



IFAD
INTERNATIONAL FUND FOR AGRICULTURAL DEVELOPMENT
Executive Board – Sixty-Seventh Session
Rome, 8-9 September 1999

REPORT AND RECOMMENDATION OF THE PRESIDENT

TO THE EXECUTIVE BOARD ON A PROPOSED LOAN TO THE

KINGDOM OF BHUTAN

FOR THE

SECOND EASTERN ZONE AGRICULTURAL PROGRAMME



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CURRENCY EQUIVALENTS

Currency Unit	=	Ngultrum (BTN)
USD 1.00	=	BTN 42.0
BTN 1.00	=	USD 0.024

WEIGHTS AND MEASURES

1 kilogram (kg)	=	2.204 pounds (lb)
1 000 kg	=	1 metric tonne (t)
1 kilometre (km)	=	0.62 miles (mi)
1 metre (m)	=	1.09 yards (yd)
1 square metre (m ²)	=	10.76 square feet (ft ²)
1 acre	=	0.405 ha
1 hectare (ha)	=	2.47 acres

ABBREVIATIONS AND ACRONYMS

BDFC	Bhutan Development Finance Corporation
DYT	District development committee (<i>Dzongkhag Yargay Tshogchung</i>)
FEZAP	First Eastern Zone Agricultural Project
GYT	Block development committee (<i>Geog Yargay Tshogchung</i>)
MOA	Ministry of Agriculture
PFO	Programme Facilitation Office
RNR	Renewable natural resources
SNV	Netherlands Development Organization (Stichting Nederlandse Vrijwilligers)
UNCDF	United Nations Capital Development Fund
UNOPS	United Nations Office for Project Services

GLOSSARY

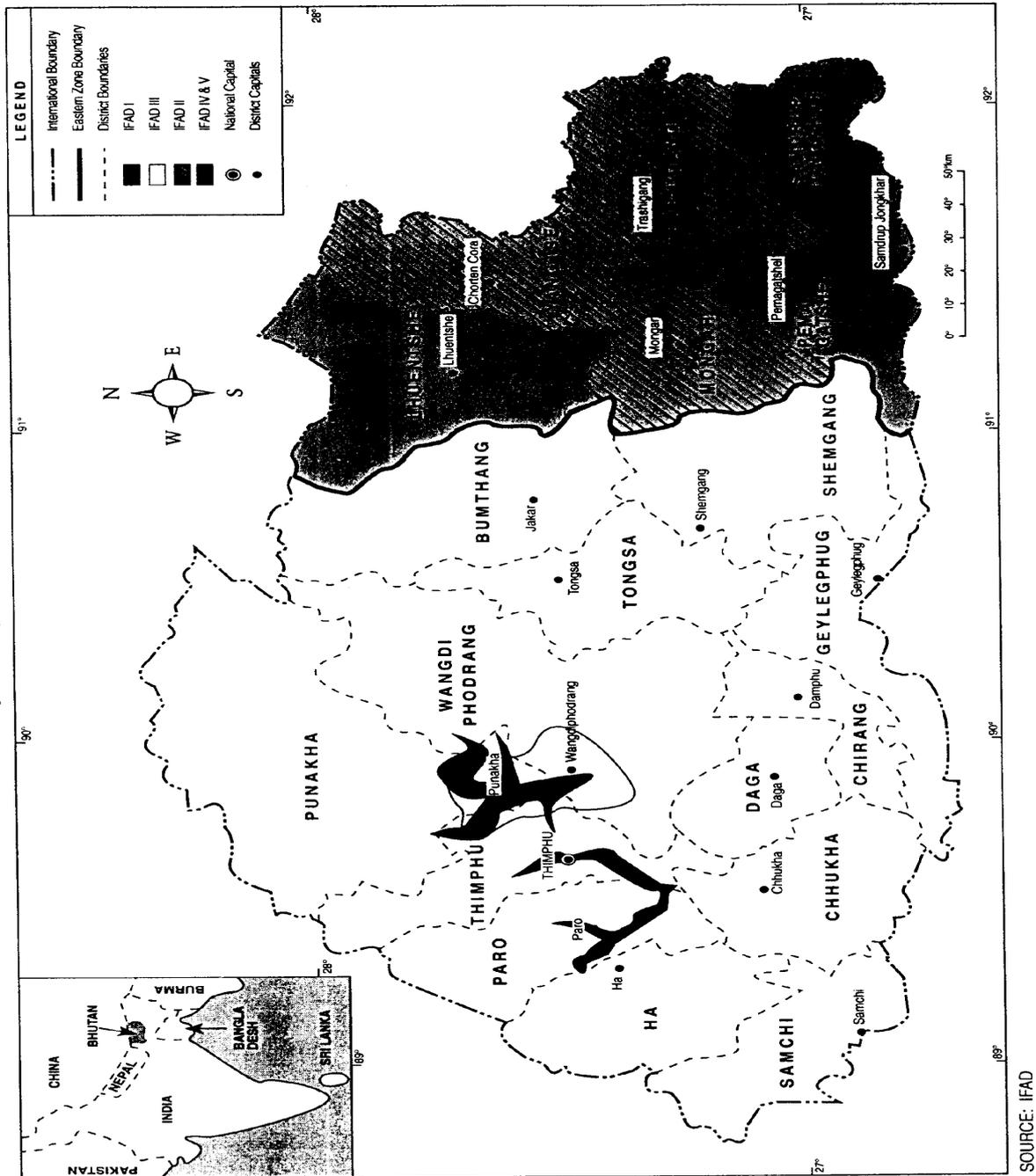
<i>Dzongdag</i>	District administrator
<i>Dzongkhag</i>	Administrative district
<i>Geog</i>	A village block, an administrative unit within a district
<i>Gup</i>	Senior elected village-block representative (3-year term)

GOVERNMENT OF THE KINGDOM OF BHUTAN

Fiscal Year

1 July – 30 June

MAP OF THE PROGRAMME AREA



Source: IFAD

The designations employed and the presentation of the material in this map do not imply the expression of any opinion whatsoever on the part of IFAD concerning the delimitation of the frontiers or boundaries, or the authorities thereof.



