>
Environmental Natural Resource Management (ENRM) Policy	<p>The goal of IFAD’s ENRM policy approved in May 2016<sup>69</sup> is “to enable poor rural people to escape from and remain out of poverty through more-productive and resilient livelihoods and ecosystems.” The purpose is “to integrate the sustainable management of natural assets across the activities of IFAD and its partners. IFAD recognizes that poor farm HHs are in the front line of climate change impacts; the ecosystems and biodiversity on which they rely are increasingly degraded.</p> <p>The project is aligned to IFAD ENRM strategy as it aims to mitigate the risks associated with shortening <i>jhum</i> cycles and promote sustainable increase in agricultural productivity. The very rationale for the project FOCUS is to</p>

<sup>68</sup>The COSOP 2011-2015 has been extended by one year to cover the design of the current project.

<sup>69</sup>IFAD’s Environment and Natural Resource Management Policy: Resilient livelihoods through the sustainable use of natural assets. May 2011.

	<p>restore the balance between the ecological imperatives of the complex highland ecology in the North Eastern states of Mizoram and Nagaland and the growing human needs by integrating modern scientific and technological knowledge with traditional know-how, experience and locally evolved systems of resource governance.</p> <p>The key focus of the project is on improving current <i>jhum</i>/ shifting agriculture practices and improving management of <i>jhum</i> fallows with the aim of increasing productivity and lengthening the <i>jhum</i> cycle. This will involve growing of cover crops, especially the fertility building and leguminous plants during the pre-crop and fallow periods, planting and growing of high value leguminous, timber and fuel wood plants / trees on contour bunds, and better agronomy and introduction of new and high value low volume crops in the system.</p> <p>The project will engage with the existing community institutions such as the VC/ VDB for participatory land use plans. The project will fund Community Conservation Area Management. This will involve contour bunding, contour trenching and water harvesting structures and biological measures including seeding the area with leguminous plants.</p>
<p>IFAD Climate Change Strategy (2010) and IFAD's Social, Environmental and Climate Assessment Procedures (2014)</p>	<p>IFAD's climate change strategy (May 2010) recognizes that the speed and intensity of climate change are outpacing the ability of poor rural people and societies to cope. The goal of this strategy is to maximize IFAD's impact on rural poverty in the context of climate change. FOCUS is fully aligned to the Climate Change Strategy.</p> <p>The project design assessed the environmental impacts of the project components (i.e. project activities, locations and magnitude of components) against the "IFAD's Social, Environmental and Climate Assessment Procedures (2014)" and the SECAP Report is available.</p> <p>FOCUS is not likely to have any adverse environment impacts on the project areas in Nagaland or Mizoram. In fact, it will have beneficial impacts through the development of land and water resources following an environmentally sensitive approach, including conservation of soil and rainwater, diversification of farming systems, introduction of tree crops and agro-forestry, creation of Community Conserved Areas, improved management of <i>Jhum</i> fallows and increasing the <i>Jhum</i> cycle. However, it is by requirement classified as Category B as it will operate in highland areas and would include resource development activities akin to watershed development.</p> <p>The Himalayan States are classified as the most environmentally sustainable among Indian States on the basis of the Environmental Sustainability Index developed by the Institute for Financial Management and Research<sup>70</sup>. Among the eight NER States, Mizoram is ranked as 1<sup>st</sup> and Nagaland is ranked as 7<sup>th</sup>. As rain-fed, <i>Jhum</i> based farming is a major livelihood source vulnerable to climate change, the project is therefore classified as a high climate risk project.</p>
<p>IFAD's Policy to improve access to Land and security of Tenure</p>	<p>The issues pertaining to land tenure are critical to the project design. The two states have different land tenure status.</p> <p>Land in Mizoram is generally community managed and state controlled with traditional free access to all households living in the villages. In 2013, GoM issued guidelines for provision of title deeds to individual households and groups to undertake permanent agriculture activities on community lands</p>

<sup>70</sup><http://www.ifmlead.org/wp-content/uploads/2015/OWC/Brief-ESI-2011.pdf>

	<p>which were earlier used for <i>jhum</i> cultivation. This effort has hastened the process of settled agriculture and there has been substantial reduction in <i>jhum</i> cultivation. There is need to provide additional support to the poorest households so that they are able to take maximum advantage of this policy of the government.</p> <p>In Nagaland 3 types of land ownership pattern exist: (i) private lands which are used for both <i>jhuming</i> and also for terraced rice cultivation; (ii) clan lands which are owned by a clan collectively and used for fuel wood collection; and (iii) community lands owned collectively by the entire village which is largely used as conservation forests and for fuel wood collection. There are no land tenure issues in Nagaland and households largely have <i>equitable access to land resources</i>. However, the land ownership is <i>de jure</i> as there are no land records and title documents. There are only disputes related to boundary and the dispute resolution mechanism is vested with the village council <i>recognizing the cultural heritage and identity</i> of the indigenous people.</p> <p>The project will adhere to the specific policies pertaining to land tenure in the two states. However, there will be considerable focus on PLUP led by the village level community Institutions to ensure all households are involved in the process.</p>
<p>IFAD's Knowledge Management Strategy</p>	<p>FOCUS is aligned with IFAD's Knowledge Management strategy, especially in the following areas (i) strengthening the process of knowledge sharing and learning within and between the two states and in the NE region as a whole; (ii) development of partnerships (e.g. with FAO/ ICAR), to provide a broader base of knowledge sharing and learning and; (iii) promotion of a dynamic regional platform (preferably in partnership with ICAR) for knowledge sharing and learning. The programme will use (human and financial) resources to enhance its impact by sharing knowledge and learning between the two states and with other states in the region which have a sizeable practice of shifting agriculture.</p>
<p>Scaling up Framework (2015)</p>	<p>Given the large-scale problem of reducing rural poverty that it is mandated to address and the limited resources available from official development assistance (ODA), IFAD needs to increase the impact of every dollar it invests in agriculture and rural development. For this reason, scaling up the results of successful development initiatives is an overarching priority that directly supports the achievement of IFAD's mandate</p> <p>The Project aims to scale up emerging lessons from three major projects, namely, SLEM and NEPED in Nagaland and NLUP in Mizoram. Whereas the former two has demonstrated the effectiveness of investing in improved <i>Jhum</i> management, the latter has focussed on finding a viable alternative to <i>Jhum</i> by promoting settled agriculture. Both approaches have been found to be useful in addressing issues such as low productivity, forest /soil degradation and poor incomes of farmers. The project will scale up the lessons of these projects in their respective states while also facilitating cross learning and adoption of key lessons across the two states. Additionally, as the practice of <i>Jhum</i> is common across the entire North Eastern region, the project will also serve as a learning site for all NE states who can explore adoption/ scaling up of one or both of these models. Refer to Table 4 for detailed responses to the Scaling up Framework.</p>

IFAD's Policy for Gender equality and Women's empowerment	The project activities, implementation arrangements and M&E system have been designed in compliance with the IFAD Targeting Policy as well as the IFAD policy on gender equality and women's empowerment. For more details please see table 1& 2 below.
IFAD's Policy for indigenous people	<p>IFAD's policy on Engagement with Indigenous Peoples (2009) aims to enhance development effectiveness and to ensure that indigenous peoples' communities in rural areas are empowered to improve their well-being, income and food security through self-driven development that builds on their identity and culture.</p> <p>The project is being implemented in the states of Nagaland and Mizoram which have respectively 92.8% and 96.6% tribal population in their rural areas. Almost the entire population covered through the project consists of scheduled tribes. The project acknowledges and builds on local, traditional knowledge and institutions of the people. For more details refer to Table 3 below.</p>

**TABLE 1. KEY FEATURES OF GENDER SENSITIVE DESIGN**

ISSUES	PROJECT COMPLIANCE
<p>1. The project design report contains – and project implementation is based on - gender-disaggregated poverty data and an analysis of gender differences in the activities or sectors concerned, as well as an analysis of each project activity from the gender perspective to address any unintentional barriers to women's participation.</p>	<p>The project design is based on the analysis of gender differences and adequate safeguards have been built to ensure equal participation.</p> <p>The project would ensure full participation of women in capacity building, project planning and implementation. The project will also build capacity of project staff to effectively address issues of gender mainstreaming and social inclusion.</p>
<p>2. The project design report articulates – or the project implements – actions with aim to:</p> <ul style="list-style-type: none"> <li>• Expand women's economic empowerment through access to and control over productive and household assets</li> </ul>	<p>Specific actions will be taken to promote the role of women in management of farm and related enterprises.</p> <p>Women play a key role in management of livestock and the project lays emphasis on both backyard poultry as well as the more remunerative pig value chains (and dairy in Mizoram).</p> <p>Where present, women's credit groups and societies will serve as the centres of credit activities enhancing the credit worthiness of women and develop them as partners in the development process.</p>
<ul style="list-style-type: none"> <li>• Strengthen women's decision-making role in the household and community, and their representation in membership and leadership of local institutions</li> </ul>	<p>Representation of women is already mandated by State policy and laws in the Village Council (VC), the principal local governance institution at the village level, and the Village Development Board, the sub-committee of the VC responsible for implementation of government programmes. In Nagaland the project will be creating <i>Jhum</i> Resource Management Committee (JRMCS) under the Village Council and the representation</p>

	<p>of women and Women’s organizations in this committee will be ensured. In Mizoram the participatory processes envisaged for land use planning will include women which will draw them into public life of the village and give a voice in matters related to the community. Women representation will be ensured in all the committees to be established by the project and while selecting beneficiaries of the project interventions. The project will invest in capacity building of the women to enhance their active participation in these village level bodies. The participatory planning process and inclusion of women in the community institutions will draw women into the public life of the village and give them a voice in matters related to the community.</p>
<ul style="list-style-type: none"> <li>Achieve a reduced workload and an equitable workload balance between women and men.</li> </ul>	<p>Women play a key role in agriculture in the project areas contributing about 75 percent of labour in <i>jhum</i><sup>71</sup>. Short <i>Jhum</i> cycles are one of the biggest source of drudgery for the women who have to undertake household work in addition to travelling to <i>jhum</i> areas (which are often far from home). The lengthening of <i>jhum</i> cycles and/ or shift towards settled agriculture will have a strong positive impact in reducing drudgery for women. The other major cause of drudgery is in firewood collection. To address this the project will actively promote the uptake of LPG Gas cylinders. Additionally, the project will explore the use of machines for highland agriculture.</p>
<p>3. The project design report includes one paragraph in the targeting section that explains what the project will deliver from a gender perspective.</p>	<p>Yes</p>
<p>4. The project design report describes the key elements for operationalizing the gender strategy, with respect to the relevant project components.</p>	<p>The project design explicitly lays out strategies for gender mainstreaming.</p>
<p>5. The design document describes - and the project implements - operational measures to ensure gender- equitable participation in, and benefit from, project activities. These will generally include:</p>	
<p>5.1 Allocating adequate human and financial resources to implement the gender strategy</p>	<p>Yes</p>
<p>5.2 Ensuring and supporting women’s active participation in project-related activities, decision-making bodies and committees, including setting specific targets for participation.</p>	<p>Yes, as explained above.</p>
<p>5.3 Ensuring that project/programme management arrangements (composition of the</p>	<p>Yes, the proposed structure provides for equal representation of women in programme</p>

<sup>71</sup>NEPED (2007). Adding Value to Shifting Cultivation in Nagaland, India. Kohima, Nagaland p.14.

project management unit/programme coordination unit, project terms of reference for staff and implementing partners, etc.) reflect attention to gender equality and women's empowerment concerns.	management.
5.4 Ensuring direct project/programme outreach to women (for example through appropriate numbers and qualification of field staff), especially where women's mobility is limited	The project design makes provisions for specifically engaging women for certain positions based on their competitive advantage. For example, the key person in supporting livestock development would be a CAHW, with one in each village who will be trained to provide preventive health services and first aid, as well as providing advice on improved husbandry practices. With women having a major role in livestock, wherever possible the CAHW will be a woman.
5.5 Identifying opportunities to support strategic partnerships with government and others development organizations for networking and policy dialogue	The project will work closely with local institutions and the state government to advocate for greater and more active role of women in the traditional community institutions.
6. The project's logical framework, M&E, MIS and learning systems specify in design – and project M&E unit collects, analyses and interprets sex- and age-disaggregated performance and impact data, including specific indicators on gender equality and women's empowerment.	Yes.

TABLE 2. IFAD TARGETING POLICY- CHECKLIST FOR DESIGN	
ISSUES	PROJECT COMPLIANCE
1. Does the main target group - those expected to benefit most- correspond to IFAD's target group as defined by the Targeting Policy (poorer households and food insecure)?	<p>In Nagaland the project will cover 137,000 rural households and in Mizoram 64,500 rural Households of whom about 95% will be active farmers.</p> <p>As the project would involve participatory land use planning for the entire village and seek to create community conserved areas and firewood forests besides <i>Jhum</i> improvement, upland terraced rice stabilisation and value chain development, the project will target all households in selected villages which include a range of different tribal groups (22 tribes in Nagaland and 15 in Mizoram overall). Thus, saturation approach will be followed within each cluster to ensure comprehensive land use planning for the entire village landscape. However within these areas, specific interventions will be undertaken to support the poorest households, the youth and women.</p>

<p>2. Have target sub-groups been identified and described according to their different socio-economic characteristics, assets and livelihoods - with attention to gender and youth differences?(Matrix on target group characteristics completed?)</p>	<p>Yes sub target groups such as youth and women have been identified according to their different socio economic characteristics. For example, Special measures will be implemented to ensure that rural youth are fully involved in taking up on and off-farm activities. Some of the civil society organizations and other agencies will be involved to train youth in off farm activities and handholding to start enterprises with financial support.</p>
<p>3. Is evidence provided of interest in and likely uptake of the proposed activities by the identified target sub-groups? What is the evidence? (Matrix on analysis of project components and activities by principal beneficiary groups completed?)</p>	<p>Yes the experience from NEPED and SLEM in Nagaland and NLUP in Mizoram demonstrates a high level of interest among the population sub-groups in the proposed project activities. Additionally, the activities have been identified based on the interaction of the design team with the community members.</p>
<p>4. Does the design document describe a feasible and operational targeting strategy in line with the Targeting Policy, involving some or all of the following measures and methods:</p>	
<p>4.1 Geographic targeting – based on poverty data or proxy indicators to identify, for area based projects or programmes, geographic areas (and within these, communities) with high concentrations of poor people</p>	<p>The identification of the project districts has been done to ensure that only hill districts are included and districts where other large scale projects are being implemented through other donors are excluded.</p> <p>Within the districts the project will identify households based on the following criteria:              In Nagaland the project will select a cluster of about 60-80 villages in each of the 8 districts depending on the size of the districts. The main village clusters selection criteria include: (i) at least 75% of the villages with more than 60% of the households undertaking <i>jhum</i> cultivation; (ii) more than 50% of the <i>jhum</i> cultivating villages have a <i>jhum</i> cycle of eight years and less; (iii) one cluster per district covering the blocks falling in the cluster in its entirety to ensure that the cluster boundary is in consonance with the administrative boundaries for ease of management; (iv) existence of access roads; and (v) potential for cultivating high value crops on <i>jhum</i> land.</p> <p>In Mizoram, the project will be implemented in all the villages of the four identified project districts.</p> <p>A saturation approach will be followed to ensure comprehensive land use planning for the entire village landscape and provision of support services to address the needs of most of the households who are involved in farm activities.</p>
<p>4.2 Direct targeting - when services or resources are to be channelled to specific individuals or households</p>	<p>This will be done for identification of the poorest households to ensure that they are provided additional services, as appropriate.</p>

<p>4.3 Self targeting – when goods and services respond to the priority needs, resource endowments and livelihood strategies of target groups</p>	<p>This will apply in the engagement of households in various value chains as well as for adoption of LPG gas cylinders.</p>
<p>4.4 Empowering measures - including information and communication, focused capacity- and confidence-building measures, organisational support, in order to empower and encourage the more active participation and inclusion in planning and decision making of people who traditionally have less voice and power</p>	<p>This will be done through the engagement of village level community institutions, membership based NGOs such as the Young Mizo Association in Mizoram and other NGOs in Nagaland, and through capacity building of the marginalised groups, especially women. Participatory processes will be employed to seek participation of the poorest.</p>
<p>4.5 Enabling measures –to strengthen stakeholders’ and partners’ attitude and commitment to poverty targeting, gender equality and women’s empowerment, including policy dialogue, awareness-raising and capacity-building</p>	<p>The project design includes all enabling measures to strengthen stakeholders’ and partners’ attitude and commitment to poverty targeting, gender equality and women’s empowerment. This will be implemented at the state, district and village level through sensitization, capacity building and necessary policy provisions.</p>
<p>4.6 Attention to procedural measures - that could militate against participation by the intended target groups</p>	<p>The project design has put in adequate procedural measures to ensure participation of the intended target group, primarily the households practicing <i>Jhum</i>. This includes targeting of villages with high <i>Jhum</i> practice, and short <i>jhum</i> cycles and engaging the Community institutions to ensure all households are engaged in PLUP.</p>
<p>4.7 Operational measures - appropriate project/programme management arrangements, staffing, selection of implementation partners and service providers</p>	<p>The project will be anchored in the respective state Agriculture Departments which is sensitive to the issues relating to <i>Jhum</i>. With the APC being the overall Mission Director, effective convergence with other concerned departments will be achieved smoothly. Finally, at the village level the engagement of existing Community institutions will facilitate the engagement of entire village communities.</p>
<p>5. Monitoring targeting performance. Does the design document specify that targeting performance will be monitored using participatory M&amp;E, and also be assessed at mid-term review? Does the M&amp;E framework allow for the collection/analysis of sex disaggregated data and are there gender sensitive indicators against which to monitor/evaluate outputs, outcomes and impacts?</p>	<p>Yes; the project design document specifies use of participatory M&amp;E and also provides for collection and analysis of gender disaggregated data.</p>

TABLE 3. IFAD POLICY FOR INDIGENOUS PEOPLE	
ISSUES	PROJECT COMPLIANCE
<p>1. The project design report is in line with IFAD Policy on Engagement with Indigenous Peoples and takes into account the socio economic and cultural specificities of the indigenous peoples' communities living in the project area. It provides baseline information on their demographic, social, cultural, and political characteristics; the land and territories that they have traditionally owned or customarily used or occupied; and the natural resources they manage or depend upon</p>	<p>The project is being implemented in the states of Nagaland and Mizoram which have respectively 92.8% and 96.6% tribal population in their rural areas. Almost the entire population covered through the project consists of scheduled tribes. Thus the design is appropriately informed by the available data pertaining to the Scheduled Tribes in the two states. The project acknowledges and builds on local, traditional knowledge and institutions of the people and is in consonance with the nine principles of engagement espoused in the IFAD Policy on Engagement with Indigenous Peoples.</p> <p>Additionally, it must be stressed that both Nagaland and Mizoram have been granted special status by the Constitution of India.</p> <p>The state of Mizoram comes under the Sixth Schedule of the Constitution of India which lays down a framework of autonomous decentralized governance with legislative and executive powers over subjects like water, soil, land, local customs and culture. The councils under the sixth schedule have been given more power than the local governments under the 73rd and 74th amendments in the rest of the country. It has been established that this autonomy paradigm has brought a degree of equilibrium within the tribal societies mainly via the formal dispute resolution under customary laws and through control of money-lending etc.</p> <p>Article 371 (A) is a special provision granted to the state of Nagaland: in this regard not only the customary law, social practice and belief of the people of Nagaland but also the resources of the state is veridantly safeguarded from the intervention of the union government and its various policies unless the State Assembly so decides by resolution.</p> <p><i>Given these special provisions for the two states which safeguard the customary knowledge, practices and culture, the project, while adhering to the key principles of IFAD IP Policy, will do so in consultation with the respective state governments.</i></p>
<p>2. The project design report includes disaggregated data by indigenous group and geographical location</p>	<p>There is data available on the different tribal groups in each of the project states/ districts and the project refers to this, where applicable. Tribal communities are geographically distributed, with very little intermixing. As the Village Council, a representative body of the communities, plays a pivotal role in the planning and implementation of the project activities, the specific concerns of the local tribal population will be addressed during implementation.</p>