KINGDOM OF BHUTAN
SECOND EASTERN ZONE AGRICULTURAL PROGRAMME
LOAN SUMMARY

INITIATING INSTITUTION:	IFAD
BORROWER:	Kingdom of Bhutan
EXECUTING AGENCY:	Ministry of Agriculture (MOA)
TOTAL PROGRAMME COST:	USD 17.83 million
AMOUNT OF IFAD LOAN:	SDR 6.95 million (equivalent to approximately USD 9.51 million)
TERMS OF IFAD LOAN:	40 years, including a grace period of ten years, with a service charge of three fourths of one per cent (0.75%) per annum
COFINANCIERS:	Netherlands Development Organization (SNV) United Nations Capital Development Fund (UNCDF)
AMOUNT OF COFINANCING:	SNV: USD 2.11 million UNCDF: USD 0.53 million
TERMS OF COFINANCING:	Grants
CONTRIBUTION OF BORROWER:	USD 5.06 million
CONTRIBUTION OF BENEFICIARIES:	USD 0.62 million
APPRAISING INSTITUTION:	IFAD
COOPERATING INSTITUTION:	United Nations Office for Project Services (UNOPS)



PROGRAMME BRIEF

Who are the programme's beneficiaries? The programme will benefit approximately 23 000 poor, food-insecure households in the Eastern Zone of Bhutan. For the most part, these families engage in small-scale mixed farming on mainly dryland plots; some have small areas under irrigation. Backyard animals and access to the surrounding forest lands for fodder, fuelwood and other forest products provide meagre additional income and livelihood. These households barely manage, if at all, to have enough food or cash resources to survive the lean, "hungry" season of the year from April to June/July.

Why are they poor? Their poverty stems from a range of adverse circumstances that reinforce each other seemingly in a vicious circle. Although the distribution of land and other assets is relatively equitable in Bhutan, with few who are very rich or very poor, the basic paucity of accessible good-quality land and other resources severely limits real opportunities for food production and cash-income generation under the present circumstances. The lack of additional irrigation opportunities, suboptimal use of existing irrigation, inadequate provision of external inputs and services, and low-level production technologies also limit productivity and production all round. Low returns and the consequent shortage of cash resources, along with a lack of credit, inhibit full exploitation of investment opportunities. Even when production does increase, poor market access due to the rugged terrain, poor marketing infrastructure and organization, and inadequate processing and storage facilities can lead to wastage. Other adverse circumstances are: further deterioration if improved soil-and-water conservation practices are not adopted; the lack of alternative, non-crop income-generating opportunities; and insufficient community and farmer-group organization and action (although in this respect emerging community structures and existing community traditions offer good prospects for more active community involvement in the future).

What will the programme do for them? The programme will contribute to alleviating poverty and food vulnerability in a sustainable manner by intervening at various points in the "vicious circle". The programme's activities – in research, extension, irrigation, credit, infrastructure support, institutional support, etc. – will place training, technical advice, physical resources, cash funds, local organization and infrastructure at the disposal of individual farmers and local communities. This will enable them to: enhance the quality and sustainability of their land and water resources through improved soil nutrition, water availability, water management, and soil-and-water conservation; upgrade their production technologies through the right combination of skills and inputs that will be made available; gain better access to markets; avoid post-harvest losses through improved storage, processing and transport infrastructure; enhance the value of their non-timber forest products; and broaden their opportunities for alternative income-generating enterprises based on traditional and newly acquired skills.

How will they participate in the programme? Participation will take the following forms: participatory diagnostic surveys to identify village-level development needs and opportunities; planning and execution of small-scale infrastructure and other community-based schemes through the locally elected village and district development committees; participatory, on-farm trials, followed by participatory evaluation of results; farmer-to-farmer demonstrations on farmers' own fields; farmers teaming up with project personnel to identify and reach the households targeted by the project; periodical beneficiary-monitoring workshops to assess project performance; specialized, need-based farmer associations (such as water users associations, potato-growers' groups, vegetable-marketing groups, etc.); credit and savings groups; participatory selection, design, construction, operation, maintenance, replacement and rehabilitation of small-scale irrigation schemes; "contract breeding" of superior poultry, pigs and cattle; and training for farmers to set up private businesses as village veterinary workers.



**REPORT AND RECOMMENDATION OF THE PRESIDENT OF IFAD
TO THE EXECUTIVE BOARD ON A PROPOSED LOAN TO THE
KINGDOM OF BHUTAN
FOR THE
SECOND EASTERN ZONE AGRICULTURAL PROGRAMME**

I submit the following Report and Recommendation on a proposed loan to the Kingdom of Bhutan for SDR 6.95 million (equivalent to approximately USD 9.51 million) on highly concessional terms to help finance the Second Eastern Zone Agricultural Programme. The loan will have a term of 40 years, including a grace period of ten years, with a service charge of three fourths of one per cent (0.75%) per annum. It will be administered by the United Nations Office for Project Services (UNOPS) as IFAD's cooperating institution.

PART I - THE ECONOMY, SECTORAL CONTEXT AND IFAD STRATEGY

A. The Economy and the Agricultural Sector¹

1. Bhutan is a mountainous, landlocked country in the eastern Himalaya Mountains. About 95% of its population is rural and engages in agricultural activities, including crop cultivation, small-scale animal husbandry, and the collection and processing of forest products, as well as such cottage activities as weaving and butter and cheese-making. Agriculture accounts for about 40% of the gross domestic product, which at current prices stood at USD 550 per capita in 1996 (using the census population). Economic growth in recent years has largely been based on expansion in the electricity, mining quarrying, manufacturing and transport/communication sectors. Coal, limestone, marble and slate are mined/quarried and exported raw or processed. Other exports include cement, hydroelectricity, charcoal and timber.

2. The primary sector – agriculture, forestry, livestock and irrigation – is known in Bhutan as the renewable natural resources (RNR) sector. The Government's policy objectives for this sector are: sustainable development of arable agriculture, animal husbandry and forestry; improvement in the income level, living standards and nutritional status of the population; and environmental conservation, with emphasis on integrated crop/livestock/forestry development within a watershed management approach. The Government attaches high priority to the development of the RNR sector in view of its importance for the livelihood of the country's mainly rural population. Arable land is a key limiting resource in this sector, since it constitutes only about 8% of the total land area. Approximately 12% of the arable land is under irrigation. Mixed subsistence farming is the format most commonly practised. The main crops are cereals (mainly rice and maize) and fruits and vegetables, especially potatoes. Yields are low, but potential exists for raising them and for crop intensification and diversification.

3. The core actors in the RNR sector are: farmers and their community organizations; input supply agents; marketing/agro-processing handlers; the Bhutan Development Finance Corporation, as the

¹ See Appendix I for additional information.



sole supplier of farm credit; and the Ministry of Agriculture (MOA), as supplier of agriculture services. The Ministry provides key support services (e.g., research, extension, machinery supply, veterinary/epidemiological services, etc.) to farmers through its network of regional, district and sub-district offices and its regional and subregional research centres (known as RNR research centres/sub-centres), livestock-breeding farms, seed-production centres and forestry support services. The Government aims at strengthening and reorienting these services towards/further decentralization, privatization, and greater farmer involvement and farmer direction through local community organization.

4. The country is divided administratively into 20 districts (*dzongkhags*), each headed by a district administrator (*dzongdag*). Districts are subdivided into village blocks (*geogs*), of which there are 196 in the country. Under the decentralization policy, district development committees (DYTs) have been established to oversee development planning and implementation. The DYTs are chaired by the district administrators and have an elected membership comprising the senior block representative (*gup*) and other village representatives. The Government has introduced block development committees (GYTs) to further decentralize planning formulation and implementation down to the *geog* level. The GYTs are chaired by the *gup*, and have an elected representative from each village as members. Development agency representatives (agricultural officers, animal-husbandry officers, irrigation officers and forestry-extension officers) attend as observers. The GYTs and DYTs are to play an increasingly important role in decentralized, participatory planning and decision-making, a key feature in the Government's approach to rural development.

B. Lessons Learned from Previous IFAD Experience in Bhutan

5. Through its projects in Bhutan, IFAD has been supporting the Government in its aspirations for greater food security, higher income levels and environmental sustainability. The ultimate vision is one of a society developing and modernizing at a reasonably rapid pace, but avoiding some of the all-too-common features of "maldevelopment", such as indiscriminate "modernization", urbanization, ecological and cultural degradation, unemployment, and marginalization/dehumanization of substantial sections of the population. The immediate task of increasing production is in itself a challenging one, given the meagre technological, institutional and infrastructure base with which the country had started and the severe constraints posed by the difficult topography and extreme shortage of arable land. IFAD's experience with the First Eastern Zone Agricultural Project (FEZAP) and the Punakha-Wangdi Phodrang Valley Development Project has been positive in this respect. The projects have helped to boost crop yields, cropping intensities and crop diversification, which has led to increased production, self-consumption and cash earnings for households and better household food security and nutrition. The surpluses generated have had favourable forward and backward-linkage effects on the local economy. This process needs to be consolidated and expanded through continuing institutional and technical support along participatory and sustainable lines, addressing at the same time the technical, organizational and institutional constraints that still remain.²

6. Given the variety of conditions and constraints in Bhutanese agriculture and the multiple goals identified (including food security, cash income, and environmental stability), a broad-based approach remains valid. Accordingly, the staple food grains (rice and maize) as well as new, higher-value crops should be supported; crops should be intensified and diversified; technologies for both intensive land use and land conservation need to be adopted; irrigated as well as rainfed areas should be developed; low-altitude as well as high-altitude areas should be catered to; both subsistence farmers and farmers with marketable surpluses should be supported; and crops as well as livestock and forest products should be promoted – each of these in their own specific circumstances and agro-ecological niches.

² For more specific lessons learned, see Appendix III.



Given the breadth of such an effort, the critical elements would be the strengthening of local and sectoral institutions, delivery of services, and the creation and dissemination of knowledge. These features need to be strengthened and improved upon in IFAD's interventions.

C. IFAD's Strategy for Collaboration with Bhutan

7. **Bhutan's policy for poverty eradication.** With "gross national happiness" described as the official goal, the Government is promoting nationwide food self-sufficiency and household food security, aiming at 70% self-sufficiency in food grains. Increasing food production where possible (e.g., by renovating and extending irrigation channels) and encouraging the planting of higher-value crops (e.g., horticultural crops that can be traded with neighbouring countries) are important features of the policy. A further objective is to enhance cash incomes and raise the nutritional intake levels of the rural population by promoting sustainable crop and livestock production within an integrated RNR production system, with emphasis on forest land protection and management and improved land-husbandry and cropping practices. Other features include: promotion of community participation through the block and district development committees and the promotion of farmers' groups; supply of some basic foodstuffs through "fair-price shops" at below - market prices; and a "National Work Force" scheme, which offers employment to poor families on road construction and building maintenance sites, along with basic housing at the sites.