<p>3. The project design report identifies, interventions which respond to the needs and priorities as expressed by the targeted indigenous peoples' communities and which build on their knowledge, cultural systems, and institutions.</p>	<p>Yes. The activities were identified in consultation with the communities during the design process and these build on their traditional knowledge, cultural systems and local institutions.</p>
<p>4.1 Ensuring that representatives of the indigenous peoples' communities, partners of the project, are present at all stages of the project cycle and that a consultation plan leading to their Free, Prior and Informed Consent is embedded in the project design and the consultation and participation process is documented</p>	<p>The project design has systematically engaged with the tribal communities at all stages and the implementation plan also proposes their engagement at various stages.</p> <p>With regards the FPIC, even though the design proposes it, its adoption will depend on the decision of the respective state governments who, under the constitution of India have been given a high degree of independence that safeguard the traditional knowledge, practice and culture of the tribal communities.</p>
<p>4.2 Ensuring that project/programme activities are co-created and co-managed by the indigenous peoples communities</p>	<p>The Village Council, a representative body of the local tribal communities, play a critical role in the implementation of the project, leading on the process of PLUP as well as in other community level activities.</p>
<p>4.3 Ensuring the service-providers and extension workers used by the project (public or private) have the capacity and are trained to reach out to indigenous peoples.</p>	<p>These being essentially tribal states, the service providers are mostly from the Scheduled Tribes and/ or very well equipped to provide services to the tribal communities. Additionally, most of the community workers hired by the project will be from the community.</p>
<p>4.4 Ensuring that the project design report includes measures to strengthen a) the social, legal and technical capacity of the government institutions to address IPs issues in the project area; b) IPs' institutions and organizations in the project area</p>	<p>Yes, and this has been explained above.</p>
<p>4.5 Ensuring that information disclosure on the project is in accordance with prevailing IPs' customs and traditions and printed material is written in the IPs language</p>	<p>Information disclosure will be in accordance with the prevailing tribal customs and traditions. As regards printed material these would be in the language being commonly used by the tribal communities.</p>
<p>5. M&amp;E mechanisms are participatory and adapted to capture indigenous peoples' perceptions and perspectives. M&amp;E systems include specific indicators to measure the well-being, poverty and sustainability in a way that is relevant to indigenous peoples.</p>	<p>The M&amp;E systems are participatory and have been devised to capture all key aspects of the project including the well-being of the target population, all of whom are likely to be scheduled tribe.</p>

TABLE 4. SCALING UP FRAMEWORK

KEY ISSUES	PROJECT RESPONSE/ STRATEGY
<p>02. What is to be scaled up? Are the lessons learned from previous interventions sufficiently rigorous to justify bringing them to scale?</p>	<p>The state of Nagaland has implemented two projects- SLEM and NEPED, elements of which will be scaled up in FOCUS Nagaland. In Mizoram the state government implemented NLUP, lessons from which will inform the design of FOCUS Mizoram.</p> <p>SLEM focused on improving <i>Jhum</i> to make it sustainable and more productive rather than advocating its abandonment. It demonstrated that productive potential of <i>Jhum</i> lands can be enhanced and soil degradation reduced by introducing various soil and water conservation measures in <i>Jhum</i> areas. Once the potential of land is enhanced, <i>Jhum</i> cycles can be increased to allow regeneration of biomass and restore soil fertility, making the farming system more productive and sustainable. . As a pilot initiative, SLEM worked in only 40 villages in three districts.</p> <p>An independent study assessed the outcomes of SLEM which includes improved vegetation cover by over 2 000 hectares of land in project areas, reduction in soil erosion rate from 50 m/ha per year to 26 m/ha per year, 10 percent increase in incomes of 4 400 women as a result of sale of organic farm produce from <i>Jhum</i> fields, 15-20 percent increase in average annual incomes of 5 008 households from increased yield of <i>Jhum</i> fields, increase in <i>Jhum</i> cropping phase from two to three years in pilot <i>Jhum</i> farms as a result of timely introduction of soil and water conservation measures, benefits to over 800 <i>Jhum</i>-practicing households from the introduction of integrated farm development practices that integrate crop, livestock, fishery, forestry and horticulture and reduce soil erosion etc.</p> <p>The key focus of NLUP is on switching over to permanent and sustainable livelihood activities as an alternative to <i>Jhum</i> (shifting) cultivation; land reforms for giving permanent land ownership rights to farmers and effective land use plan with judicious mix of agri-horti and plantation crops, agro-forestry, micro-enterprise etc. NLUP, has succeeded in reducing dependence of farmers on <i>Jhum</i> practices from 66.40% to 46.14% and correspondently settled cultivation has increased from 16.19% to 27.20% in the last 5 year as well as the income of the farmers. NLUP expects to eventually increase income of farmers by 7 to 10 times compared to income from <i>Jhuming</i> at present.</p>

<p>03. If a project is innovating/testing a new model/approach, to what extent has the project identified the areas and approaches for accumulating knowledge during implementation in order to guide future decisions on scaling up?</p>	<p>Both SLEM and NLUP were introduced as an innovative approach to deal with <i>Jhum</i>, albeit in two different ways. The projects have been assessed through third party evaluations and midterm studies.</p>
<p>04. What is the appropriate ultimate scale of the intervention the IFAD project or programme supports in the country? In other words, how many people, households, districts, etc., could and should ultimately be reached? What will be the economic impact?</p>	<p>The scale up will cover 64,500 rural households in 4 out of 8 districts in Mizoram and 137,000 rural households in 8 out of 11 districts in Nagaland. Depending on the success of the initiative it can be scaled up to cover the entire states of Mizoram and Nagaland (except plains). As all the states in North East India deal with <i>jhum</i>, the models could be scaled up across the entire region.</p>
<p>05. Where will sustainability come from in the future and what is the rationale in the choice of the key partners?</p>	<p>The key focus of the project is (1) to create ecological balance through either sustained increase in <i>Jhum</i> cycles and/or gradually shifting to sedentary farming; and (2) enhancing farmer's income so that the pressure on land is reduced. In so doing the project will strengthen sustainability of upland farming systems and their capacity to respond to climate change. It is expected that most of the changes brought about during the project life cycle will be self-sustaining.</p> <p>The organisation which will be responsible for anchoring the project is the DoA in Mizoram and Nagaland. This is because the department brings together significant funds from the Centrally Sponsored schemes under 4 flagship schemes and has outreach up to the village level. These schemes will continue to operate after the project life and will provide needed support to households and communities post project lifecycle.</p>
<p>06. To what extent is a scaling-up approach able to maintain selectivity and simplicity in project design? Is the project avoiding the risk of adding complexity while scaling up?</p>	<p>The project is scaling up select elements/ strategies of NLUP and SLEM, which have demonstrated success such as Participatory Land use planning. The design is simple with two programme components.</p>
<p>07. What is the likelihood that the key drivers of the scaling-up process will be able to lead and sustain the efforts beyond the project?</p>	<p>The state Dept of Agriculture which anchored the SLEM and NLUP projects and will now be anchoring FOCUS are the repository of knowledge related to the successful interventions and the lessons learned. They are well placed to lead the activities beyond the project. Besides, the village level planning and implementation will be anchored by the Village Councils which are traditional community institutions and which have also played an</p>

	active role in the implementation of SLEM and NLUP.
08. Are the economic and financial benefits sufficiently attractive to drive expansion and sustain the initiative in the long term?	Yes, as explained in 1.
09. Has the project identified the right “spaces” that will permit the intervention to grow to the desired scale? Is the project sufficiently integrating policy engagement and knowledge to open the necessary spaces?	<p>Yes. This is a two state project and proposes to engage a regional institution such as ICAR to conduct specific studies and to organize periodic learning events in the region to facilitate cross learning in the region, undertake documentation and dissemination and inform policies. It is to be noted that the state of Nagaland is currently in the process of formulating its Land Use Policy and could learn from the experiences of Mizoram which has already formulated and rolled out its New Land Use Policy.</p> <p>Knowledge sharing and exchange through a regional entity will also help to generate interest in other NE states who are tackling similar issues of shifting agriculture.</p>
10. Is the government providing the required fiscal space to sustain project financing?	<p>Yes, the government is contributing significantly through parallel financing and convergence funds, channeling a significant share of the Centrally Sponsored Schemes to the project area. Additionally the respective state governments will release INR 15.00 crores as endowment grant to the Society responsible for implementing the project. Breakdown of financing by key partners and states is as below:</p> <p>In Mizoram the total project cost is estimated at about USD 78.85 million and will be financed by an IFAD loan of USD 35.25 million, parallel financing of USD 17.19 million through Central Sector Schemes (CSSs), and GoM counterpart funding of USD 11.79 million (including state share for CSSs), convergence funding USD 12.75 million, and a beneficiary contribution and bank loan of USD 1.43 million.</p> <p>In Nagaland the total project cost is estimated at about USD 89.20 million and will be financed by an IFAD loan of USD 40.25 million, a GoN counterpart funding of USD 11.69 million, Parallel financing from CSSs of USD 19.70 million, IFAD grant of USD 0.55 million, Beneficiary contribution of USD 1.74 million and convergence funding USD 13.08 million. Convergence funding will be mainly through MGNREGS funding to Village Development Boards.</p>
11. Are actions likely to be coordinated with partners and the momentum maintained?	Yes the co-ordination is well worked out in the DPR

<p>12. Are there adequate procedures for documenting the progress, lessons learned and impacts of the scaling-up effort?</p>	<p>Yes, the project will engage with a regional entity like the ICAR Regional office for North East to undertake documentation, facilitate cross learning and exchanges, organise regional events for knowledge sharing. Additionally project will have a robust M&amp; E system for regular data collection and analysis; impact studies at baseline and end term and an MIS.</p>
<p>13. Does the project's M&amp;E system track whether the scaling-up process is moving in the right direction, as identified at the design stage?</p>	<p>Yes. It is also proposed to engage a technical agency such as FAO to provide technical guidance and support to the project.</p>
<p>14. How will the information generated by M&amp;E be fed back to key stakeholders and the broader public, and used to make necessary course corrections?</p>	<p>Explained in 8 and 11 above.</p>
<p>15. Have obstacles and risks been identified and addressed through mitigation measures?</p>	<p>Yes as listed in the risk section of the DPR</p>

## Appendix 12: SECAP Review Note

### A. Major landscape characteristics and issues (Social, natural resources, and climate)

96. The project will be implemented in the states of Nagaland and Mizoram, in the North-east region of India. The State of Nagaland was formally inaugurated on December 1, 1963, as the 16<sup>th</sup> State of the Indian Union. It is bound by Assam in the West, Myanmar (Burma) on the east, Arunachal Pradesh and part of Assam on the North and Manipur in the South. The State consists of eleven Administrative Districts, inhabited by 16 major tribes along with other sub-tribes. Each tribe is distinct in character from the other in terms of customs, language and dress; although all tribes belong to the Naga ethnic group. Mizoram is a mountainous region which became the 23<sup>rd</sup> State of the Union in February 1987. It was one of the districts of Assam till 1972, when it became a Union Territory. Flanked by Bangladesh on the west and Myanmar on the east and south, Mizoram occupies an area of great strategic importance in the north-eastern corner of India, having a long international boundary of 722 kms.

97. The Constitution (Seventy-Third Amendment) Act, 1992, which came into force w.e.f. 24<sup>th</sup> April, 1993, inserted Part IX in the Constitution of India and accorded Panchayats a Constitutional status as institutions of local self-governance for rural India. Article 243M (1) of the Constitution exempts Scheduled Areas and Tribal Areas referred to in Clause (1) and (2) of article 244 from application of the provisions of Part IX of the Constitution. However, article 243M (4) (b) empowers the Parliament to legislate and extend the provisions of Part IX to Scheduled Areas and Tribal Areas referred to in clause (1), subject to such exceptions and modifications as may be specified in such law and no such law shall be deemed to be an amendment of the Constitution for the purpose of article 368.

98. The fifth Schedule of the Indian Constitution deals with the administration and control of Scheduled Areas as well as of Scheduled Tribes residing in any State other than the States of Assam, Meghalaya, Tripura and Mizoram. At present, Fifth Schedule Areas exist in 10 States viz. Andhra Pradesh, Chhattisgarh, Gujarat, Himachal Pradesh, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Rajasthan and Telangana.

99. The sixth schedule of the Constitution of India provides for local self-government for the tribal people in the northeast, by making special provisions for the administration of the tribal dominated areas in four states viz. Assam, Meghalaya, Tripura and Mizoram. As per article 244 and 6<sup>th</sup> Schedule, these areas are called "Tribal Areas", which are technically different from the Scheduled Areas under fifth schedule.

100. While both the areas under 5<sup>th</sup> schedule and 6<sup>th</sup> schedule have dominance of the tribal people, the Constitution calls them with different names viz. Scheduled Areas under 5<sup>th</sup> schedule and Tribal Areas under 6<sup>th</sup> schedule. While executive powers of the union extend in Scheduled Areas with respect to their administration in 5<sup>th</sup> schedule; the 6<sup>th</sup> Scheduled Areas remain within executive authority of the state. While 5<sup>th</sup> schedule envisages creation of Tribal Advisory Council, 6<sup>th</sup> schedule provides for District Councils and Regional Councils with certain legislative and judicial powers.

101. Further, article 371A and 371G confer special autonomy provisions for Nagaland and Mizoram, respectively; enhancing the autonomy and power of the Nagaland and Mizoram state legislatures vis-à-vis the Indian Parliament.

102. In Nagaland, the project activities will be implemented in eight out of 11 districts, namely, Mon, Longleng, Zunheboto, Wokha, Kiphire, Phek, Mokokchung and Kohima. In Mizoram, the project activities will be implemented in four out of the eight districts, namely, Kolasib, Serchhip, Mamit and Champhai.

## B. Socio-cultural context

### 1. Nagaland

103. The hilly State of Nagaland is predominantly rural with over 71% of the population living in villages (Census 2011) and a poverty Headcount rate of 19.3%<sup>72</sup> in 2012. The total area of Nagaland is 16,579 sq. km and the total population is 1.98 million with an average population density of 119 per sq km<sup>73</sup>. The sex ratio of the state is 931 females per 1000 males. The literacy rate in the state is 80.11 percent.<sup>74</sup>

104. The state is inhabited by 16 major tribes – *Angami, Ao, Chakhesang, Chang, Kachari, Khiamniungan, Konyak, Kuki, Lotha, Phom, Pochury, Rengma, Sangtam, Sumi, Yimchunger and Zeme-Liangmai (Zeliang)*, as well as sub-tribes. Each of the 16 odd tribes and sub-tribes that dwell in this exotic hill State is unique in character with its own distinct customs, language and dress. They can easily be distinguished by the colourful and intricately designed costumes, jewellery and beads that they adorn. The traditional ceremonial attire of each tribe is in itself, an awe inspiring sight to behold; the multi-coloured spears and *daos* decorated with dyed goats' hair, the headgear made of finely woven bamboo interlaced with orchid stems, adorned with boar's teeth and hornbill's feathers, elephant tusk armlets. In days of yore, every warrior had to earn each of these items through acts of valour, to wear them.

105. Most of the Naga villages are located on hilltops, which make supply of drinking water a challenging task. The percentage of households with an improved drinking-water source<sup>75</sup> is 80.9 percent for rural areas. The percentage of rural households using clean fuel for cooking such as electricity, LPG/natural gas, and biogas is only 14.4 percent. Nagaland has a significant burden of infectious diseases that is closely linked to sanitation and water facilities. Improved sanitation facilities<sup>76</sup> are used by 79 percent of rural households.<sup>77</sup>

### 2. Mizoram

106. Mizoram is an isolated, land-locked state characterized by steep, parallel forested hills with exceptional biological diversity. It has a geographical area of 21,081 sq. km and total population of 1.09 million with an average population density of 52 persons per sq. km. Of the total population of 1,091,014 in Mizoram, almost half i.e. 529,037 (48.49 percent) are living in rural areas and 561,977 (51.52 percent) are living in urban areas. The state has a poverty headcount of 31.1%<sup>78</sup> in 2012. The sex ratio of the state is higher than the national average (976 females per 1000 males as compared to national average of 940 females per 1000 males). The literacy rate in the state is 91.58 percent.<sup>79</sup>

107. About 95% of the current population is of diverse tribal origins who settled in the state, mostly from Southeast Asia, over waves of migration starting about the 16th century but mainly in the 18th century. This is the highest concentration of tribal people among all states of India, and they are currently protected under Indian constitution as a Scheduled Tribe. Of the 15 tribes in the state majority are *Mizos*, but there are also some *Maras, Chakmas, Riangs* and *Bru*. World-renowned for their hospitality, *Mizos* are a close-knit society with no class distinction and no discrimination on grounds of sex. The entire society is knitted together by a peculiar code of ethics '*Tlawmngaihna*' an

---

<sup>72</sup>Government of India, Ministry of DoNER: <http://www.mdoner.gov.in/content/poverty-estimates>

<sup>73</sup> The national average is 382 per sq km.

<sup>74</sup>Census Data, 2011

<sup>75</sup> Piped water into dwelling/yard/plot, public tap/standpipe, tube well or borehole, protected dug well, protected spring, rainwater, community RO plant.

<sup>76</sup> Flush to piped sewer system, flush to septic tank, flush to pit latrine, ventilated improved pit (VIP)/biogas latrine, pit latrine with slab, twin pit/composting toilet, which is not shared with any other household.

<sup>77</sup> National Family Health Survey-4 (2015-16)

<sup>78</sup> Government of India, Ministry of DoNER: <http://www.mdoner.gov.in/content/poverty-estimates>

<sup>79</sup>Census Data, 2011

untranslatable term meaning on the part of everyone to be hospitable kind, unselfish and helpful to others.

108. Although the terrain in Mizoram is difficult, however the percentage of households with an improved drinking-water source<sup>80</sup> is 87.8 percent for rural areas. The percentage of rural households using clean fuel for cooking such as electricity, LPG/natural gas, and biogas is only 29.9 percent. Improved sanitation facilities<sup>81</sup> are used by 73.1 percent of rural households.<sup>82</sup> Women's high workloads are exacerbated by deficiencies in basic water and sanitation services in rural areas. Deficiencies in basic services increase the time and effort expended on household water collection, waste disposal, and family hygiene; women are usually responsible for these duties, which generally constrain the time available for income-earning.<sup>83</sup>

## C. Natural resources and Natural Resource Management

### 1. Nagaland

109. Nagaland has an area of 16,579 sq. km. and inhabits a total population of 1.97 million, which is 0.16 percent of the country's population (Census, 2011).