8. **The development activities of other major donors.** The following activities by other donors, either echo IFAD's concerns or they complement the present programme: (a) assistance from the United Nations Development Programme to develop Bhutan's potential for horticultural crops under the Integrated Horticulture Development Project, whose main components are technical assistance and training; the project's kitchen-garden component is expected to support the horticultural training and demonstration activities proposed here; (b) the forthcoming Micro-Finance Project of the United Nations Capital Development Fund (UNCDF), which will finance a credit line and infrastructure and institutional support for Bhutan Development Finance Corporation's (BDFC's) regional offices; (c) a UNCDF pilot programme, which will set up local development funds for 10 *geogs* for development activities undertaken by GYTs; (d) the World Food Programme's project for the construction and upgrading of community feeder roads in the Eastern Zone; (e) the World Bank's Third Forestry Development Project, whose communal forests and pilot community-plantation component will support tree plantation and catchment protection in the irrigation schemes proposed here; and (f) the European Union's Extension Support Project, which is lending financial and technical assistance to modernize agricultural extension systems and will support the present programme's farmer training and demonstration activities.

9. **IFAD's strategy in Bhutan.** IFAD's strategy for Bhutan derives from its project experience and is focused on supporting the Government as it pursues its policy of greater food security, higher income levels and environmental sustainability. These objectives are to be achieved through the intensification and diversification of agricultural production by way of integrated renewable-natural-resource use and management. Enhanced participation, better public-service delivery, reduced subsidies and improved market access will be some of the means adopted. The aim also is to avoid any undesirable social, cultural or environmental effects of development while promoting an equitable spread of benefits across the geographic and social spectrum. In consonance with these objectives, IFAD's strategy is to adopt an approach that is multifaceted, participatory, demand-driven and, although targeted at the whole area, concentrated on the less-advantaged, food-insecure areas; the Eastern Zone is the country's largest such area. Some of the elements inherent in this strategy are: more effective outreach to beneficiaries at the grass-roots level; institutional strengthening of local, block and district agencies and organizations (both formal and informal); intensification of staple-food production to enhance food security through research, technology development and extension; diversification of crop, livestock and forest production towards higher-value, readily marketable items that would boost



farm and household incomes; marketing support, including infrastructure investments where appropriate; and bringing small farmers into the economy by making credit available to them.

10. **Programme rationale.**³ Bhutan's Eastern Zone is considered the most remote and food-insecure region in the country. At the same time, it possesses considerable potential for development, including good administration, a large market in neighbouring India and Bangladesh, and strengthened institutional and technical capabilities developed during the IFAD-financed FEZAP. The Government has recently embarked upon its Eighth Plan, which attaches high priority to development of this region, and has designated IFAD as its preferred lead agency in this regard. The FEZAP was a first step in the long-term development of this area, which now needs further institutional and technical support to achieve its full development potential. The Second Eastern Zone Agricultural Programme will make it possible to maintain the impetus already generated, consolidate present gains, complete investments initiated, and further reorient services and approaches towards greater integration and participation. Moreover, the FEZAP evaluation recommended a second-phase project for the Eastern Zone. The magnitude of the need and the development potential of the Eastern Zone provide strong justification for this second-phase programme.

PART II - THE PROGRAMME

A. Programme Area and Target Group

11. The programme area comprises the six districts (*dzongkhags*) of Lhuentse, Mongar, Pemagatshel, Yangtse, Trashigang and Samdrup-Jongkhar – formerly known, and still referred to, as the Eastern Zone. It is composed of 66 village blocks (*geogs*) covering an area of 12 530 km² (26% of the national total) and a population estimated at 204 000 (36% of the national total). With 28 200 farm households, the area's rural population is calculated at 191 600. The area is rugged, with altitudes ranging from 200 m above sea level in the south to 7 500 m in the Himalayas. About 65% of the area is classified as forest; a scant 12% is classified as agricultural, of which more than half is located on slopes with gradients exceeding 50%. Crop type and suitability is heavily dependent on location, aspect and altitude. Most farms have mixed wetland, dryland and shifting cultivation, plus some access to grazing and forest land. Crop, livestock and forestry activities are usually well integrated. Rice and maize are the main cereals grown. Where irrigation is available, winter wetland crops include wheat, mustard and potatoes. Maize rather than rice occupies the largest surface area in this zone, where it forms the staple diet. Potatoes are cultivated mainly for export. The food security of farm families rests predominantly on maize and rice production. Maize is grown on fairly steep slopes, and is inset into the forest. Lowland rice is a stabler production system, comparatively speaking, since soil erosion, nutrient depletion and soil degradation threaten upland maize cultivation. Although average yields are still low (1 650 kg/ha for maize and 2 200 kg/ha for rice), cropping methods are changing with the adoption of improved varieties and fertilizer use. Homestead farming includes fruit and vegetable production and raising small ruminants, poultry and pigs. Large animals are kept principally for portage, draught power and manure. Due to cultural/religious reasons, the potential for increased livestock production is modest. Apart from locally slaughtered pigs, all other meat is imported. The commercial livestock sector is minuscule. Forests provide fuel, fodder, timber, traditional foods, and organic matter for crop nutrition, as well as non-timber forest products, such as essential oils, resin, chirata and mushrooms, which provide a source of income. Other family income is derived from wage labour; marketing of milk products (particularly cheese), poultry, pigs, vegetables, fruit, and lemon grass oil; and crafts, e.g., weaving.

³ For further details, see Appendix IV.



12. Poverty and food insecurity are widespread in the Eastern Zone. Around 80% of rural households are estimated to have not enough or just barely enough food to last through the lean season. These households will be the prime focus of programme activities. The target group universe comprises an estimated 23 000 households and spans a broad spectrum of farming, livestock and forest-based occupations. Typically, they are small farmers who practise dryland and shifting cultivation with perhaps a small wetland area on their farms and some backyard animals for manure and draught power.

13. Although women-headed households will be targeted as well, they represent a relatively small proportion of the total. Women enjoy equal legal status and are not subject to social prejudice or discrimination. Land inheritance under the matrilineal system places them in a favourable position in terms of household decision-making. In agriculture, men and women generally complement each other in the performance of farming activities, except such activities as ploughing and bunding which are carried out exclusively by men. Women are less mobile than men and are less active in social and economic life beyond the immediate village community, such as in the GYT. They are also under-represented in public-sector employment and are less literate.

14. Given the relative uniformity in living standards and the well-knit, kinship-based nature of the communities, the differential provision of services to households in the same neighbourhood would be perceived locally as discriminatory. The programme will rely on various mechanisms for targeting. Community dialogue through the GYT will ensure that the concerns of the poor are reflected in research and extension agendas. In the allocation and presentation of programme interventions (including training and on-farm demonstrations), the programme's management and the elected village representatives will channel activities to give preference to poorer families. Selection of crucial infrastructure for investment under local development initiatives will be directed towards disadvantaged *geogs* and communities. Disadvantaged *geogs* will be identified and selected as pilot sites for contract breeding and the rearing of poultry and other animals. In the case of irrigation investments, the criterion for scheme selection will be that the majority of farmers should have under one acre of wetland. Credit-based activities will be undertaken with small loans backed by group guarantees, exclusively for small farmers without collateral: these are expected to be of little interest to better-off households. For some activities, the programme will adopt locations and methods that are especially suited to the target group, e.g., by offering training *in situ* in response to the mobility constraints of women. Other targeting methods will be tested and refined, including a wealth-ranking method based on asset ownership.

B. Objectives and Scope

15. The purpose of the programme is to alleviate rural poverty in the Eastern Zone of Bhutan by enhancing the incomes, living standards and food security of rural households through sustainable, community-based resource use. This is to be achieved through integrated action to increase crop, livestock and forest-based production based on individual, group and community-based activities undertaken with support from local representative institutions and public-sector service-delivery organizations. The programme, which will be carried out within the framework of the Flexible Lending Mechanism, will be implemented in two phases over an eight-year period. The first three years will begin with planning, testing and setting up the necessary organizational and institutional capacity at the local level. Based on a programme review of experience in this phase, a second phase in years 4 to 8 will build on the achievements of the first phase.



C. Components

16. The programme activities are grouped into the five components described below.

17. **Local development initiatives.** As a means towards achieving more sustainable and relevant development and as an end in itself, the programme will promote local development initiatives based on the articulation of community priorities. Local technical capacity and participatory mechanisms will be strengthened by revitalizing of local institutions, especially the GYTs, and by promoting informal farmer associations and special interest groups. This is in line with the Government's decentralization policy and aspirations. Local institutions and groups will be provided the opportunity to identify, plan and execute priority small-scale infrastructure and other community-based activities. Doing so will enhance the capacity for effective bottom-up planning at the *geog* level.

18. In pursuance of these objectives, the programme will provide the following: (a) training, staff mobilization and technical assistance for carrying out diagnostic and other studies at the *geog* level, identifying priority needs and opportunities for community betterment; (b) orientation and technical training, technical assistance, staff and materials for promoting farmer groups, e.g., for potato producers, milk producers, marketing, water users, non-timber forestry products; and (c) grant funds, materials, training, technical assistance and task-force mobilization for planning and execution of locally identified infrastructure (such as access tracks and roads, small bridges, storage sheds and market places) or for other community needs, such as maternal and child health and nutrition, adult literacy, etc. These community or group undertakings will be planned and executed by the communities themselves, at their own initiative and discretion; they will be mainly under the aegis of the GYTs, with technical, financial and material support from the programme.

19. **Community-based natural resource development.** Under this component, the programme will provide assistance - i.e., equipment, materials, funds, training, technical assistance, staff support and operation/maintenance assistance - to the following production-support activities, organized and conducted mainly at the **district** level but with adequate grass-roots linkage and outreach: catchment system rehabilitation; irrigation rehabilitation and upgrading; sustainable crop intensification and diversification; improvement of storage, marketing and inputs supply; livestock improvement; use and conservation of non-timber forestry products; and local agro-processing and artisanal income-generating activities.⁴

20. **Renewable natural resource services.** To support the community-based activities stated under the previous component and to underpin the overall on-farm research and extension effort, the programme will build up essential institutional and scientific capacity for integrated agricultural research and extension as well as other support services. Specifically, the programme will foster the development of infrastructure and service-delivery capacity at the RNR centres and sub-centres in Wengkharr, Nankor, Lingmethang, Khangma, Tashiyongphu and Arong and at various agriculture extension centres in the districts; it will do this by providing laboratory and office space and equipment, vehicles, land, and other work-related facilities, as well as additional staff and funds for operation and maintenance. Provision is also made for training and technical assistance. This support will enable the centres (each representing important sectoral specializations and agro-ecological niches) to fulfil their role more effectively as launching pads for on-farm participatory research, extension and service delivery. The efficacy of such institutional support was demonstrated in the IFAD-supported Punakha-Wangdi Phodrang Valley Development Project, where the Bajo Research Centre became the vanguard for agricultural and economic advancement in the whole valley.