**Table 1: Nagaland: At a glance**

#	Particulars	Unit	Value
1.	Total Area	Sq. km	16,579
2.	Forest Cover <sup>84</sup>	Sq. km (%)	13,345 (80.49%)
3.	Forest Area	Sq. km (%)	8,629 (52.04%)
4.	Area under Agriculture	Ha	3,89,120
	a. Gross Sown Area	Ha	2,60,000
	b. Net Sown Area	Ha	2,48,354
	c. Area Sown More than Once	Ha	9,000
5.	Area under Irrigation		
	a. Irrigated Area	Ha	66,000
	b. Net Irrigated Area	Ha	62,000
6.	Area under Shifting Cultivation	Ha	123,909 <sup>85</sup>
7.	No. of Cultivators	in lakh	5.444
8.	No. of Agricultural labourers	in lakh	0.338
9.	No. of families practicing Shifting Cultivation		1,16,046

**Source:** Official web page of the GoN, updated 18/March/2014 (accessed at: <https://www.nagaland.gov.in/portal/portal/StatePortal/AboutNagaland/NaturalResources>)

110. *Jhum* is the predominant farming system in the highlands across the State of Nagaland and the principal source of rural livelihoods<sup>86</sup> with nearly 97% of the villages practising *Jhum*. In addition to

<sup>80</sup> Piped water into dwelling/yard/plot, public tap/standpipe, tube well or borehole, protected dug well, protected spring, rainwater, community RO plant.

<sup>81</sup> Flush to piped sewer system, flush to septic tank, flush to pit latrine, ventilated improved pit (VIP)/biogas latrine, pit latrine with slab, twin pit/composting toilet, which is not shared with any other household.

<sup>82</sup> National Family Health Survey-4 (2015-16)

<sup>83</sup> Human Development Report. 2011

<sup>84</sup> The forest cover includes all lands which have a tree canopy density of 10 percent & above and a Minimum Mapping Unit (MMU) of one hectare. The forest cover reported in the ISFR does not make any distinction between the origins of forest stand (whether natural or man-made) or tree species; and encompasses all types of lands irrespective of their ownership, land use and legal status. Thus, all areas bearing tree species including bamboos, orchards, coconut, palm, etc. within recorded forest, private, community or institutional lands meeting the above defined criteria have been termed as forest cover (India State of Forest Report, FSI, 2015).

<sup>85</sup> Kuotsuo, R. et al., 2014. Shifting Cultivation: An 'Organic Like' Farming in Nagaland. *Indian Journal of Hill Farming*, December, 27(2), pp. 23-28.

<sup>86</sup> Over 97% villages in Nagaland practice *Jhum*, the few exceptions being in Dimapur, Kohima, Mokokchung and Wokha. In more than 50% villages, 50% or more households practice *Jhum* and about 85% villages have more than 25% households engaged in *Jhum*.

*Jhum*, wet terraced paddy is cultivated on hill terraces using the traditional *Zabo*<sup>87</sup> systems of harnessing rainwater runoff, mainly in Phek inhabited predominantly by the Chakhesang tribe and to a lesser extent in Kohima and Wokha districts. Horticulture and spice cultivation on a small scale as a source of cash through trade within and outside the State and livestock rearing (mainly pig fattening and backyard poultry) supplement rural livelihoods.

111. The land-use statistics of Ministry of Agriculture (2012-13) highlight the patterns as: recorded forest area (52.24%), net area sown (23.02%), land not available for cultivation (5.76%), land under miscellaneous tree crops and groves (5.67%), culturable wasteland (4.26%), fallow lands other than current fallows (6.02%), current fallows (3.03%)<sup>88</sup>.

**Table 2(a): Land Use Pattern of Nagaland**

Land use	Area in '000 ha	Percentage
Total Geographical Area	1,658	
Reporting area for land utilization	1,652	100
Forests	863	52.24
Not available for cultivation <sup>89</sup>	95	5.76
Permanent pastures and other grazing lands	0	0
Land under Misc. Tree crops and groves	94	5.67
Culturable wasteland <sup>90</sup>	70	4.26
Fallow lands other than current fallows <sup>91</sup>	99	6.02
Current fallows <sup>92</sup>	50	3.03
Net Area Sown <sup>93</sup>	380	23.02

**Source:** Land use Statistics, Ministry of Agriculture, GOI, 2012-13

112. The total forest cover in the state is 12,966 sq. km.<sup>94</sup>, along with a tree cover of 381 sq. km. (India State of Forest Report, 2015). The forest cover is 78.21 percent of the total area of Nagaland. The distribution of forest cover is illustrated in Figure 2(a) (Annex 1). The India State of the Forest Report (2015) reports a decrease in forest cover in all districts of Nagaland, except Mon. As reported, the main reasons for decrease in forest cover are shifting cultivation and other biotic pressure on forest lands. As such, forests represent the richest natural resource of the State. Nagaland is also very rich in biodiversity with abundance of animal, insect and plant species. The State has a wealth of herbal, medicinal and aromatic plants with tremendous economic potentials.

113. Nagaland is largely a mountainous state. The Naga Hills rise from the Brahmaputra Valley in Assam to about 2,000 feet (610 m) and rise further to the southeast, as high as 6,000 feet (1,800 m). Mount Saramati at an elevation of 3,841 metres is the state's highest peak. This is where the Naga Hills merge with the Patkai Range in which form the boundary with Burma. Rivers such as the Doyang and Diphu to the north, the Barak river in the southwest, dissect the entire state. The large tracts of

<sup>87</sup>*Zabo* or *Ruza* literally means impounding water and is an indigenous system of harvesting rainwater in practice for centuries as an integral part of the farming system based on upland terraced rice cultivation. It includes maintaining a forest cover in the catchment upstream of the rice terraces, a water storage pit/pond, channels to guide the runoff from the forest and canals to transport the water from the *Zabo* to paddy terraces. It is practiced predominantly by the Chakhesang tribe, known for their highly developed terrace making skills.

<sup>88</sup>India State of Forest Report, 2015

<sup>89</sup>This includes forest area under non-Agriculture use, barren and uncultivable land.

<sup>90</sup> All lands available for cultivation, whether not taken up for cultivation or taken up for cultivation once, but not cultivated during the current year and the last five years or more in succession for one reason or the other. Such lands may be either wholly or partly covered with shrubs and jungles, which are not put to any use. Land once cultivated but not cultivated for five years in succession are also included in this category.

<sup>91</sup> All lands, which are taken up for cultivation but are temporarily out of cultivation for a period of not less than one year and not more than five years.

<sup>92</sup> Cropped area, which are kept fallow during the current year but was cultivated in the previous year. For example with any seeding area is not cropped in the same year, it may be treated as current fallow.

<sup>93</sup> Total area sown with crops and orchards; counting area sown more than once in the same year, only once.

<sup>94</sup> The total forest cover of Nagaland is further distributed as: 1,296 sq. km. of very dense forest, 4,695 sq. km. of moderately dense forest, 6,975 sq. km. of open forest and 622 sq. km. of scrub.

total land area of the state under forest cover act as a haven for flora and fauna. The evergreen tropical and the sub-tropical forests are found in strategic pockets in the state.

114. The tropical and sub-tropical evergreen forests of Nagaland consist of a variety of flora — including palms, bamboo, rattan as well as timber and mahogany forests. While some forest areas have been cleared for *jhum* cultivation, many scrub forests, high grass, reeds; secondary dogs, pangolins, porcupines, elephants, leopards, bears, many species of monkeys, sambar, harts, oxen, and buffaloes thrive across the state's forests. At times, there have been incidences of human-wildlife conflict in the state. The great Indian hornbill is one of the most famous birds found in the state. Blyth's tragopan, a vulnerable species of pheasant, is the state bird of Nagaland. It is sighted in Mount Japfü and Dzükou Valley of Kohima district, Satoi range in Zunheboto district and Pfütsero in Phek district. Of the mere 2500 tragopans sighted in the world, Dzükou valley is the natural habitat of more than 1,000.

115. The state is also known as the "falcon capital of the world." Rhododendron is the state flower. The state has at least four species which is endemic to the state. *Mithun* (a semi domesticated gaur) found only in the north-eastern states of India, is the state animal of Nagaland and has been adopted as the official seal of the GoN. It is ritually the most valued species in the state. To conserve and protect this animal in the northeast, the National Research Centre on Mithun (NRCM) was established by the Indian Council of Agricultural Research (ICAR) in 1988.

116. Nagaland has four main rivers, namely, Doyang, Dhansiri, Dhiku, and Tizu. Of these, the first three flow towards the west through Assam plains, to join the mighty Brahmaputra, while Tizuriver flows towards the east and south-east, and pours into the Irrawady in Myanmar. The Barak, itself a tributary of Brahmaputra, also drains a small area in Peren district. The drainage map of Nagaland is presented in Figure 3, Annex 1.

117. The state comprises of four agro-climatic zones, namely, (i) Hot per-humid climate (ii) Hot moist sub-humid climate (iii) Warm humid climate, and (iv) Warm per-humid climate.

118. The soils of Nagaland belong to 4 orders, 7 sub-orders, 10 great groups, 14 sub-groups and 72 soil families. The 4 orders found in Nagaland are: (i) Alfisols (ii) Entisols (iii) Inceptisols and (iv) Ultisols. Inceptisols<sup>95</sup> dominate the soils of the State with 66% followed by Ultisols<sup>96</sup> 23.8%, Entisols<sup>97</sup> 7.3% and Alfisols<sup>98</sup> 2.9% of the total 16.6 million Hectares of the State Geographical area. The soil map of the state is presented in Figure 4, Annex 1.

119. Mountains are among the most fragile environments on Earth. The hilly topography, heavy seasonal rains, and the traditional farming practices lead to heavy soil erosion. Soil erosion due to heavy rain leads to increased acidity of soils because Calcium, Magnesium, and Sodium minerals are washed out from soils and at the same time mineral like Iron, Copper and Aluminium in the soil becomes toxic to plants. The mineral imbalance leads to reduced Phosphorus availability to the plant affecting the growth of rice plant. In 2008, the Indian Council of Agricultural Research (ICAR) estimated that without any soil conservation measures, the soil loss in *jhum* cultivation area will be about 40-90 tons per hectare (ICAR Complex, NER, Shillong).

---

<sup>95</sup>**Inceptisols** are a soil order in USDA soil taxonomy. They form quickly through alteration of parent material. These are usually the weakly developed young soil, though they are more developed than *entisols*. They have no accumulation of clays, iron oxide, aluminium oxide or organic matter. They have an *ochric* or *umbric* horizon and a *cambic* sub-surface horizon.

<sup>96</sup>**Ultisols** are highly weathered forest soil, which tend to be reddish in colour because of residual iron and aluminum oxides in the horizon. The increased precipitation in *ultisol* regions means greater mineral alteration, more leaching, and therefore, a lower level of fertility. Fertility is further reduced by certain agricultural practices and the effect of soil damaging crops such as cotton and tobacco. These soils need substantial management.

<sup>97</sup>**Entisols** are usually young or underdeveloped, lack vertical development of horizons. These are less fertile soils.

<sup>98</sup>**Alfisols** are pale, grayish brown to reddish in colour with moderate-to-high reserves of basic cations and are fertile. However, their productivity depends on moisture and temperature. They are supplemented by the moderate application of lime and other chemical fertilizers.

## 2. Mizoram

120. Mizoram has an area of 21,081 sq. km. and inhabits a total population of 1.09 million, which is 0.09 percent of the country's population (Census, 2011).

121. In Mizoram, Agriculture and allied sector account for 16% of the State GDP but support 60% of the population. 9.84% of the total land is under fallow conditions and 4.47% is under net sown area. Only 3% of land is suitable for paddy cultivation. Overall, the people are highly dependent on natural resources, mainly forests, for their livelihood. Mizoram has a forest cover of 18,748 sq. km., the highest cover in the country in terms of percentage area (88.93%) under forests (India State of Forest Report, 2015). *Jhuming* is the pre-dominant land use system which covers 63% of the total cropped area. With reduction in *Jhum* cycles the systems suffer from low productivity, soil erosion, water scarcity, biodiversity loss and fragmentation of forest cover, thereby heightening vulnerability of rural households to climate change. This necessitates better and more efficient management of *Jhum* while simultaneously promoting settled agriculture.

122. The land-use statistics of Ministry of Agriculture (2012-13) highlight the patterns as: recorded forest area (75.71%), net area sown (5.54%), land not available for cultivation (4.54%), land under miscellaneous tree crops and groves (1.96%), culturable wasteland (0.32%), fallow lands other than current fallows (9.27%), current fallows (2.41%)<sup>99</sup>.

**Table 2(b): Land Use Pattern of Mizoram**

Land use	Area in '000 ha	Percentage
Total Geographical Area	2,108	
Reporting area for land utilization	2,094	100
Forests	1,585	75.71
Not available for cultivation	95	4.54
Permanent pastures and other grazing lands	5	0.25
Land under Misc. Tree crops and groves	41	1.96
Culturable wasteland	7	0.32
Fallow lands other than current fallows	194	9.27
Current fallows	50	2.41
Net Area Sown	116	5.54

**Source:** Land use Statistics, Ministry of Agriculture, GOI, 2012-13

123. The total forest cover in the state is 18,748 sq. km<sup>100</sup>, along with a tree cover of 535 sq. km. (India State of Forest Report, 2015). The forest cover is 88.93 percent of the total area of Mizoram. The distribution of forest cover is illustrated in Figure 2(b) (Annex 1). The India State of the Forest Report (2015) reports a decrease in forest cover in all districts of Mizoram.

124. Tropical Semi Evergreen, Tropical Moist Deciduous, Subtropical Broadleaved Hill and Subtropical Pine Forests are the common vegetation types found in Mizoram. Bamboo is common in the state, typically intermixed with other forest vegetation; about 9,245 km<sup>2</sup> (44%) of state's area is bamboo bearing.

125. Perching on the high hills of North Eastern corner, Mizoram is a storehouse of natural beauty with its endless variety of landscape, hilly terrains, meandering streams deep gorges, rich wealth of flora and fauna. Almost all kinds of tropical trees and plants thrive in Mizoram. The hills are marvellously green. The state has two national parks and six wildlife sanctuaries - Blue Mountain (Phawngpui) National Park<sup>101</sup>, Dampa Tiger Reserve<sup>102</sup> (largest), Lengteng Wildlife Sanctuary<sup>103</sup>,

<sup>99</sup>India State of Forest Report, 2015

<sup>100</sup> The total forest cover of Mizoram is further distributed as: 138 sq. km. of very dense forest, 5,858sq. km. of moderately dense forest and 12,752 sq. km. of open forest.

<sup>101</sup>Phawngpui National Park is located in the *Lawngtlai* district.

<sup>102</sup>Dampa Tiger Reserve is within *Manit* District.

<sup>103</sup>Lengteng Wildlife Sanctuary is located in the *Champhai* district.

Murlen National Park<sup>104</sup>, Ngengpui Wildlife Sanctuary<sup>105</sup>, Tawi Wildlife Sanctuary<sup>106</sup>, Khawnglung Wildlife Sanctuary<sup>107</sup>, and Thorangtlang Wildlife Sanctuary<sup>108</sup>.

126. Mizoram has the most variegated hilly terrain in the eastern part of India. The hills are extremely rugged and steep and are separated by rivers which flow either to the north or the south creating deep gorges between the hill ranges. Mizoram is a land of rolling hills, rivers and lakes. As many as 21 major hills ranges or peaks of different heights run through the length and breadth of the state with the highest peak 'Phawngpui (Blue Mountain) towering 2,065 metres above the sea level. The average height of the hills to the west of the state is about 1,000 metres.

127. Mizoram terrain is, according to Geological Survey of India, an immature topography, and the physiographic expression consists of several almost North-South longitudinal valleys containing series of small and flat hummocks, mostly anticlinal, parallel to sub-parallel hill ranges and narrow adjoining synclinal valleys with series of topographic highs. The general geology of western Mizoram consists of repetitive succession of Neogene sedimentary rocks of Surma Group and Tipam Formation viz. sandstone, siltstone, mudstone and rare pockets of shell limestone. The eastern part is Barail Group. Mizoram, lies in seismic zone V, according to the India Meteorological Department; as with other northeastern states of India, this means the state has the highest risk of earthquakes relative to other parts of India.

128. The biggest river in Mizoram is Chhimtuipui, also known as Kaladan, Kolodyne or Chhimtuipui. It originates in Myanmar, four tributaries and the river is in patches. The Western part is drained by Karnaphuli (Khawthlangtuipui) and its tributaries. A number of important towns including Chittagong in Bangladesh is situated at the mouth of the river. Before Independence, access to other parts of the country was possible only through the river routes via Cachar in the north, and via Chittagong in the South. Entry through the later was sealed when the Sub-continent was partitioned and ceded to E. Pakistan (now Bangladesh) in 1947.

129. Although many rivers and streamlets drain the hill ranges the most important and useful rivers are the Tlawng (also known as Dhaleswari or Katakhal), Tut (Gutur), Tuirial (Sonai) and Tuivawl which flow through the northern territory and eventually join river Barak in Cachar district. The rivers have a gentle drainage gradient particularly in the south.

130. Lakes are scattered all over the state, but the most important of them are Palak, Tamdil, Rungdil; and Rengdil. The Palaklake is the biggest in Mizoram, is situated in Chhimtuipui district in southern Mizoram and covers an area of 30 Ha. It is believed the lake was created as a result of an earthquake or a flood. The local people believe a village which was submerged still remains intact deep under the waters.

131. The Tamdillake is a natural lake situated 85 kms from Aizawl. Legend has it there was once a huge mustard plant in this place. When the plant was cut off, jets of water sprayed from the plant and created a pool of water, and thus the name Tamdil which means of 'Lake of Mustard Plant'. Today, the lake is an important tourist attraction and a holiday resort.

132. The most significant lake in Mizo history, RihDil, is ironically located in Burma, a few kilometres from the Indo-Burma border. It was believed that the departed souls pass through this lake before making their way to Pialral or heaven. Mizoram is also called as peninsula state, as it has three sides covered with international land and one side covered with domestic land.

133. Due to its geo-climatic condition, the entire state is one of the most hazard prone states in the country. The state is annually swept by cyclonic storms, cloudbursts, hailstorms and landslides. To

---

<sup>104</sup>Murlen National Park is located in the *Champhai* district.

<sup>105</sup>Ngengpui Wildlife Sanctuary is located in the *Lawngtlai* district.

<sup>106</sup>Tawi Wildlife Sanctuary is located in the *Aizawl* district.

<sup>107</sup>Khawnglung Wildlife Sanctuary is located in *Lunglei* district.

<sup>108</sup>Thorangtlang Wildlife Sanctuary is located in *Lunglei* district.

make matters worse, the State falls under Seismic Zone V, and thus liable to be hit by strong earthquakes. Small tremors are felt every now and then in and around the state.

## **D. Climate**

### **1. Nagaland**

134. Nagaland has a largely monsoon climate with high humidity levels. Annual rainfall averages around 70–100 inches (1,800–2,500 mm), concentrated in the months of May to September. Temperatures range from 21°C to 40°C. In winter, temperatures do not generally drop below 4°C, but frost is common at high elevations. The state enjoys a salubrious climate. Summer is the shortest season in the state that lasts for only a few months. The temperature during the summer season remains between 16°C to 31°C. Winter makes an early arrival and bitter cold and dry weather strikes certain regions of the state. The maximum average temperature recorded in the winter season is 24°C. Strong north-west winds blow across the state during the months of February and March.