⁴ For the content and details of each of these items, see paragraphs 3 to 7 of Appendix V.



21. **Rural financial services.** The substantial investments made in the Eastern Zone under the FEZAP, which will be continued under the present programme, will enhance economic opportunities in the region and stimulate further rural investments. Credit is an important input underpinning this process. Credit demand is anticipated for: seed and fertilizer inputs for crops and vegetables; orchard development and nurseries; land development through irrigation and contour bunding; farm machinery (e.g., power tillers, grain mills, and oil extractors, which would only be approved for groups or as joint loans); agro-processing units for value addition, (e.g., for lemon grass); livestock (e.g., pigs, poultry, mules for transport, draught animals and dairy cows); contract-breeding schemes, contract production for agro-processing, agro-processing machinery, small commercial nurseries and small-scale enterprises; small-scale enterprises (e.g., weaving handicrafts and tailoring for women); and other income-generating and trading activities.

22. A savings facility will also be provided under the programme. The products to be offered will include joint compulsory savings, joint voluntary savings for groups, and savings for individuals. Savings deposit and withdraw facilities will be made available at the *geog*, and sometimes at the village, level. The branch staff will carry cash and the accounts with them on specified dates, operating as a sort of mobile banking facility.

23. **Programme facilitation and management.** To enable the Programme Facilitation Office (PFO) to perform its normal administrative and financial functions efficiently, respond to community needs, and play a heightened role in marshalling resources from different sources (e.g., RNR centres, districts, blocks, other Ministry of Agriculture agencies, the technical-assistance team, the private sector, etc.), the PFO will be strengthened through provision of financial, physical and technical resources. These will include: improvement of office and transport facilities; addition of key staff (notably a finance officer and a monitoring and evaluation officer); coverage of operating and maintenance expenses; placement of unallocated technical-assistance funds at its disposal; and funding for studies, workshops, training sessions, and participation in meetings of GYT and other stakeholders.

D. Costs and Financing

24. Total programme costs, including price and physical contingencies, are estimated to be USD 17.83 million over the eight-year implementation period (Table 1). The financial plan for the programme is set out in Table 2. An IFAD loan of USD 9.51 million will partially finance all project components and all expenditure categories except technical assistance and international staff salaries. A UNCDF grant of USD 0.53 million will finance part of the rural financial services component, and a grant of USD 2.11 million from The Netherlands (to be executed by the Netherlands Development Organization (SNV)) will finance all technical-assistance expenditures. The Government of the Kingdom of Bhutan will contribute USD 5.06 million for incremental salaries and part of the operating expenses; the beneficiaries will contribute USD 0.62 million. IFAD will provide a Special Operations Facility grant of USD 50 000, not included in the programme costs, to support start-up activities. Retroactive financing of USD 700 000 will be authorized for eligible programme expenditures incurred before the effectiveness date but after 30 June 1999 for civil works, equipment, vehicles, training, and operating costs; and eligible expenditures for incremental credit incurred before the effectiveness date but after the subsidiary loan agreement between BDFC and the Government has been entered into.

TABLE 1: SUMMARY OF PROGRAMME COSTS^a
(USD million)

Components	Local	Foreign	Total	% of Foreign Exchange	% of Base Costs
Local development initiatives	0.50	0.66	1.15	57	8
Community-based natural resource development	4.12	1.05	5.17	20	34
Renewable natural resource services	4.27	1.30	5.57	23	37
Rural financial services	-	1.54	1.54	100	10
Programme facilitation and management	0.90	0.83	1.73	48	11
Total base costs	9.79	5.38	15.16	35	100
Physical contingencies	0.25	0.03	0.28	10	2
Price contingencies	2.26	0.13	2.39	6	16
Total programme costs	12.30	5.54	17.83	31	118

^a Discrepancies in totals are due to rounding.

TABLE 2: FINANCING PLAN^a
(USD million)

Components	IFAD		SNV		UNCDF		Government		Beneficiaries		Total		Foreign Exchange	Local (Excl. Taxes)	Duties And Taxes
	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%			
Local development initiatives	0.82	61.6	0.51	38.4	-	-	-	-	-	-	1.33	7.5	0.68	0.65	-
Community-based natural resource development	3.32	52.8	0.51	8.1	-	-	1.84	29.2	0.62	9.9	6.29	35.3	1.09	5.21	0.21
Renewable natural resource services	3.46	52.0	0.44	6.6	-	-	2.75	41.3	-	-	6.65	37.3	1.34	5.31	0.17
Rural financial services	1.05	66.7	-	-	0.53	33.3	-	-	-	-	1.58	8.8	1.58	-	-
Programme facilitation and management	0.86	43.5	0.65	32.8	-	-	0.47	23.7	-	-	1.98	11.1	0.85	1.13	0.04
Total disbursement	9.51	53.4	2.11	11.9	0.53	2.9	5.06	28.4	0.62	3.5	17.83	100.0	5.54	12.30	0.42

^a Discrepancies in totals are due to rounding.





E. Procurement, Disbursement, Accounts and Audit

25. **Procurement.** Procurement of goods and services, including consultants, financed by IFAD would be in accordance with procedures acceptable to IFAD. Contracts for civil works, except irrigation rehabilitation, will be awarded on the basis of competitive bidding advertised locally. Irrigation rehabilitation and construction will be carried out by force account. Given the limited number of vehicles operated by the Government and the lack of service and repair facilities in Bhutan, programme vehicles will be purchased from a single supplier in accordance with standard government procedures. Cement pipes and high-density polyethylene pipes for the irrigation schemes will be procured from local suppliers. The procurement of goods and services will have financial limits as follows: (a) items costing USD 20 000 or more will be procured through local competitive bidding; and (b) items costing up to USD 20 000 will be procured through local shopping procedures. All contracts for goods and services valued at more than USD 100 000 will be subject to prior review.