### **2. Mizoram**

135. Mizoram has a pleasant climate. The upper part of the hills are predictably cold, cool during the summer, while the lower reaches are relatively warm and humid. It is generally cool in summer and not very cold in winter. During winter, the temperature varies from 11°C to 21°C and in the summer it varies between 20°C to 29°C. Storms break out during March-April, just before or around the summer.

136. The entire area is under the direct influence of the monsoon. It rains heavily from May to September and the average rainfall in Aizawl is 208 cm. Winter in Mizoram is wonderfully blue, and in the enchanting view of wide stretches of a vast lake of cloud. Mizoram receives an average annual rainfall of 2500 mm and is categorized as high risk region with higher degree of climate variability resulting in floods and droughts.

137. Taken all in all, Mizoram is made up of wooded hills, swift flowing rivers quicksilver streams and still lakes, the combination of all this is a rarity. It is the combination of these physical features that has given Mizoram its own charm and fascination.

## **E. Potential project's social, environmental, and climate change impacts and risks**

138. **Key potential impacts:** Shifting cultivation is prevalent in all the north-eastern states. Ecologically, these regions are far worse than realized. Apart from losing vegetation and biomass due to the practice of shifting cultivation, many other ecological factors too have been affected. Due to shifting cultivation practice on slopes, down-stream siltation of the water bodies is apparent in many districts. Protection and repair of drainage basins for conservation of ecological resources, including water, need large amounts of financial input. The shifting cultivation areas normally receive moderate to high rainfall. Due to splash forces generated from the rain drops, the erosion of precious top soil occurs. Thus, the major factors which influence the rate of soil erosion are rainfall, topography of the terrain, and the kind of vegetation and soil conditions.<sup>109</sup>

139. The traditional and primary agricultural practice of *jhum* in the two states of Nagaland and Mizoram is built around utilizing the heavy monsoonal rainfall. Scanty rainfall and inadequate natural or artificial storage/harvesting facilities for rain water imply that the cultivation during the Rabi season is insignificant.

140. The project places emphasis on increasing the household agricultural income of rural highland communities in Nagaland and Mizoram, and enhancing their resilience to climate change. Implementation of the project will have several positive impacts on the social and natural environment, namely, reduced soil erosion, soil and rainwater conservation, restored soil fertility, and regeneration of biomass. The project has been conceived to increase the environmental sustainability and

---

<sup>109</sup>Singh, J. S. *et al.*, in *Eco-Development Guidelines and Model of Development of the Central Himalaya*, Department of Botany, Kumaun University, Nainital, 1986, p. 48.

profitability of farming systems practiced by the highland farmers in eight districts of Nagaland and four districts of Mizoram. The project approach is predicted to enhance farmers' income, while at the same time improve soil productivity and reduce forest/soil degradation, and doing this in a way that builds resilience to climate vulnerability. In conclusion, in order to reduce these climate-related vulnerabilities, as well as the risk of promoting maladaptive activities, it is important to consider the following responses.

141. The following table summarises possible negative environmental and climate change impacts during project implementation, as well as steps to address these, for inclusion in the project document.

**Table 3: Project potential environmental and CC impacts and proposed response measures**

Potential project impacts	Measures to address the impacts
Improved profitability of farming could provide incentives for increased use of pesticides and fertilizers, which may adversely impact on soil fertility, water quality and air pollution which would further impact on health of humans, livestock and other animals	In Nagaland, organic farming is in practice and will be promoted under the proposed project as well. In Mizoram, fertilizer and pesticide application will be in doses too low to cause environmental harm. <i>Jhum</i> is a form of naturally organic farming as farmers do not use pesticides or fertilizers (burning of trees provides necessary potash to the soil). Promotion of IPM for pest control. Integrated approach to farming, inclusive of crop rotation, cover crops, mulches, etc. to maintain soil fertility. Promotion of crop farming along with trees
Improved profitability from farming may provide incentives for organised, unsustainable, over-exploitation of available forest and water resources, which may further constrain the available natural resource base.	Assess economic, environmental and social costs and benefits of adaptation responses based on a thorough analysis of available downscaled climate projections. Define practical criteria in determining how specific climate adaptation interventions are promoted to reduce current and expected risk levels cost-effectively. Invest in off-farm livelihood diversification. Invest in agroforestry and denotification of species to facilitate planting them and using them as commercial species Invest in expanding the community conserved areas and forests as a result of the participatory land use planning and higher environmental awareness Managed conversion from <i>Jhum</i> to settled agriculture
Increased inequality amongst the rural population as a fallout of missing out on proper implementation of the ideal targeting approach as envisaged in project design	Stringent monitoring of the project implementation, esp. the selection of target households (focusing on the poorest households, landless, and agricultural labourers). Promote communitarian systems of resource governance embedded in the cultural ethos and customs of the highland communities in the two States. Work through existing village level institutions, i.e. Village Councils (VCs) in Nagaland and Mizoram, and the line departments to build capacity and commitment to climate risk management, rather than build project specific institutions to avoid duplication and conflict, and ensure institutional sustainability of climate response.
Increase in <i>Jhum</i> cycles may also be affected by degradation and over-exploitation of forests, including fire and overgrazing	Invest in sustainable forest management, afforestation and reforestation, fire breaks, social fencing, community forest management of NTFP, grazing management, promotion of alternative energy sources for cooking, food processing and product development
Landslide and seismic risks are not properly assessed prior to the construction/improvement of agri-link roads and construction of collection centres for farm produce	Conduct an environmental assessment prior to the construction/ improvement of roads/ buildings that would take into consideration natural and climate risks as well as environmental and social safeguards

## F. Climate change and adaptation

142. The climate change and adaptation related parameters are first discussed for Nagaland in this section, followed by Mizoram later on.

### 1. Nagaland

143. The Indian Network for Climate Change Assessment (INCAA) in its report 'Climate Change and India: A 4X4 Assessment - A sectoral and regional analysis for 2030s' for the purpose of observed climate and climate change projections classifies the country into four regions – the Himalayan region, the North-Eastern region, the Coastal region and the Western Ghats. The Nagaland state, with most of its landmass part of the North-Eastern Hills, falls within the Himalayan and the North Eastern region. The trend of projections for both the regions is similar, as indicated in the table below.

**Table 4: Projected climate change parameters in 2030s with respect to 1970s**

Features		Himalayan/North Eastern Region
Temperature		Increase
Precipitation		Increase
Extreme Temperature		Increase
Extreme Precipitation	Intensity	Increase
	Number of Rainy Days	Increase

**Source:** Climate Change and India: A 4X4 Assessment - A sectoral and regional analysis for 2030s, MOEFCC, GOI, 2010

48. Specifically, the projections for climate change for the North-Eastern region by the Indian Network for Climate Change Assessment in its report 'Climate Change and India: A 4X4 Assessment', are summarised below:

- a. **Precipitation:** The projected mean annual rainfall is varying from a minimum of 940±149mm to 1330 ±174.5 mm. The increase with respect to 1970's is by 0.3% to 3%. The north-east also show a substantial decrease in rainfall in the winter months of January and February in 2030's with respect to 1970's with no additional rain projected to be available during the period March to May and October to December. In fact, recent data indicates the same pattern. However, the monsoon rainfall during June, July and August is likely to increase by 5 mm in 2030's with reference to 1970's, a rise of 0.6%.
- b. **Annual Surface Temperature:** Surface air temperature is projected to rise by 25.8 to 26.8°C in 2030's with a standard deviation ranging from 0.8 to 0.9. The rise in temperature with respect to 1970's is ranging from 1.8 to 2.1°C.

144. **Extreme Precipitation:** The frequency of rainy days is projected to be more and there will be an increase in intensity of rainy days by 2-12% in 2030s.

145. **Observed Trends in Climate.** (Figures 5-6, Annex 2).Indian Institute of Science (IISc), Bangalore<sup>110</sup> has analysed the climate change trends for Nagaland, at the district level, using temperature and rainfall as the key climate variables for analysis. In summary, the observations are:

146. As part of the study, the high resolution (0.5° x 0.5° lat. and long.) daily gridded rainfall dataset for a period of 35 years (1971–2005) provided by Indian Meteorological Department (IMD) was analysed to understand the precipitation trends. The analysis focused on the monsoon season as more than 95 percent of precipitation falls over Nagaland during that period. For temperature trends, the Climatic Research Unit Time Series (CRU TS) version 2.10 on a 0.5° lat x 0.5° long resolution monthly dataset spanning 102 years (1901-2002) were used. District-wise data was obtained by re-gridding the dataset to 0.1° lat. x 0.1° long and re-aggregating by the districts to study the climate variability at district level.

147. **Observed Precipitation Trends:** A majority of districts of Nagaland experienced an increase in monsoon precipitation in the past 100 years (Figure 5, Annex 2). However, Wokha showed a

<sup>110</sup> Prof. Ravindranath of Indian Institute of Science and his team carried out this study, and were sponsored by the GIZ/KfW.

decrease in precipitation of 0.26 mm/day. The precipitation trend shows high variability with Zunheboto (4.67 mm/day) and Tuensang (3.96 mm/day) showing a high increase in precipitation.

148. **Observed Temperature Trends:** The analysis of temperature records for Nagaland shows a steady warming trend in both the minimum and maximum temperatures, over the past 100 years. The districts of Wokha, Zunheboto, Tuensang and Phek have registered an increase in minimum temperature of more than 1.6°C. The minimum temperature in Mon has increased by about 1.4°C (Figure 6(a), Annex 2). The maximum temperature also shows an increasing trend all across Nagaland (Figure 6(b), Annex 2). The maximum temperature in the district of Wokha has increased by 1.17°C, and in Phek the increase in maximum temperature is of the order of 1.1°C. The northern districts, in comparison, have experienced a smaller increase in absolute value of maximum temperature. For example in Mon the maximum temperature has increased by 0.57°C, in Zunheboto by 0.69°C, and in Tuensang the maximum temperature has increased by 0.77°C respectively. Overall, the trend of last 100 years shows that increase in minimum temperature is slightly higher in absolute terms than the increase in maximum temperature.

149. The observed district wise trends in minimum and maximum temperature during the period 1901 and 2002 and precipitation during the period 1971 and 2005 are summarised in the table below. As can be seen, information for Kohima (which includes Peren and Dimapur district, carved out of it during the past decade and a half) and Mokokchung is not available for the period, and is, therefore, a limitation.

**Table 5: Summary of the observed trends in temperature and precipitation**

District	Change in precipitation (1971-2005)	Change in Minimum Temperature (1901-2002)	Change in Maximum Temperature (1901-2002)
Mon	+2 - 3 mm/day	+1.4°C	+0.57°C
Tuensang <sup>^</sup>	+3 - 4 mm/day	+1.6°C	+0.77°C
Mokokchung	No data	No data	No data
Wokha	Negative change	+1.6°C	+1.17°C
Zunheboto	>4mm/day	+1.6°C	+0.69°C
Phek	1 - 2 mm/day	+1.6°C	1.1°C
Kohima	No data	No data	No data

**Note:** <sup>^</sup> Includes Longleng, Kiphire

150. **Climate Change projections.** The projections for various climate parameters for the state of Nagaland are summarized in this section.

151. **Temperature:** In the mid-century (2020-2050), the state is projected to experience an increase in annual average temperature between 1.6°C and 1.8°C (Figure 7(a), Annex 2). Southern districts show higher increase in temperature, with Kohima, Wokha, Phek, Zunheboto and Tuensang showing an increase in temperature between 1.7°C and 1.8°C. The Northern districts of Mon and Mokokchung are projected to have an increase in average temperature of between 1.6°C and 1.7°C.

152. **Precipitation:** The total annual rainfall in Nagaland within the same period is projected to increase state-wide (Figure 7(b), Annex 2). The southern districts of Nagaland are likely to receive higher rainfall with respect to the northern districts. The southern districts of Kohima, Zunheboto, and Phek are projected to obtain more than 20 percent increase in rainfall with respect to base line. Wokha and Tuensang are projected to receive an increase in precipitation by 15 percent and 20 percent. The northern most districts of Mon and Mokokchung are projected to receive an increase in precipitation of between 10 percent and 20 percent. A gradient decrease in precipitation is projected as the latitude increases.

153. **Extreme Precipitation:** Increase in extreme rainfall events (100 mm/day) is projected in some districts of the state. Phek, Tuensang, and Kohima are projected to experience an increase in extreme rainfall events of 2 or more days per year. These are the same districts that exhibited an increase in

absolute value of rainfall as well. The northern districts of Zunheboto, Wokha, Mon, Mokokchung all exhibit less than 2 days increase in extreme events per year.

154. Heavier precipitation during monsoon will manifest itself into higher surface runoffs, higher frequency of landslides, higher soil erosion and hence heavier silt load in the rivers leading to frequent meandering of rivers and river bank erosion. The higher run-offs may lower the recharge capacity of soils in and around the spring heads of perennial springs, damage existing water storage structures built in the hills, lead to loss in soil minerals, and may make non-landslide prone areas also prone to landslides. Erratic and heavy rains also lead to frequent landslides and damages to irrigation infrastructure, affecting agricultural activities in the command area.

155. **Droughts and Floods:** Increase in moderate drought like condition (onset of drought) is projected for Nagaland during 2021-2050s, with northern states facing more drought weeks than the southern states. The drought weeks across Nagaland are likely to increase by 25-50 percent in 2021-2050s with respect to current base line scenario. The projections also indicate higher flood discharge in the southern districts of Phek and Kohima, an increase of 10 - 25 percent more flood discharge is likely to take place with respect to current discharge rates in these districts.

156. The climate projections for the state are summarized in the table below.

**Table 6: Climate projections for Nagaland in 2021-2050**

Climate parameter	Districts	Projected Change in 2021-2050s with respect to base line (1961-1990)
Temperature	Kohima, Wokha, Phek, Zunheboto and Tuensang,	+ 1.7-1.8°C
	Mon, Longleng and Mokokchung	+1.6°C-1.7°C
Precipitation	Kohima, Zunheboto, and Phek	+20%
	Wokha and Tuensang	+15-20%
	Mon, Longleng and Mokokchung	+10-20%
Extreme rainfall (>100 mm/day)	Phek, Tuensang, Kohima	>2 or more days
	Zunheboto, Wokha	1.0 – 2.0 days
	Mon, Mokokchung	0 – 1.0 days

157. **Agricultural vulnerability profile.** Agricultural vulnerability assessment for Nagaland is presented in the Nagaland State Action Plan on Climate Change (SAPCC). Indicators for agricultural vulnerability assessment were selected based on the dynamics of the region and data availability such as rainfall variability, area under rain-fed crops, rural population density, net sown area, area under high yielding crop varieties, amount of fertilizers and manure used, groundwater availability, mean crop yields, etc. These indicators were quantified mostly with data from secondary sources across districts and at the state level. Further, for the future scenario, the same set of indicators was estimated, incorporating simulation trials for crop yield function. The assessment representing the year 2010 has been referred to as the 'baseline'. With the same set of indicators, impact projections for the short-term (2021-2030) incorporating the outputs of climate model projections are assessed. The vulnerability profiles for the agricultural sector are developed for the two scenarios namely baseline/current scenario and A1B scenario, a moderate climate scenario. Figure 8 shows district-wise agricultural vulnerability profile of Nagaland for baseline as well as A1B scenario. Out of the 8 districts considered, Tuensang, Wokha, Mon, Mokokchung, Phek and Zunheboto districts fall in the highly vulnerable to moderately vulnerable category. For climate impacted scenario, the district Tuensang is very highly vulnerable.

158. **Projected Impact of Climate Change on Forests and Biodiversity.** (Figure 9-10, Annex 2).The change in rainfall pattern changes, humidity and temperature increases and larger number of extreme events, leads to a higher projected Net Primary Productivity (NPP)<sup>111</sup> figures for the forests in

<sup>111</sup> **Net Primary Productivity** (NPP) is the amount of carbon uptake after subtracting *Plant Respiration* (RES) from *Gross Primary Productivity* (GPP). GPP is the total rate at which the ecosystem captures and stores carbon as plant biomass, for a given length of time.

Nagaland. Various factors, as discussed in the previous section, leading to greater human interference in eco-systems and modelling results using the biophysical vegetation model IBIS with climate scenario inputs from PRECIS from the study carried out by Ravindranath of Indian Institute of Science (IISc), Bengaluru indicate that of the 515 forested grids of 50kmx50km resolution covering Nagaland forests, only 16.7 percent of those grids will be impacted by climate change in the short-term period of 2030s and undergo change in vegetation type in Mid Century (MC) period (2021-2050) due to changes in observed climate with respect to baseline (BL) period (1961-1990). The grids corresponding to the likely change in the forest types correspond to the western region of Mon district, northern region of Tuensang and north-eastern region of Mokokchung.

159. Climate change is also likely to aggravate human induced pressures on eco-systems leading to progressive biodiversity decline. However, there is insufficient understanding at the moment on the exact nature of the complex interactions of various pressures and the responses of ecosystems and the time span over which these will play out. Species extinction at the local level is a cause of concern as it can reduce societal options for adaptation. For the mountain regions in the state, it is expected as experienced in other mountains that, with current level of increase in mean annual temperature over various parts of the Himalayas, an upward movement of plants is expected (INCCA Report #2).

160. With a vast majority of the population dependent on agriculture and natural resources for livelihoods, changes in natural resource base due to climate change will affect livelihood of rural households directly. Conversely, the high dependence of livelihoods on natural resources, especially forest produce, also puts a question mark on the sustainability of the resource use. It is, therefore, important to climate-proof livelihoods of those who are dependent on natural resources, and make the resource use by them more sustainable, reducing their carbon footprint. A shift away from natural resource usage may not be an appropriate strategy in view of the vast land resources, with a low population density of 119 persons per sq. km.

161. Climate change impacts on livelihoods can arise out of crop failures due to delayed or erratic monsoonal rainfalls, loss of harvest due to flash floods and landslides, shift from self-employment to wage labour as agriculture productivity gets affected, increase in labour requirements to harness water due to drying up sources, etc. Shift in forest vegetation, biodiversity and cover will also have positive or negative impact on the livelihood of local communities. As demonstrated in the study conducted by Indian Institute of Science, geographically, the rural and urban households in Tuensang, Kiphire, Longleng and Mon are more vulnerable to climate change than the other districts.

## 2. Mizoram

162. A study by remote sensing center in Mizoram that tracks climatic parameters (namely rainfall, temperature and humidity) of Aizawl City for a period of twenty years (1986-2005) in Aizawl city has been summarised below. The data were compared and analyzed for two decades taking an average data for 10 years interval as well as 5 years interval to arrive at brief conclusive results on the overall climate change in Mizoram.

- a. **Rainfall:** The Pattern of rainfall in Mizoram during the past 20 years, i.e. from 1986 to 2005 follows the usual expected trend in which maximum downpour occurred during the monsoon seasons and declines during the rest of the seasons. However, when analyzed on a yearly basis the trend shows a gradual decline and then a sudden increase from 1990 to 1995. In fact, during the span of the 20 years study period, 1995 recorded the highest rainfall of 3185.98 mm whereas 1994 had the lowest rainfall with a measure of 2278.29 mm only. From here onwards, the trend does not show either a sharp increase or decrease in rainfall.

When analyzed on an average monthly basis per year, the trend shows a gradual increase from January and reaches its peak maximum during July-August and then continues to decrease sharply by the end of the year. Anyway, when taken as a whole the average annual rainfall for the studied 20 years accounts to 2793.67 mm which can be credited to the contribution of downpour recorded during the monsoon seasons. On analysis of the two decades, the monthly average rainfall during 1996-2005 when compared to the previous decade of 1986-1995 shows a gradual

increase during the month of March, May, September and then a remarkable increase during the month of July.

Thus, it can be interpreted that there is change in the rainfall trend when analyzed and compared between the two decades, but not on an extremely large scale which again shows that this trend can further change the pattern for the consecutive 10 years rainfall data. If this usual small scale change in trend continues, then Mizoram is not expected to experience a sharp decrease in rainfall unless there are other climatic elements that unexpectedly alter the usual trend, which is mostly above the 2000 mm mark.

- b. **Temperature:** Temperature data has also been analyzed using 20 years temperature data collected and studied for two decades. The average monthly maximum temperature taken during the decade of 1996-2005 shows an increase over the previous decade of 1986- 1995, during the early part (January-February) as well as later part (November-December) of the years. However, not much increase is observed during the rest of the months on comparison and the trend is somewhat parallel to each other.

However when analyzed on a whole, there has been an increase in the average maximum temperature during 1996-2005 by  $+0.28^{\circ}\text{C}$ , over the decade of 1986-1995, which denotes a trend in increase in temperature during the last decade. The same increase is also reflected in the average minimum temperature recorded for the decade of 1996-2005 which is  $+0.30^{\circ}\text{C}$ , much higher than that recorded for the previous decade of 1986- 1995. The rate of increase is clearly reflected when the overall monthly average temperature recorded for both decades shows an increase of  $+0.29^{\circ}\text{C}$ . The overall trend in temperature also shows a gradual increase during the 1996-2005 decade. The increase in temperature as per the data indicates that there might be further rise in the heat wave in the years to come.

- c. **Humidity:** Humidity is another climatic element that has close relation to temperature and rainfall and also plays a key role in affecting the climate of a region. Average data on humidity for 20 years was collected and analyzed for a period of 5 years each. The results studied for each period clearly indicated that there was a gradual and progressive increase in humidity during the entire span of 20 years. In each of the 5 years period data that was analyzed, the trend seemed to decrease during the month of February but then gradually increased till August where it reached its maximum and then decreased during the end of each year. All the data recorded were within the wide range of +50% to +90% relative humidity, with the highest percentage recorded during June to August. Taken as a whole, the average relative humidity studied at 5 years interval for a span of 20 years indicated a gradual increase from 73.14% in 1986-1990 to 81.42% in 2001-2005, a marked increase of +8.28% during last two decades.

163. Data that have been used to study climate change in this context are necessarily simplified representations of the climate system prevailing during 1986-2005. Despite the inevitable limitations, the climate data simulations more or less accurately reproduce the large-scale seasonal distributions of pressure and temperature. In addition, the large-scale structure of precipitation (rainfall) and heat flux (temperature variations) also closely resembles the observed estimates on a global scale (which was  $+0.3$  and  $+0.6^{\circ}\text{C}$  during the last 150 years).

164. Considering all the results obtained from the study, it can be said that the climate parameters studied, have either direct or indirect relation to increased atmospheric concentrations of the principal anthropogenic greenhouse gases ( $\text{CO}_2$ ,  $\text{CH}_4$ ,  $\text{N}_2\text{O}$ , CFCs) which have subsequently increased in significant amount during the last two decades. Elevated concentrations are predicted to persist in the immediate atmosphere for years to come if we do not reduce emissions of greenhouse gases by the end of the next decade. Moreover, the increased atmospheric levels of these gases, especially  $\text{CO}_2$ , increase the IR (Infrared) energy absorbed by the atmosphere, thereby producing a warming influence at the ground level and sub-surface as a result raising the mean temperatures by a few more degrees.

165. **Current climate variability in Mizoram.** Climate variability refers to variations in the mean state (of temperature, monthly rainfall, etc.) and other statistics (such as standard deviations, statistics of extremes, etc.) of the climate on all temporal and spatial scales beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability), or to variations in natural (e.g. solar and volcanic) and external forcing (external variability).

166. **Rainfall variability:** Majority of districts of Mizoram experienced an increase in precipitation in the past 100 years (Figure 11, Annex 3). There are just slight differences between the absolute values of increase in precipitation, the Champhai district observing the highest increase in precipitation over the last 100 years, (>13%). The districts of Mamit, Serchhip, Lunglei, Lawngtlai, and Saiha had an increase in precipitation of 3.62 mm/day/100 years. These districts are primarily in the South and the West of Mizoram. Kolasib also observed an increase in precipitation.

167. **Temperature variability:** The analysis of temperature records for Mizoram shows a steady warming trend in both the minimum and maximum temperatures (Figure 12, Annex 3). The minimum temperature trend (Figure 12(a), Annex 3) indicates an increase of  $\geq 1.5^{\circ}\text{C}$  in Kolasib which is located in the northern-most tip of the state. The districts in the northern part of the state show a higher increase in minimum temperature than the southern districts. The maximum temperature trend (Figure 12(b), Annex 3) shows an increase in of  $\geq 1.2^{\circ}\text{C}$  in all the districts, with northern districts exhibiting a higher increase in maximum temperature. Overall, the minimum temperature trend is higher in absolute terms than the maximum temperature trend.

168. **Future climate projections for Mizoram.** The observations are:

- The state is projected to experience an increase in temperature above  $1.6^{\circ}\text{C}$  and lesser than  $1.75^{\circ}\text{C}$ .
- The projected increase for annual average temperatures for the northern-most district of Kolasib is the highest.
- The southern districts are predicted to have a lesser increase in average temperature than the northern districts.
- The entire state of Mizoram is projected to receive an increase in precipitation.
- The southern and western districts of Mizoram are projected to obtain higher rainfall.
- The northern-most tip of the state, Kolasib is also projected to receive an increase in precipitation of more than 10%.

169. **Projected increase in average temperature:** The projected increase in average temperature in the state by mid-2030's is shown in Figure 13, Annex 3.

170. **Projected changes in rainfall.** The projected change in total annual rainfall and for the southwest monsoon season (June, July, August and September months abbreviated as or JJAS) is shown in Figure 14, Annex 3. The entire state of Mizoram is projected to receive an increase in precipitation.

- The southern and western districts of Mizoram are projected to obtain higher rainfall.
- The northern-most tip of the state, Kolasib is also projected to receive an increase in precipitation of more than 10%.

171. **District-wise projection of extreme events in precipitation.** An increase in the number of extreme rainfall days is projected for the state.

- The eastern part of the state, Champhai, Serchhip and Saiha observed more than 1 day of extreme precipitation (Table 7).
- The Northern and Western part of the state, Kolasib, Aizawl, Mamit, Lunglei and Lawngtlai exhibited an increase in extreme event of at least 1 day more.

Table 7: **District-wise change in the number of days (in a year, on an average) when the rainfall exceeds 100 mm per day for Mizoram**

#	District	Annual increase in extreme event days
1.	Champhai, Saiha, Serchhip	1.0 – 2.0
2.	Mamit, Aizawl, Lawngtlai, Lunglei, Kolasib	0.0 – 1.0

\*\* A heavy rainfall day is defined as a day when the rainfall exceeds 100 mm

172. **Impact of climate change on crop yield.** INFOCROP is a generic dynamic crop model developed to simulate the effects of weather, soils, agronomic management practices (including planting, nitrogen, residues and irrigation) and major pests on crop growth, yield, soil carbon, water and nitrogen, and the associated impacts on rice production. It can be used for a variety of applications at field, farm and regional levels. The various inputs required by the model include information on rice variety sown, location, soil type, type of sowing, irrigation, fertilizer application, climate data, pest type and diseases. Two model runs were performed-the first simulation called “baseline” using climate data averaged over the period 1975-2005 and fixed CO<sub>2</sub> concentration at 370 ppm and the second simulation incorporating changes in precipitation and temperature for 2035 and with a CO<sub>2</sub> concentration of 466 ppm.

173. It is observed that there will be a reduction in rice yield by 2035 in the five districts of Mizoram. The district Mamit, in the western region of the state is projected to experience a decrease of 5% in rice yield, while the districts of Lunglei, Aizawl and Kolasib are projected to experience a decrease of 8% in rice yield.

174. **Agricultural vulnerability profile:** Agricultural vulnerability assessment is an important pre-requisite for undertaking any planning work or developmental projects aimed at climate resilient sustainable agricultural development. Indicators for agricultural vulnerability assessment were selected based on the dynamics of the region and data availability such as rainfall variability, area under rain-fed crops, rural population density, net sown area, area under high yielding crop varieties, amount of fertilizers and manure used, groundwater availability, mean crop yields, etc. These indicators were quantified mostly with data from secondary sources across districts and at the state level. Further, for the future scenario, the same set of indicators was estimated incorporating simulation trials for crop yield function. The assessment representing the year 2010 has been referred to as the ‘baseline’. With the same set of indicators, impact projections for future short-term (2021-2030) incorporating the outputs of climate model projections were assessed. The vulnerability profiles for the agricultural sector are developed for the two scenarios namely baseline/current scenario and A1B scenario, a moderate climate scenario. The district-wise agricultural vulnerability profile of Mizoram for baseline as well as A1B scenario is shown in Figure 15, Annex 3. As per these projections, the district Saiha presents the highest agricultural vulnerability, followed by district Aizawl.

175. **Forest vulnerability profile of Mizoram.** A Composite Forest Vulnerability Index was calculated for each district, for two scenarios: Current CFVI and Future CFVI. The forest vulnerability profile of Mizoram for future climate scenario is shown in Figure 16, Annex 3. Based on the CFVI, it was found that the forests of the following districts of Mizoram have high CFVI (have high to moderate vulnerability): Serchhip, Aizawl and Lunglei:the forests in these districts will be the first to show negative impacts when the projected climate changes are actually observed.

## G. Environmental and social category (A, B, C)

176. The project is not likely to have any adverse environment impacts on the project areas in Nagaland or Mizoram. In fact, it will have beneficial impacts through the development of land and water resources following an environmentally sensitive approach, including conservation of soil and rainwater, diversification of farming systems, introduction of tree crops and agro-forestry, creation of Community Conserved Areas, improved management of *Jhum* fallows and increasing the *Jhum* cycle, as well as conversion of *jhum* to settled agriculture. The project is expected to have positive social impacts as it would follow an inclusive approach, will be implemented through existing village

institutions i.e. VCs, both traditional and statutory, enhance the capacity of these institutions and support greater participation of women and youth in project activities. However, it is by requirement classified as **Category B** in the **environmental and social category** as it will operate in highland areas and would include resource development activities akin to watershed development. Given the risks of landslides (particularly in Mizoram), it is recommended that environmental impact assessments will be undertaken for road works or building construction.

### 1. Climate risk category (High, Moderate, Low)

177. The Himalayan States including Nagaland and Mizoram are classified as the most environmentally sustainable among Indian States on the basis of the Environmental Sustainability Index (ESI) developed by the Institute for Financial Management and Research<sup>112</sup>. As per the results of ESI 2011, the states that are most sustainable are largely in the Northeastern region including Nagaland and Mizoram. It is projected that during 2020-2050, the project states will experience an increase in annual average temperature of 1.6°C-1.8°C compared to 4°C increase in the western coast of India. The total annual rainfall in Mizoram is expected to remain at the current level and in case of Nagaland it is expected to increase by 15%. About 0-2 extreme rainfall events (more 100 mm/day) of 0-2 days are expected to occur in Mizoram and Nagaland.<sup>113</sup>

178. *Jhum* based farming system which is a major source of livelihoods being a rain fed farming system is vulnerable to climate change. FOCUS proposes to implement agriculture-related interventions on *jhum* land, taking into account climate change and its impact on food production and livelihoods. The proposed climate resilient interventions include: (i) soil and water conservation measures to reduce soil erosion and to increase moisture holding; (ii) introduction of varieties tolerant to drought and flood; (iii) introduction of agro-forestry to provide insulation against sudden changes in temperature, increasing soil profile recharge, reducing soil erosion and providing mulch and organic matter; (iv) increasing soil fertility through leguminous cover crops, leguminous trees and bio-fertilizers; (v) improved nursery management; (vi) pest management through bio-control agents; (vii) improvement in the management of terrace rice cultivation with introduction of improved high yielding varieties of paddy; (viii) irrigation support for water storage and delivery systems; (ix) introduction of fish/ duck farming systems in terrace rice lands for diversification; (x) protection from fire in fallow *jhum* through introduction of cover crops; (xi) water source protection as a part of village forest /community forest conservation; and (xii) introducing a system of increasing the cultivation period in the same plot to reduce forest burning every year.

179. The project will fund cross drainage structures and other climate resilient features to improve the existing gravel roads connecting the clusters identified for production support under value chain related activities. The main climate change parameters affecting the agriculture link roads are increased rainfall intensity, duration and frequency and greater variation in maximum and minimum temperature. Climate change is expected to increase the road's exposure to the following risks: (i) loss or damage to road assets due to flooding and landslides; (ii) reduction in road safety and reliability due to flood and landslides; (iii) reduction in road connectivity; (iv) damage to farm land and forest due to flood and landslides; and (v) increase maintenance cost .

180. In response to the identified risks, the project intends to implement climate resilient interventions in construction, which include: ( i) raising construction quality - incorporate higher specifications on works and materials to improve quality of works; (ii) applying safety factors to design assumptions such as, increased size of drains and culverts, bridge openings, etc.; (iii) avoiding geologically sensitive areas; (iv) reducing slopes and gradients;(v) increasing protective works; (vi) applying scour protections and check dams to reduce gradients of drains; (vii) applying bioengineering measures; (viii) providing sufficient maintenance budget and manage maintenance efficiently; and (ix) enforcing truck axle load regulations (if required). These measures will be introduced during the improvement works.

---

<sup>112</sup> <http://www.ifmrllead.org/wp-content/uploads/2015/OWC/Brief-ESI-2011.pdf>

<sup>113</sup> State Action Plan on Climate Change for Nagaland and Mizoram

181. In view of the above, the project is classified as a **moderate climate risk** project. The project will support climate risk assessment during the project implementation.

## **2. Recommended features of project design and implementation**

182. Nagaland and Mizoram, being states with a majority of the farming population practicing *Jhuming*, the traditional farming systems have come under increasing stress due to increased population pressure, rising needs and aspirations of a traditional society in rapid transition, and changing climate patterns. It is crucial to invest in building resilience of the community towards climate variability that impacts the highland farming systems. This section discusses some additional interventions that would be taken into consideration during project design.

183. Component-1 on "Improved *Jhum* Management" will seek to introduce sustainable resource management practices in the *Jhum* areas through participatory land use planning using remote sensing maps. This component will cover activities like preparation of land use plan for the village using land use maps and land suitability classification maps; soil and rainwater conservation measures; improving current *jhum* and improved management of *jhum* fallows; and village forest conservation and support to existing settled agriculture. In the case of Mizoram, in addition to the activities proposed for Mizoram an additional activity of supporting landless households through promotion of Farmers Interest Groups (FIGs) to take up settled agriculture coupled with provision of land titles will be taken up. The main intention is to increase *Jhum* cycle and enhance productivity in *Jhum* areas. This component will have two sub-components: (i) Better *jhum* and conservation; and (ii) Support to settled agriculture including terrace rice cultivation for increased yields.

184. Under Component 2, "Value Chain and Market Access", the project will support development of value chains for selected commodities that have markets in the NER and also outside the states, have longer shelf life or high value to weight ratios (e.g. large cardamom) in view of the weak communications infrastructure. Activities like aggregation, grading, storage, certification, packaging and branding will be funded under the project, providing support for production and marketing related activities. Among livestock, pig rearing and fattening has large potential as the States are unable to meet their domestic demands; Nagaland imports significant quantities of pork. The project will support development of feed production, breeding and basic health services. In Mizoram, there is additionally significant scope for developing bamboo value chain. This component will need the support of entrepreneurs and agencies that have adequate knowledge of markets and trained manpower. These will be procured by the respective state project management units. The project will build market access infrastructure in both the states and climate resilient construction practices will be built into these activities. This component will have two sub-components: (i) Value chain development; and (ii) market access infrastructure.

185. Component-3 on "Project Management" will establish management and administrative procedures including finance, accounting, auditing and a monitoring and evaluation (M&E) system in line with IFAD and state government guidelines. The component will also facilitate knowledge management, using data from the M&E system to inform policy dialogue and structured knowledge exchange within and between the project sites across the two project states and other NE states as well as with the Ministry of DoNER in the FIG, so that emerging lessons from the project could be integrated into state plans of other North Eastern states where *Jhum* is being practiced. This will be achieved by (i) FAO would build capacities of state and district level staff for better land use planning and nursery techniques (i) building the capacity of state and district institutions to generate MIS (including through enhanced M&E capacities); (ii) supporting the finalisation and enforcement of the public policies related to *Jhum* management and (iii) knowledge sharing between the project areas and at the regional level based on opportunities and demands.

186. The environmental and climate change assessment prepared for IFAD's India Country Strategic Opportunities Program (COSOP 2016-2021) concluded that it is clear that farmers and other local stakeholders do not have to be convinced about the importance of climate change and are generally well aware of the consequences of climate change on their farming systems and livelihoods. However,

developing local adaptation responses is constrained with a high degree of information uncertainty and complexity. Therefore, the technical options to be designed under the project should be based on a thorough analysis of available climate projections at the district level. Furthermore, diversification of land use/farming systems, crop productivity enhancement and development of climate resilient and equitable farm based value chains can help achieve the project's development objective of increasing the environmental sustainability and profitability of farming systems practiced by highland farmers in Nagaland and Mizoram.

187. From an institutional point of view, this project will use the existing basic institutional framework for participatory planning and implementation to ensure sustainability. As all development activities in the village, including MGNREGA, are implemented under the aegis of the VDB in Nagaland and VC in Mizoram, it is imperative that project activities will be scaled up by these institutions through convergence with various government development programmes. A Village Council (VC) is the principal local governance institution at the village level, and the Village Development Board (VDB) is the sub-committee of the VC responsible for implementation of government programmes. Use of 3-D village maps, setting up of FIGs and JhumResources Management Committees(JRMC), formulation and adoption of appropriate village land use policies by VCs based on land suitability maps and farmer-led multiplication by adoption of improved nursery techniques for crops and trees and exchange of selected upland paddy cultivars under the guidance of the State Agriculture Research Station (SARS) are among the likely project innovations.

188. It has been noted that where these institutions have operated collectively, effectively and efficiently, local farmers and households have successfully improved management of agriculture, forests and natural resources and diversified their incomes and livelihood sources. Building adaptive capacity for the poor and most vulnerable requires first social inclusion at the local level, and second, support by middle and higher-level institutions that enable access of these local people to assets and act to facilitate adaptation<sup>114</sup>.

189. The participatory planning process and inclusion of women in the community institutions will draw women into the public life of the village and give them a voice in matters related to the community. Where present, women's credit groups will serve as the centre of credit activities enhancing the credit worthiness of women as partners in the development process. The project will also build capacity of project staff to effectively address issues of gender mainstreaming and social inclusion.

190. **Mitigation measures.** Drawing on the significant lessons emerging from from the implementation of at least three projects in the two states, the project seeks to demonstrate the effectiveness of a twin approach of promoting better management of *Jhum* on the one hand and gradually shifting towards sedentary agriculture on the other.