26. **Disbursement.** The IFAD loan will be disbursed over an eight-year period. Funds will be disbursed through two special accounts: Special Account A will finance all activities other than rural credit, which will be financed through Special Account B. The total authorized amount for the special accounts will be USD 0.96 million. Withdrawals for payments under USD 30 000 equivalent will be made against certified statements of expenditure. All other disbursements will be fully documented.

27. **Accounts and audit.** All the programme implementing agencies - the six district administrations, RNR research centres and sub-centres, other Ministry of Agriculture (MOA) agencies and centres, BDFC, and the PFO - will maintain appropriate financial records and accounts in accordance with generally accepted accounting principles. The PFO will consolidate the financial information and prepare the programme accounts. On the basis of these accounts, MOA will submit semi-annual and annual financial statements and detailed statements of expenditures drawn on the loan proceeds to the cooperating institution and IFAD within three months of the end of the reporting period. The Royal Audit Authority will audit the programme accounts of all implementing agencies annually and submit an audit report to IFAD within six months of the end of the financial year.

F. Organization and Management

28. **Programme implementation.** MOA will have overall responsibility for executing the programme. Day-to-day implementation and management, following the Government's decentralization policy, will be in the hands of: the six district administrations in the programme area (which, under the Government's policy, are responsible for coordinating development in the districts); the regional and local MOA units and the RNR research centres/sub-centres (which are the main repositories of technical expertise); and BDFC (for the credit component). Given the programme's, diverse and participatory nature, it will need to pull together inputs from various sources, including: traditional village organizations, the GYTs and DYT, regional line agencies, parastatals, the private sector, and informal groups and community-based organizations. The PFO, supported by a Programme Coordination Committee, will perform a coordinating and energizing function by liaising with the district administrations and GYTs, promoting programme activities, initiating actions, and marshalling resources to enhance community participation and planning effectiveness; for this purpose, it will mount specialized task forces combining technical inputs from various sources, including the SNV-supported technical-assistance team. The Programme Steering Committee will



provide strategic guidance at the central level. A programme implementation manual, to be produced by MOA, will compile the procedures to be followed by the programme's implementing agencies.⁵

29. The programme will be implemented under IFAD's recently established Flexible Lending Mechanism in two phases: an initial three-year phase during which the basic institutional mechanisms will be established, training started and programme activities initiated in selected *geogs* and villages; and a subsequent phase of five years during which time interventions will be consolidated and *geog/village* coverage expanded. A participatory review at the end of the first phase will determine the course of the programme during the second phase, based on the programme's performance in such aspects as: the extent to which the target group has adopted efficient resource management and posted agricultural improvements; the uptake of local development initiatives and status of group formation and support; the uptake of credit and its use and repayment records; BDFC's role in the promotion and management of group credit; technical assistance and outcomes and future requirements; and beneficiaries' opinions on programme impact and performance. Satisfactory performance during the first phase will be a condition for proceeding to the second phase.

30. Among the specific "triggers" to set off the second phase are: (a) 2 300 farming households have adopted a significant level of advice and improved practices; 1 900 borrowers of individual or group credit and/or 350 groups have taken up USD 490 000 of funds; BDFC has an on-time recovery rate of at least 75%, and women make up at least 25% of all borrowers; and 18 workshops, liaison meetings and annual reviews have been held; (b) 70% of the projected irrigation works and buildings have been completed and/or renovated; (c) 10 community/catchment diagnostic studies and watershed plans have been formulated; 30 farmers', womens', and water users' groups have been trained and are efficiently operating; 10 marketing/storage facilities; 10 kilometres each of roads and tracks have been put in place; and 12 bridges or crossings or the equivalent in other common infrastructure have been built or rehabilitated; and (d) programme reports, accounts, and monitoring and evaluation data of adequate quality and timeliness are available to track these trigger points. Based on the findings of the first phase review, a mutually acceptable action plan for the second phase will be prepared.

31. **Participation.** Within the constraints posed by the area's rugged terrain and scattered communities, the programme will be implemented through the involvement and activation of the GYTs and DYT, whose institutional capabilities will be strengthened through training and technical assistance. The GYTs will gradually become the principal mechanisms for local community participation in development planning and implementation; they will identify, review and prioritize possible activities, define constraints and ensure participation in maintenance of local services and institutions. Diagnostic surveys at the *geog* level will identify development needs and opportunities and serve as input for local plans. The programme will also support the formation and strengthening of specialized need-based farmer groups, e.g., water users' associations, potato growers' groups, savings-and-credit groups, marketing groups, etc. A participatory approach will be adopted in individual programme activities. Participatory trials on farmers' fields will be designed and conducted jointly by researchers, farmers and extension agents under the leadership of the research centres, and will be followed by participatory evaluation of the results. These fields will also serve as training and demonstration grounds for local farmers. Contract-breeding of poultry, pigs and cattle by local farmers will be undertaken with technical and monitoring/evaluation support from the programme. Selected farmers will be trained as village veterinary workers to provide veterinary services to local livestock owners. The programme will involve local communities in deciding on the location, design and construction of infrastructure such as bridges, access roads and tracks, roadside storage sheds, market places, etc. Irrigation activities will be participatory at every step – from farmers' requests for assistance (to be processed by the GYTs) up through scheme planning and design, construction,

⁵ See Appendix VIII for additional information.



maintenance of civil works, and in water users' associations for the operation, maintenance and water management. Once the engineers have surveyed a site, a meeting will be organized between farmers and irrigation officials to ensure that there is a full understanding of the design of the work involved and the contributions expected of farmers. Under the credit component, group formation and group lending will be encouraged, and small loans will be provided without collateral to encourage small, poor farmers to participate in the programme's development activities.