191. In Nagaland, the project seeks to demonstrate pathways for sustainable and climate resilient *Jhum* management that enhance productivity and farmer incomes from *Jhum* and lead to improved regeneration on *Jhum* fallows in the intervening periods between *Jhum* cycles.

192. In Mizoram, the project strives to provide sustainable income to farming families who comprise nearly three-fourths of the total population, by weaning them away from the labour intensive and low value shifting cultivation practice; promoting livelihoods by encouraging small scale industries and small trades; land reclamation and afforestation by introducing sedentary farming systems and land reforms; environment protection and restoration through various means such as expansion of rain catchment areas for recharging springs and underground water, encouraging rearing of domestic animals and poultry for increased meat production to discourage hunting to protect the fauna, etc.

193. **Multi-benefit approaches.** The targeted communities will be benefitted as a whole by focusing on strengthening capacities of the State agencies and community based institutions, and empower them to improve the governance and quality of their *Jhum* lands, develop and implement climate

---

<sup>114</sup>Sterrett, Charlotte (2011) Review of Climate Change Adaptation Practices in South Asia (Oxfam).

resilient resource management systems, biodiversity and ecosystem conservation. Improvement in the natural resource management will facilitate better rainwater management, soil and water conservation, climate resilient *Jhum* field management, diversification of land use/farming systems, crop productivity enhancement and development of climate resilient and equitable farm based value chains.

194. **Participatory processes.** The implementation of the project has been envisaged through community participation. As the project would involve participatory land use planning for the entire village and seek to create community conserved areas and firewood forests besides *Jhum* improvement, upland terraced rice stabilisation and value chain development, the project will target all households in selected villages which include a range of different tribal groups (22 different tribes in Nagaland and 15 in Mizoram overall). About 65% of the target group would comprise of *Jhum* farmers. The focus will be on vulnerable households, such as women-headed households, old people without support systems and agricultural labourers, as target beneficiaries for project interventions. The project will adopt a strategy of gender and youth mainstreaming as well.

### 3. Analysis of alternatives.

195. Apart from the approach envisaged in project design, a few other alternate options that could have been considered for making the project district climate-resilient were analysed as well. Although the proposed project focusses on the soil and water conservation measures, effective and sustainable management of the States' groundwater and surface water resources can also be tapped, particularly through interventions related to rainwater harvesting which is an abundant resource in the north-east. However, the potential small-scale interventions towards groundwater and surface water management may render these economically infeasible for the present project to uptake. Alternate design options explored during the course of the field visits and consultations are briefly mentioned below

- a) Increasing area under rice cultivation to meet the food requirements of the families / communities was an option explored during field visits. This was not substantiated during discussions with farmers as the income was mainly from cash crops like spices and piggyery.
- b) Concentrating on the improvement of current *jhum* was also discussed but the area under fallow *jhum* was a critical to the efforts of increasing *jhum* cycle. It was therefore, decided to consider both current and fallow *jhum* lands for project interventions.
- c) Though many other cash crops like ginger, arecanut, pineapple, chayote are grown on a large scale and volumes of produce large, it was decided that the project should focus on high value and low volume crops like turmeric, large cardamom and naga / mizo chilli as they are easier to store and transport to other places efficiently.
- d) The watershed approach was also explored during discussions with the district and state level agencies who had experience of implementing the Integrated watershed management program (IWMP) in Nagaland and Mizoram. However, it was not feasible to get immediate benefits to farmers since watershed approach was focusing on soil and water conservation in a given area and not on production oriented approaches for increasing farm incomes.

## H. Institutional analysis

196. The FIG is aware of the challenges ahead and has taken some initiatives to address the climate change impact on agriculture. India's National Action Plan on Climate Change (NAPCC), released in 2008, was the first major milestone to achieve the objectives of a socially inclusive and sustainable economic growth. Development of climate resilient crops, expansion of weather insurance mechanisms, improved agricultural practices and a 20 percent enhancement in water use efficiency in farming are highlighted. In 2009, the Ministry of Environment and Forests called upon the States to expeditiously prepare the State Action Plans on Climate Change (SAPCC) consistent with the strategy outlined in NAPCC. The Governments of Nagaland and Mizoram have developed their SAPCCs, whereby most of the interventions aimed at improving the climate resilience/adaptation ability of the communities, public or private infrastructures and preserving the eco-systems are proposed to be undertaken and implemented at the State level. Besides, technology improvements in

production, consumption and other related sectors at the State level are also critical in enhancing the effectiveness of national policies for mitigation.

197. In the two target states, there are significant lessons emerging from the implementation of at least three projects which demonstrate the effectiveness of a twin approach of promoting better management of *Jhum* on the one hand and gradually shifting towards sedentary agriculture on the other. The projects are NEPED<sup>115</sup>, funded by the India-Canada Environmental Facility (ICEF) during 1995-2006, the Sustainable Land and Ecosystem Management in shifting cultivation areas of Nagaland for ecological and livelihood security (SLEM) project funded under UNDP-GEF in Nagaland to introduce modest changes in *Jhum* management practices and the New Land Use Policy (NLUP) in Mizoram which promotes sedentary agriculture. Additionally, the North Eastern Region Community Resource Management Project for Upland Areas (NERCORMP), a project supported by IFAD in two phases and implemented in Manipur, Meghalaya and the hill districts of Assam has demonstrated the effectiveness of community-based planning and implementation to usher in more sustainable land use systems.

198. The states aim to scale up emerging lessons from two major projects, namely, SLEM in Nagaland and NLUP in Mizoram. Whereas the former has demonstrated the effectiveness of investing in improved *Jhum* management, the latter has focussed on finding a viable alternative to *Jhum* by promoting settled agriculture. Both approaches have been found to be useful in addressing issues such as low productivity, forest/soil degradation and poor incomes of farmers. The project will scale up the lessons of these projects in their respective states while also facilitating cross learning and adoption of key lessons across the two states. Additionally, as the practice of *Jhum* is common across the entire North Eastern region, the project will also serve as a learning site for all NE states that can explore adoption/scaling up of one or both of these models.

199. In Nagaland, SLEM focused on improving *Jhum* to make it sustainable and more productive rather than advocating its abandonment. It demonstrated that productive potential of *Jhum* lands can be enhanced and soil degradation reduced by introducing various soil and water conservation measures in *Jhum* areas. Once the potential of land is enhanced, *Jhum* cycles can be increased to allow regeneration of biomass and restore soil fertility, making the farming system more productive and sustainable. A key innovation of the SLEM project was introduction of Participatory Land Use Planning (PLUP) in its project villages by setting up land use committees (LUC) under the Village Council. With technical guidance of the project staff and consultation with households in the village, LUCs developed land use plans for *Jhum* rotation and site-specific soil and water conservation measures.

200. The NLUP in Mizoram is a versatile mechanism for a stable State economy, environment protection and land reforms and reclamation. The scheme envisages self-sufficiency for beneficiary families in consonance with traditional Mizo values. While the primary objective is economic empowerment of farmers and improvement of rural economy, NLUP also takes care of issues such as food security, product market linkage and value addition, opening of new employment opportunities, strengthening community bonds, maintenance of ecological balance through regeneration of forest and water sources and prevention of soil erosion. Its key focus is on switching over to permanent and sustainable livelihood activities as an alternative to *Jhum* (shifting) cultivation; land reforms for giving permanent land ownership rights to farmers and effective land use plan with judicious mix of agri-horti and plantation crops, agro-forestry, micro-enterprise etc. The State envisages formulation of a Land Use Policy that will create a State Land Use Council to replace the present Land Use Board, enact enabling laws to set up village LUCs and facilitate technical support to the LUCs from line departments. The project will support further policy dialogue in this respect if requested by the State Government.

---

<sup>115</sup> Implemented in two phases, the first phase (1995-2001) was called Nagaland Environment Protection and Economic Development through People's Action and the second phase (2001-06) was called Nagaland Empowerment of People through Economic Development. [https://www.nagaland.gov.in//Nagaland/GovernmentAndPrivateBodies/Department\\_of\\_NEPED.html](https://www.nagaland.gov.in//Nagaland/GovernmentAndPrivateBodies/Department_of_NEPED.html)

201. As in the case of SLEM and NLUP, this project will use this basic institutional framework for participatory planning and implementation to ensure sustainability.

202. The present national policies for environmental management are contained in *National Forest Policy, 1988, the National Conservation Strategy and Policy Statement on Environment and Development, 1992, and the Policy Statement on Abatement of Pollution, 1992*. Some sector policies such as the *National Agriculture Policy, 2000, National Water Policy, 2002*; have also contributed towards environmental management. All of these policies have recognized the need for sustainable development in their specific contexts and formulated necessary strategies to give effect to such recognition. The National Environment Policy seeks to extend the coverage, and fill in gaps that still exist, in light of present knowledge and accumulated experience. Its principal objectives are: (i) Conservation of critical environmental resources; (ii) Livelihood security for the poor; (iii) Inter-generational equity; (iv) Integration of environmental concerns in economic and social development; (v) Efficiency in environmental resource use; (vi) Environmental governance; and (vii) Enhancement of resources for environmental conservation.

203. The Environmental Impact Assessment (EIA) is the principal methodology for appraising and reviewing new projects; and significant devolution of powers to the State level is foreseen. Currently, a weak enforcement of environmental compliance is attributed to inadequate technical capacities, monitoring infrastructure, and trained staff in enforcement institutions. In addition, there is an insufficient involvement of the potentially impacted local communities in the monitoring of compliance, and absence of institutionalized public-private partnerships in enhancement of monitoring infrastructure<sup>116</sup>.

204. National Policy for Farmers, 2007 has also emphasized the need of improving water services to address the issues of quality, adequacy and equity distribution of water and water-use efficiency. The government has also set up National Rain-fed Authority of India. The DoA has also followed a cluster-based approach for Rain-fed Area Development (RAD) under National Mission for Sustainable Agriculture. Strategic Research and Extension Plan (SREP) is being prepared under Agricultural Technology Management Agency (ATMA) for each district through Participatory Rural Appraisal (PRA).

205. National Tribal Policy, 2006 has been outlined to prevent the alienation of land owned by STs and for empowerment of tribal communities to promote self-governance and self-rule as per the provisions and the spirit of Panchayats (Extension to the Scheduled Areas) Act, 2006. The objective of Panchayats (Extension to the Scheduled Areas) Act, 2006 is to safeguard and preserve the traditions and customs of the people living in fifth Scheduled areas, their social, religious and cultural identities, and traditional management of practices of common resources. None of the areas in Nagaland or Mizoram are included in the fifth schedule areas as defined under PESA.

## **I. Monitoring and Evaluation**

206. The project's M&E system will take into account the project log-frame and the RB-COSOP results. M&E data will be disaggregated by gender and by age. Being predominantly tribal population, the data may, if required, be collected/analysed with respect to the most vulnerable tribes. A management information system will be developed in line with other ongoing projects. Baseline and post-implementation surveys as well as annual outcomes surveys will be carried out to document project impact. Outcome surveys will be carried out annually as per the new guidelines developed by IFAD for this purpose.

207. The project reporting system will produce consolidated reports on project progress and results, including the annually reported RIMS indicators of outputs and outcomes. The project will develop a Knowledge Management strategy and action plan. This will include internal learning through regular progress review meetings and the generation of knowledge products, such as newsletters, briefs, training materials, technical manuals, booklets, posters, videos, etc. The project will also strive to be a

---

<sup>116</sup> Government of India. 2006, National Environment Policy.

platform for learning for the other states in NER wherever *Jhum* is being practiced. A project website will be established in each of the two states as a knowledge sharing tool, with information on good practices and innovations shared with NITI Ayog, DEA and MoDoNER and also displayed on the IFAD Asia website.

208. It is recommended that the M&E officer and project staff collect GPS coordinates of all interventions to plot the data in maps and provide a visual representation of activities. This approach enhances monitoring, impact assessment and overall accountability.

#### **J. Further information required to complete screening, if any**

209. The information available herein and presented in the SECAP Note is sufficient to complete the screening, and no further information is required in this context.

#### **K. Budgetary resources and schedule**

210. The total project cost for Nagaland is estimated at about USD 90.06 million and will be financed by an IFAD loan of USD 40.25 million and IFAD Grant of USD 0.55 million, parallel financing of USD 13.26 million equivalents through Central Sector Schemes (CSS) and GoN contribution to CSSs of USD 1.55 million equivalents, convergence funding USD 13.13 million equivalents, beneficiary contribution of USD 3.90 million and GoN counterpart funding of USD 17.42 million equivalents including taxes and duties and staff salaries

211. The total project cost for Mizoram is estimated at about USD 79.31 million and will be financed by an IFAD loan of USD 35.25 million and IFAD Grant of USD 0.45 million, parallel financing of USD 14.98 million equivalents through Central Sector Schemes (CSS) and GoM contribution to CSSs of USD 1.98 million equivalents, convergence funding USD 13.13 million equivalents, beneficiary contribution of USD 2.37 million and GoM counterpart funding of USD 11.14 million equivalents including taxes and duties and staff salaries.

212. The project seeks to increase the *Jhum* cultivation period to three years from the present levels of one to two years. In order to have significant and sustainable impact, it is proposed to work on two *Jhum* blocks/cycles in each project village. In view of the rugged hilly terrain, poor road connectivity and work distribution during the year in case of *Jhum* cultivation, project implementation would be staggered across years with about one-third of the project villages covered every year, completing one cycle in all project villages in three years. The project duration is therefore proposed to be six years from Loan Effectiveness.

#### **L. Record of consultations with beneficiaries, civil society, general public, etc.**

213. The mission members undertook field visits to project districts in Nagaland and Mizoram during the design mission. Teams of the mission members undertook field visits to select villages in identified project districts in Nagaland and Mizoram. The field visits were designed to have a first-hand knowledge of the topography, agricultural practices and local practices and management by village institutions. During field visits, design members observed the various practices of *jhum* cultivation like slashing the vegetation, burning of the dried grass/ vegetation, local agricultural practices like log wood bunding, protection of trees of value. In the low lands, paddy cultivated in the terraces had been harvested and in some villages where water was available, second crops like potato were being cultivated. Community conserved areas in some villages were also visited by the teams in Nagaland.

214. Information and data were gathered during the field interactions on all aspects of agriculture production of key crops, *jhum* practices locally adopted, animal husbandry practices and assessment of the incomes from these activities, markets for these produce and constraints and problems affecting the marketing of agriculture produce and animal husbandry. Discussions were held with village council members, village development board members, *jhum* farmers and women in the villages visited by the design mission in Nagaland and Mizoram. Discussions were also organised at

the district level with officials of the development departments like agriculture, horticulture, sericulture, soil and water conservation, fisheries, animal husbandry and veterinary, forestry, irrigation and few representatives of local NGOs and district commissioners in all the project districts of Nagaland and Mizoram.

215. After the completion of the field visits, the design mission members interacted with officials of state level development departments like agriculture, horticulture, soil and water conservation, forestry, fisheries, irrigation, sericulture, animal husbandry and veterinary. As a part of the preparations of the wrap up meeting at the state level, draft recommendations of the mission on the major components and assumptions were also discussed with the concerned departments

216. The design mission members also met officials of departments like revenue, finance and planning who play a key role in the planning and financing of the project activities and other central/ state sector schemes in Nagaland and Mizoram. Meeting were also held with select local entrepreneurs and agencies involved in the management of the value chain of a few commodities to understand the process and assess financial requirements.

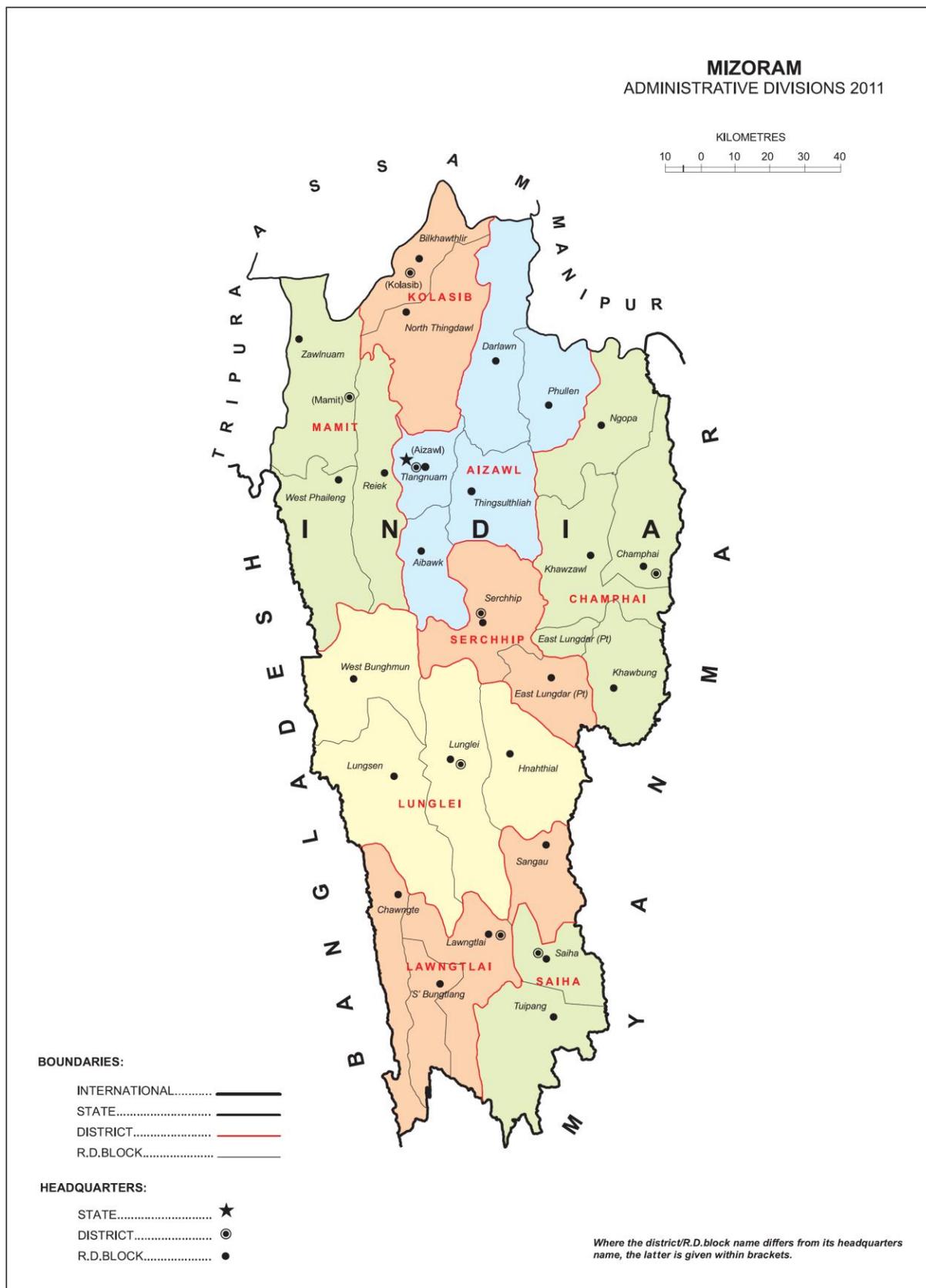
Annex 1

Figure 1(a): A map of Nagaland



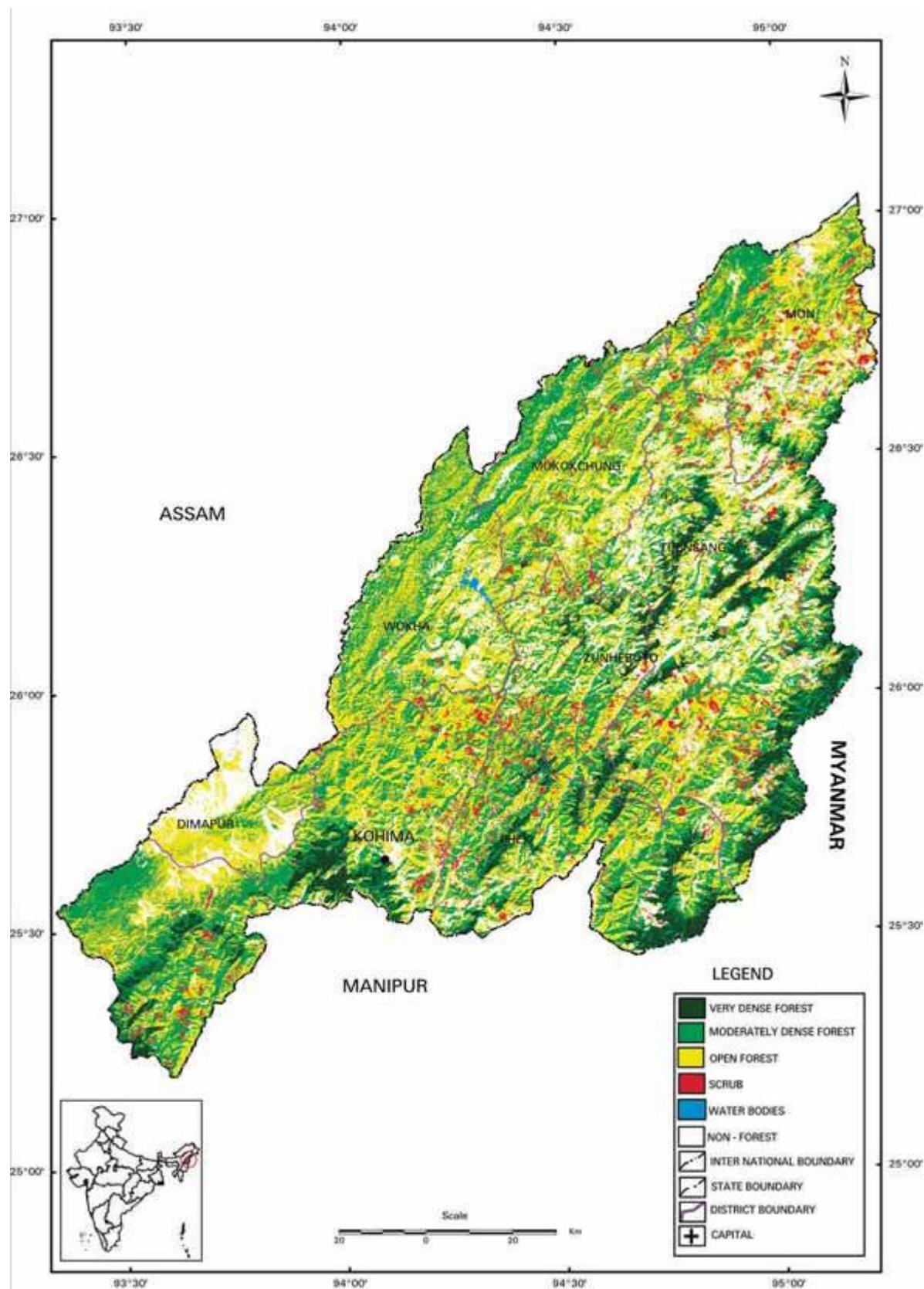
Source: Administrative Atlas of India, Census of India, 2011

Figure 1(b): A map of Mizoram



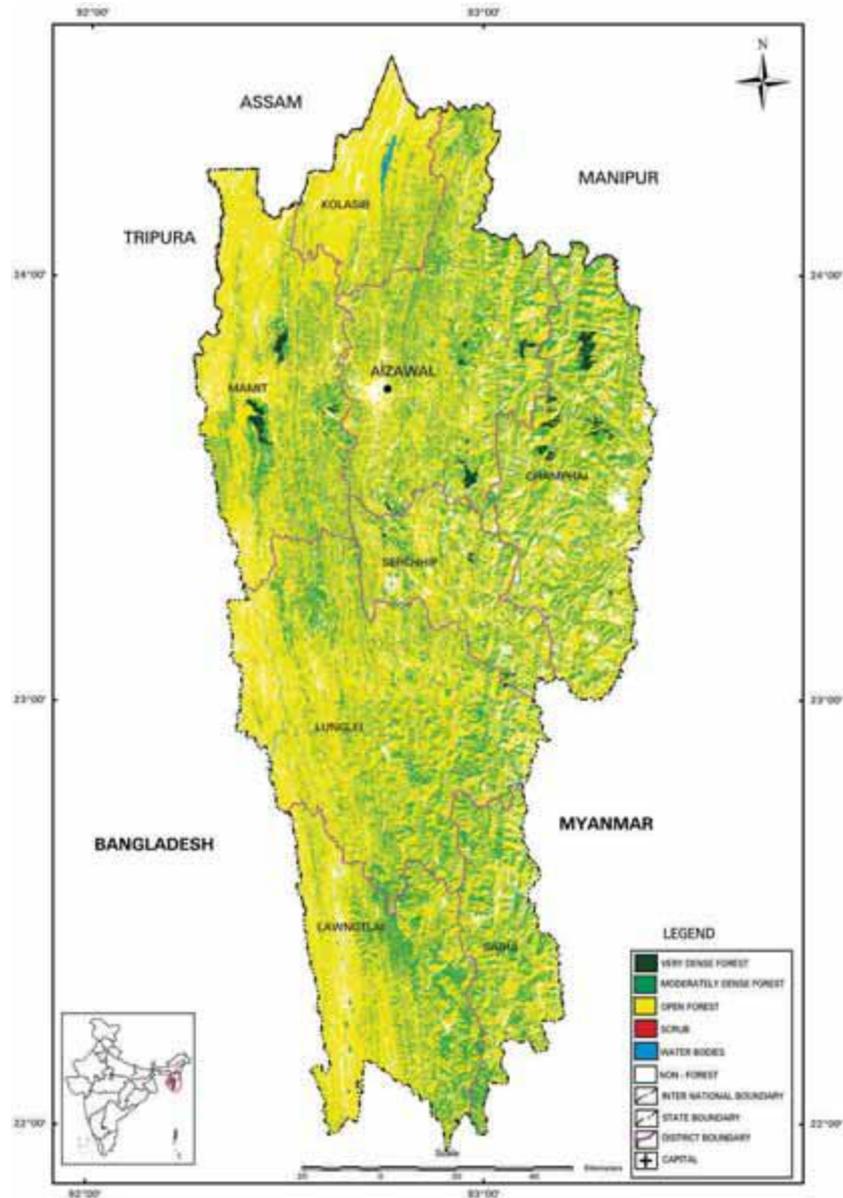
Source: Administrative Atlas of India, Census of India, 2011

Figure 2(a): **Forest cover map of Nagaland**



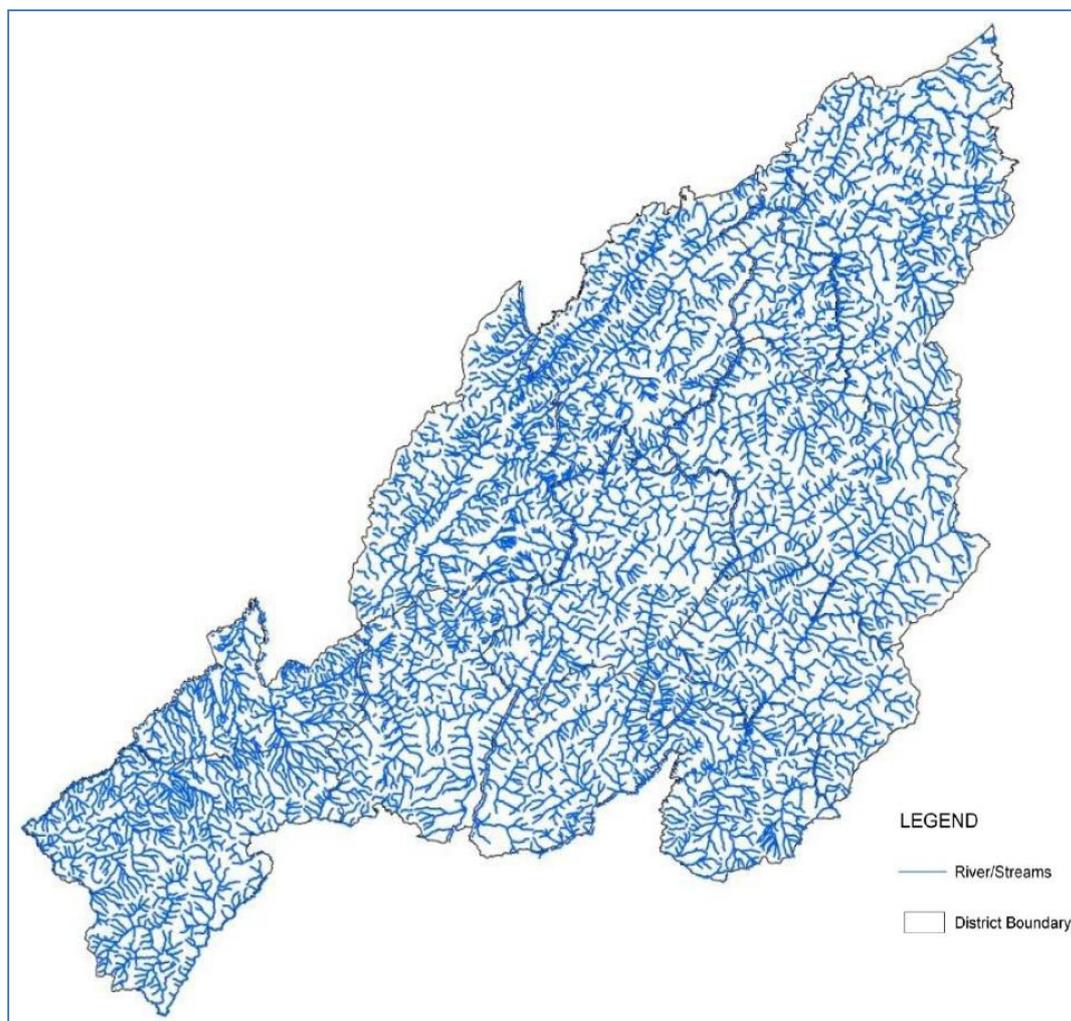
Source: India State of Forest Report, FSI, 2015

Figure 2(b): **Forest cover map of Mizoram**



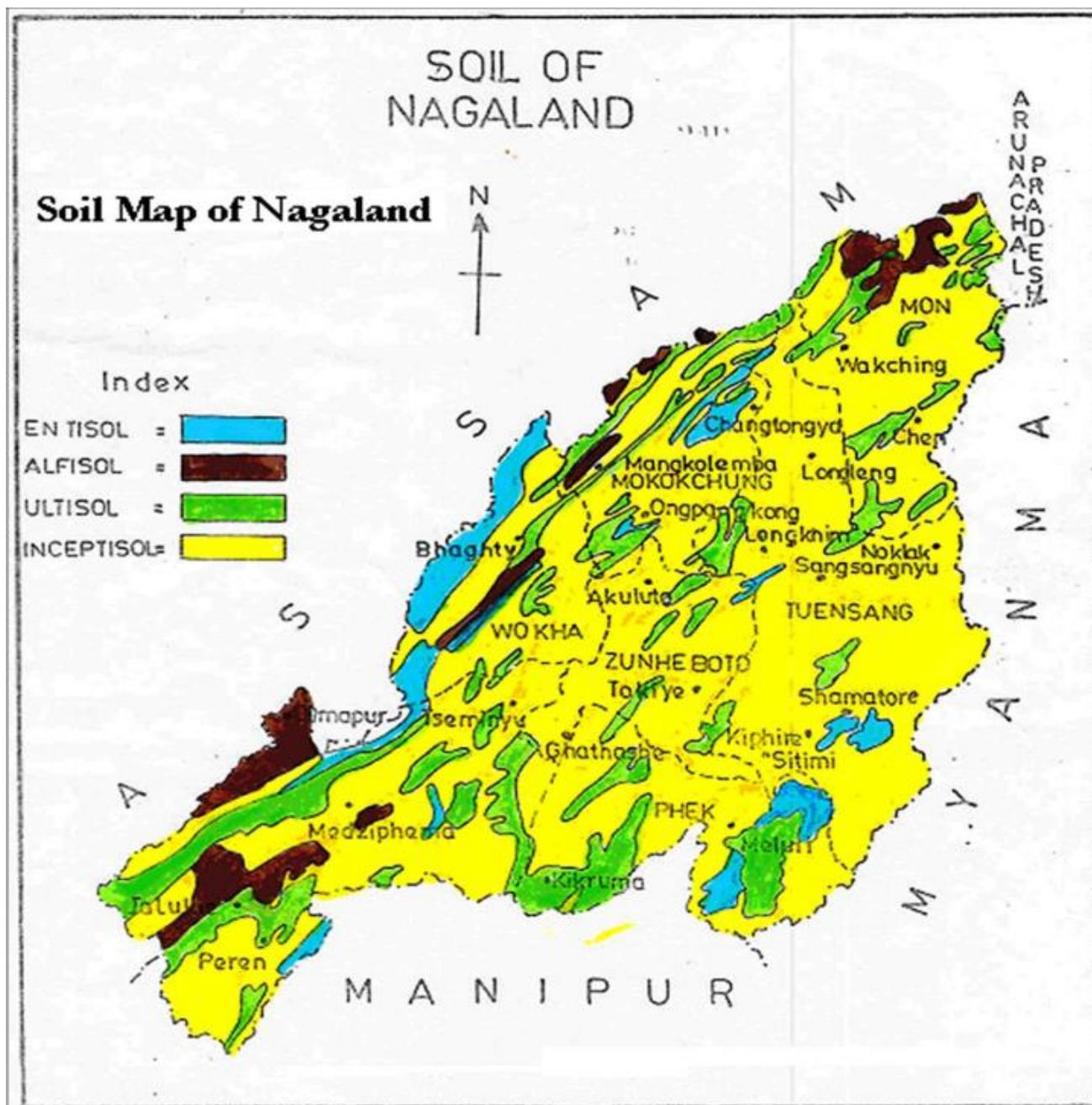
**Source:** India State of Forest Report, FSI, 2015

Figure 3: ***Drainage map of Nagaland***



**Source:** Nagaland State Action Plan on Climate Change (SAPCC), Govt. of Nagaland, 2012

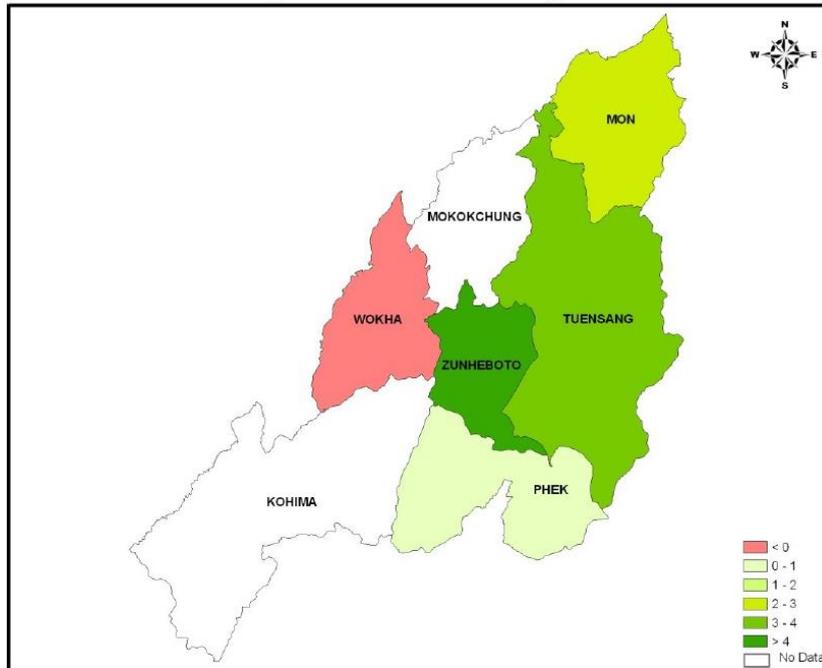
Figure 4: **Soil map of Nagaland**



**Source:** Department of Soil and Water Conservation, Govt. of Nagaland

**Annex 2**

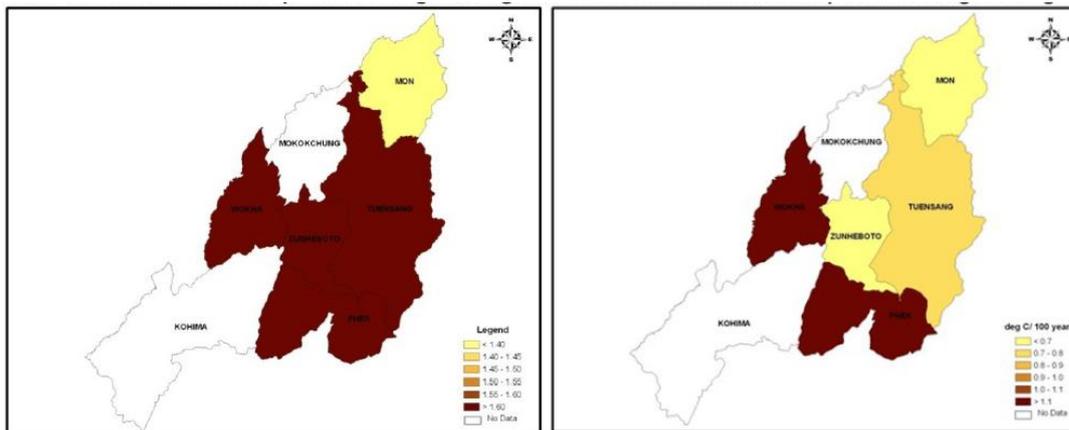
**Figure 5: District-wise precipitation trend (mm/day per 100 yr) of south-west monsoon (June-September) for the period 1975-2005\***



**Source:** Nagaland State Action Plan on Climate Change (SAPCC), Govt. of Nagaland, 2012

\* The districts of Dimapur, Kohima and Mokokchung have no observations.

**Figure 6: Spatial pattern of temperature trends for JJAS ( $^{\circ}\text{C}$  per 100 yr) over Nagaland for the period 1901-2002\***



**(a) Spatial Pattern of Minimum Temperature Change for Nagaland**

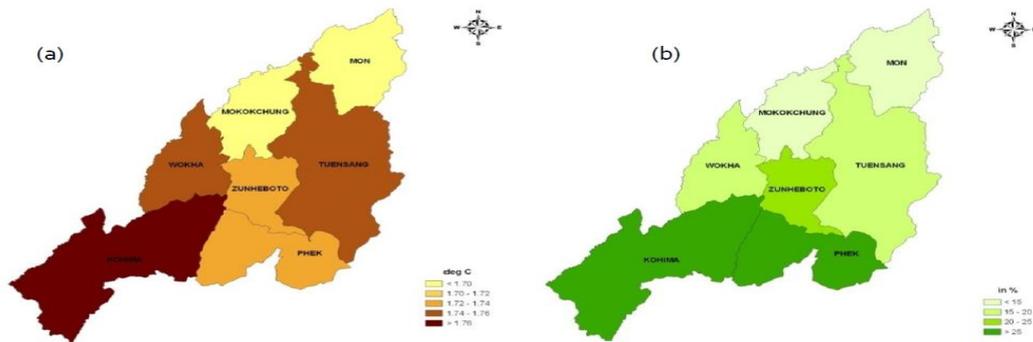
**(b) Spatial Pattern of Maximum Temperature Change for Nagaland**

**Source:** Nagaland State Action Plan on Climate Change (SAPCC), Govt. of Nagaland, 2012

\* No data present for Dimapur, Kohima and Mokokchung.

Figure 7(a): **District-wise projected increase in annual average temperature (°C) for the period 2021-2050 (A1B SRES scenario) compared to baseline (1975), projected by HadRM3 model**

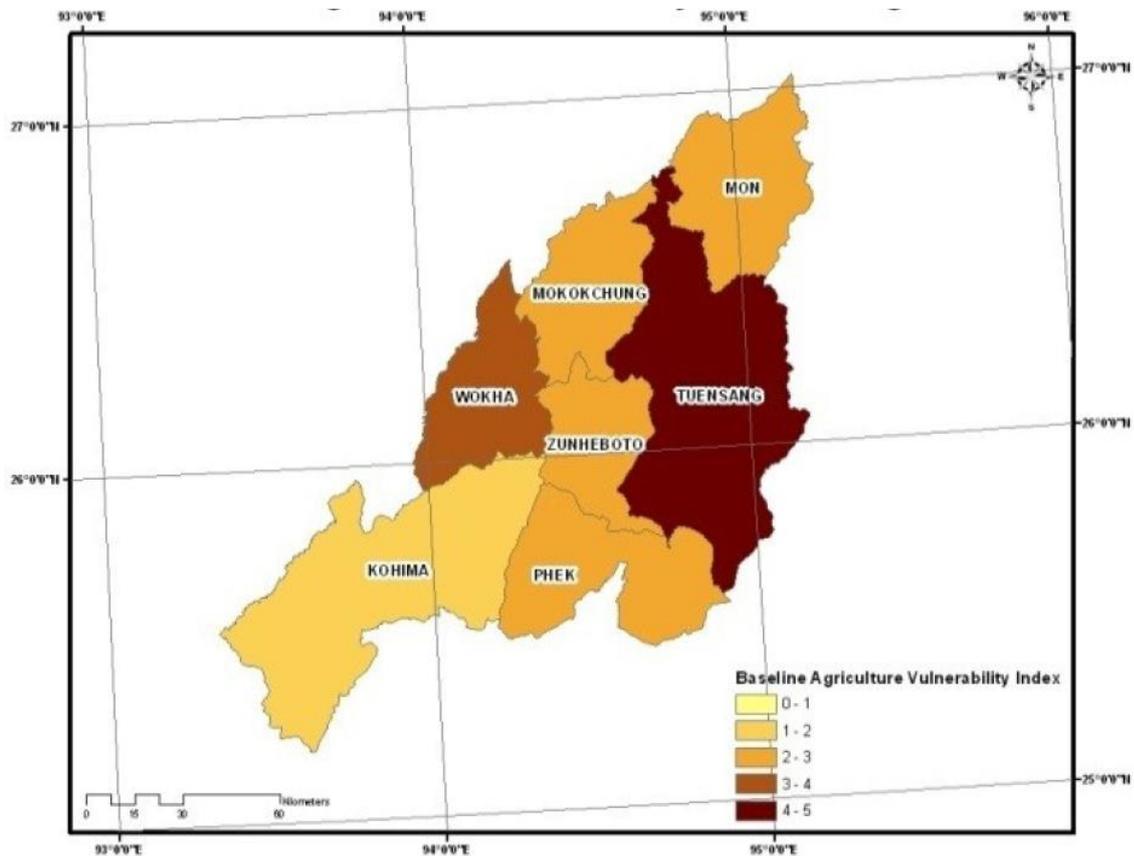
Figure 7(b): **District-wise projected increase in annual rainfall and JJAS rainfall for the period 2021-2050 (A1B SRES scenario) compared to baseline (1975), , projected by HadRM3 model**



**Source:** Nagaland State Action Plan on Climate Change (SAPCC), Govt. of Nagaland, 2012

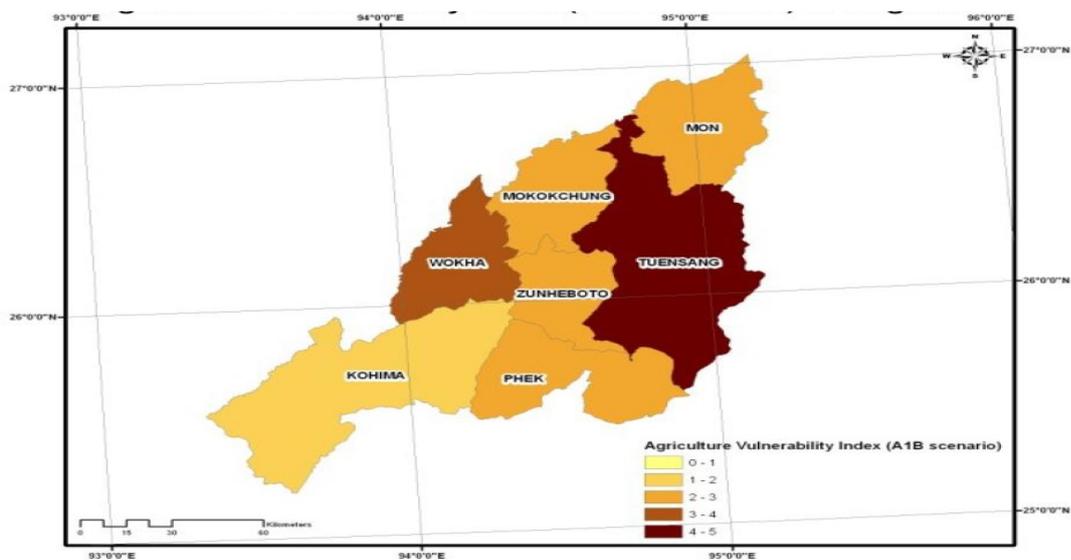
Figure 8: **District-wise agricultural vulnerability profile of Nagaland for baseline and A1B scenario (where 0-1 represents very low vulnerability and 4-5 represents very high vulnerability)\***

Figure 8(a): **Baseline Agriculture Vulnerability Index of Nagaland**



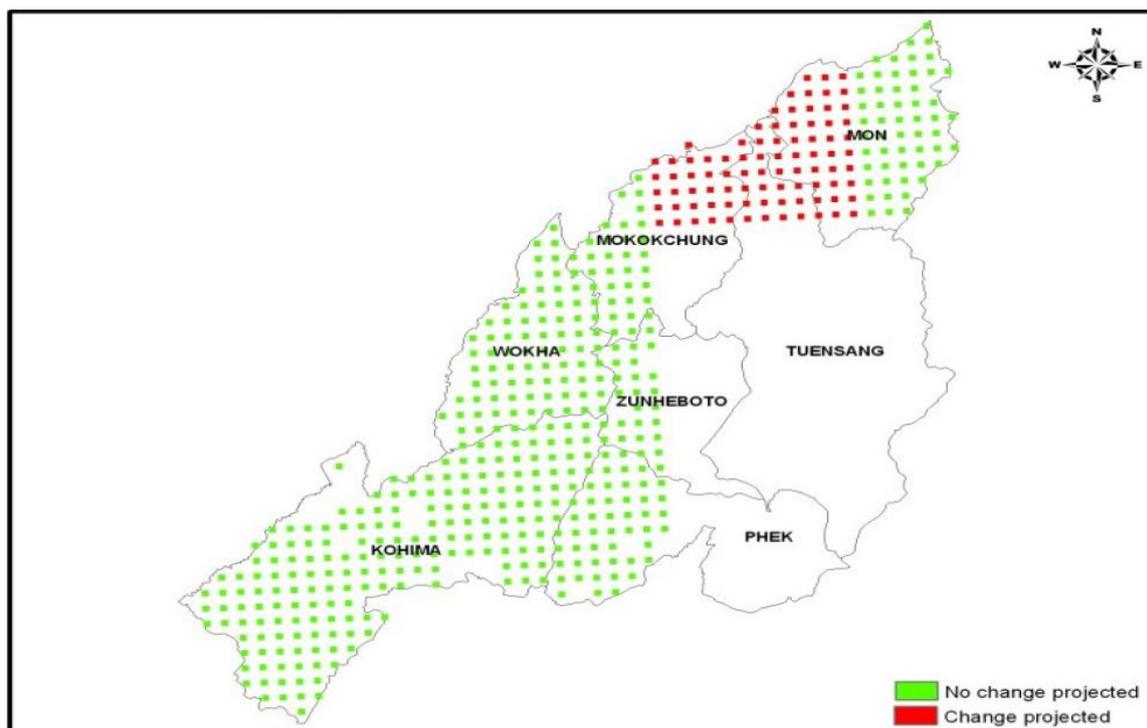
**Source:** Nagaland State Action Plan on Climate Change (SAPCC), Govt. of Nagaland, 2012

Figure 8(b): **Agriculture Vulnerability Index (A1B scenario) of Nagaland**



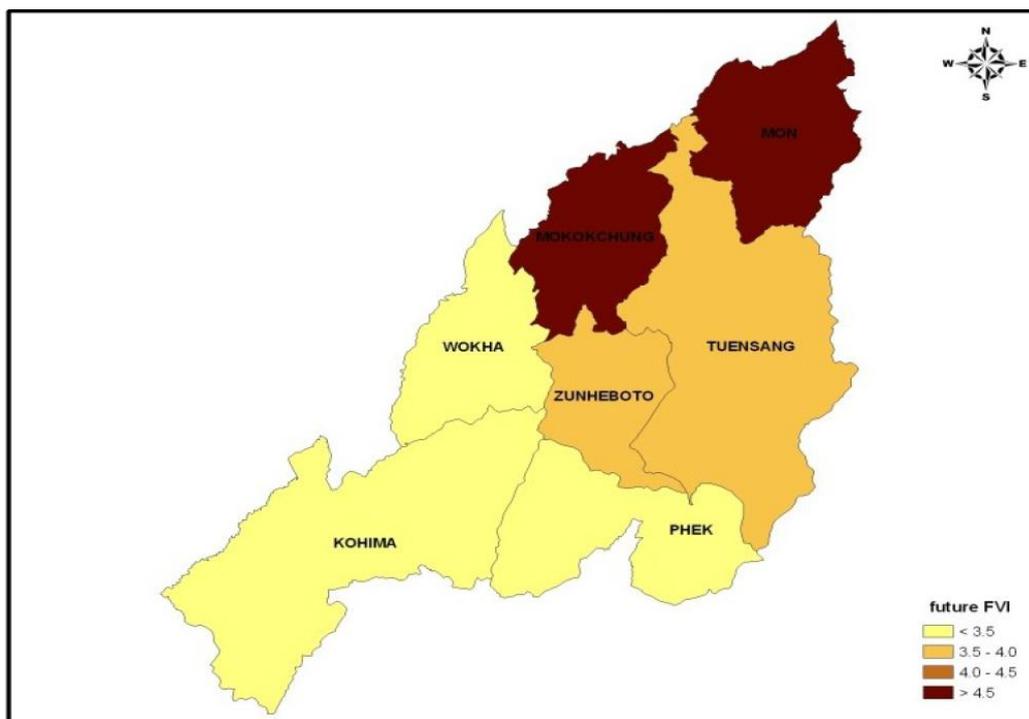
**Source:** Nagaland State Action Plan on Climate Change (SAPCC), Govt. of Nagaland, 2012  
\* The districts Dimapur, Longlegs, Kiphire and Preen have not been depicted in the map

Figure 9: **Forest vegetation change projected by 2035**



**Source:** Nagaland State Action Plan on Climate Change (SAPCC), Govt. of Nagaland, 2012

Figure 10: **District-wise representation of the area that is projected to undergo change in vegetation type by 2021-2050 in Nagaland**



**Source:** Nagaland State Action Plan on Climate Change (SAPCC), Govt. of Nagaland, 2012

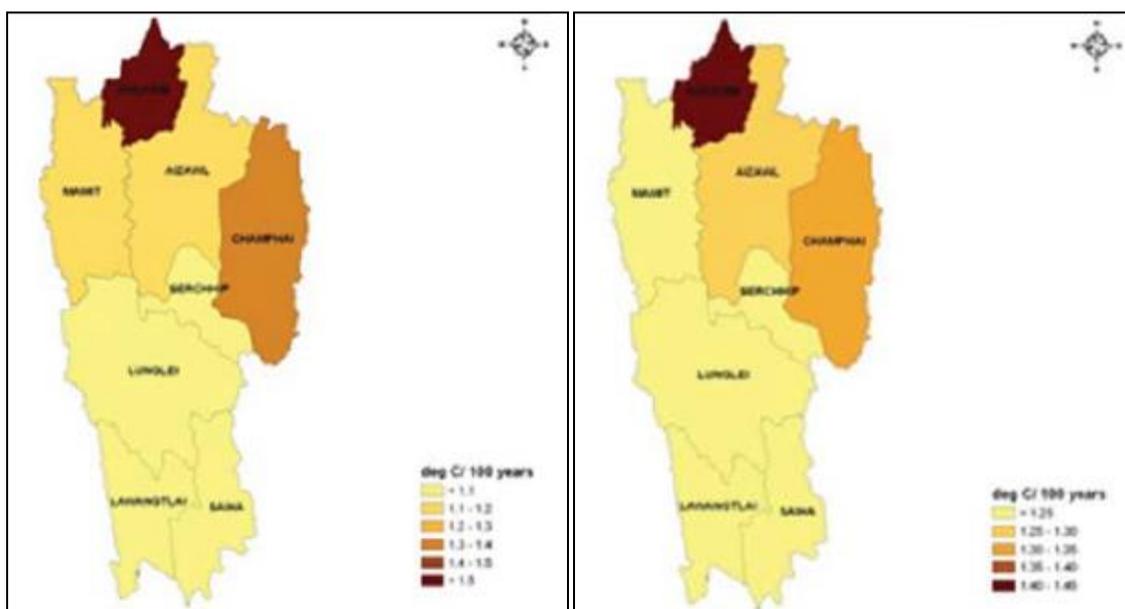
Annex 3

Figure 11: *District-wise precipitation trend (mm/day per 100 yr) of south-west monsoon (June-September) for the period 1971-2005*



**Source:** Mizoram State Action Plan on Climate Change (SAPCC) 2010-15, Govt. of Mizoram

Figure 12: *Spatial pattern of temperature trends for JJAS ( $^{\circ}\text{C}$  per 100 yr) over Mizoram for the period 1901-2002\**

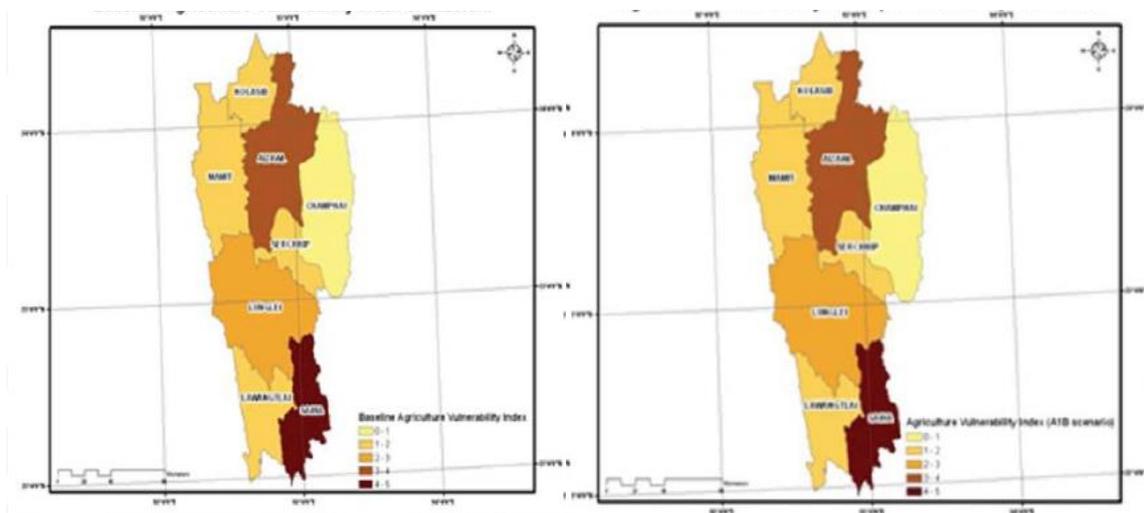


(a) *Spatial Pattern of Minimum Temperature Change for Mizoram*

(b) *Spatial Pattern of Maximum Temperature Change for Mizoram*

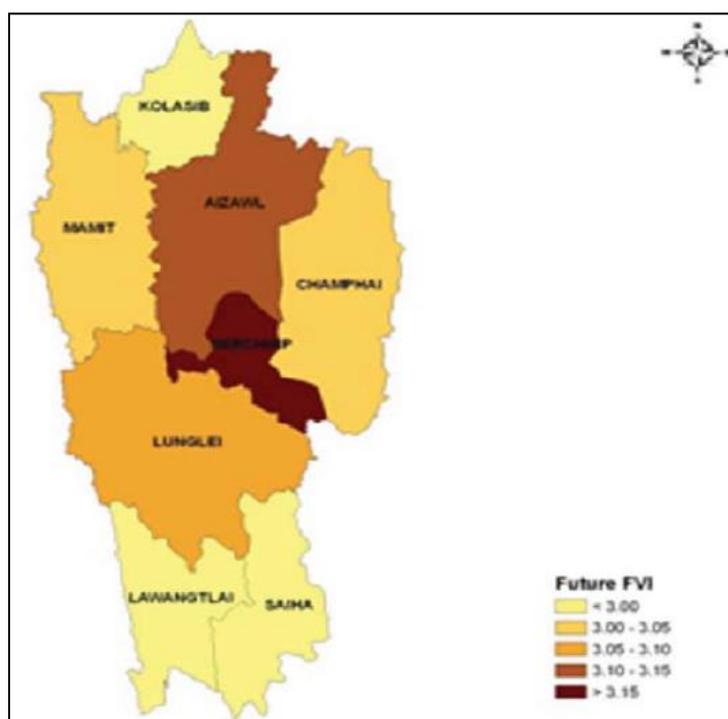


Figure 15: **District-wise agricultural vulnerability profile of Mizoram for baseline and A1B scenario (where 0-1 represents very low vulnerability, 1-2 represents low vulnerability, 2-3 represents moderate vulnerability, 3-4 represents high vulnerability and 4-5 represents very high vulnerability)**



Source: Mizoram State Action Plan on Climate Change (SAPCC) 2010-15, Govt. of Mizoram

Figure 16: **District-wise representation of the area that is projected to undergo change in vegetation type by 2021-2050 in Mizoram**



Source: Mizoram State Action Plan on Climate Change (SAPCC) 2010-15, Govt. of Mizoram