32. The programme will adopt various approaches to encourage women's participation. Given the constraints on women's time and mobility, training and support services will be provided *in situ* as much as possible, and training materials and methods will be tailored to their specific circumstances, e.g., their illiteracy. Qualified women will be encouraged to occupy decision-making positions within their communities and will receive help in acquiring the necessary skills and knowledge. The number of female RNR staff and agricultural extension staff at the district and *geog* levels will be increased as much as possible, and women's participation in GYTs and DYT's will be encouraged. Women's access to credit will be enhanced through promotion of women's saving and lending groups. Labour-saving investments and technologies that would lighten the workload of women will be promote as well. Since inadequate intake of vegetables and fruit is a major cause of malnutrition, women will receive training in how to grow more produce in their backyards and advice on its nutritional value. They will be trained in food-processing and preserving techniques to promote food security in the lean period. Inasmuch as women in Bhutan are well attuned to local forest products, their collection or cultivation of products such as mushrooms and lemon grass will be supported, as will their involvement in forest nursery programmes as wage-earners or suppliers of seedling and planting materials. Gender-specific monitoring of programme impact will be instituted and, where the information requirements so justify, gender-disaggregated data will be collected.

33. **Monitoring and evaluation.** Overall monitoring will be the direct responsibility of the Ministry of Agriculture's Policy and Planning Division (PPD), which will oversee the programme through the PFO. PPD's statistical unit will complete the preparation of baseline data, which is to encompass the socio-economic and institutional characteristics of the individual households or groups and basic information relating to the six districts. Monitoring will be carried out at the PFO level as well as at the beneficiary level. Beneficiaries will liaise with the programme through the bBlock development committees (GYTs). The PFO will provide orientation and training in monitoring and evaluation techniques to the GYT's, extension staff and group officials. At the PFO level, the programme will have a monitoring and evaluation officer. The block extension officers – for agriculture, animal husbandry, irrigation and forestry – will gather information directly from the beneficiaries. Annual regional reviews and planning workshops will be organized by the PFO and the research centres to review programme performance and to conduct direct dialogue with the representatives of the different stakeholders. The data collected from GYT and PFO monitoring and specific case studies will be a key input for redefining the second phase of the programme after three years of implementation. Apart from the first phase review and the completion review, an ongoing evaluation of programme activities will be undertaken through sample household case studies and reports at GYT meetings by extension agents or group officers at the village level. The PFO's monitoring and evaluation officer and the district planning officers will supervise and backstop this evaluation. The PFO will coordinate the preparation of annual and semi-annual progress reports based on information collected at the field level.



G. Economic Justification⁶

34. **Benefits and beneficiaries.** The programme is expected to generate higher income levels and food availability as a result of increased agricultural production, reduced crop losses and value enhancements brought about by programme-induced factors. Annual incremental production by project year 10 would be nearly 6 400 t for rice and 8 700 t for maize, with smaller increases in crops such as potatoes, chilli, mustard and beans. Most of the produce will be consumed at home, but some would be sold or bartered on local or export markets. Besides improving food security, living standards, health and nutrition, the programme will promote grass-roots participation and institutional development, development of indigenous skills and entrepreneurship, local community development and private-sector initiative.

35. The target group universe will be the approximately 23 000 households (out of the total 28 000 in the Eastern Zone) considered to be poor and food-insecure. The group encompasses households across the spectrum of farming, livestock, forestry and natural-resource-using occupations and livelihoods. It is anticipated that about 5 750 households will adopt all or most of the improved technologies offered; these households will be the prime beneficiaries of the programme. Women are expected to benefit through training, access to credit, growing of fruits and vegetables, improved nutrition, and enhanced status stemming from better representation in community leadership and public-sector employment.

36. **Economic analysis.** Based on the quantifiable incremental costs and benefits associated with programme investments in activities such as irrigation rehabilitation, improved water management and improved technology dissemination, calculated over a 20-year period, the overall economic rate of return is estimated at 13%. The sensitivity analysis indicated that the programme is reasonably robust under most adverse conditions.

H. Risks

37. The programme faces three main risks: its successful execution hinges on collaborative action from different sources, which may be difficult to marshal; the inclination and capacities of the DYT and GYT may prove unequal to the tasks assigned to them; and “appropriate” technology generation and dissemination capability may be deficient.

38. These risks will be mitigated by the following measures. A revamped Project Coordination Committee and revised job description for the PFO will enable wider stakeholder participation (including regional line agencies, parastatals, private sector, farmers groups, and community-based organizations). The PFO will see its staff strengthened (through the posting of a full-time finance officer, thus freeing up the Programme Facilitation Officer for more field work), and will have access to considerable technical assistance support. Support will also be available from the extension programming units and the farmer support services units of the RNR centres. A task-force approach will be adopted to flexibly pool skills and manpower from diverse sources; the recent experience in watershed planning through such an approach in Radi village (Mongar District) will provide useful guidance. Considerable training and orientation support will be provided to GYTs. There is a strong government commitment to support decentralization down to the *geog* level, and the district administrators and the PFO have sufficient combined strength to pull things together. A collaborative approach and support for GYTs and DYT are among the assurances given by the Government. The workshop held with all stakeholders at the programme formulation stage galvanized a common commitment to such approaches. The technical capacity of the RNR centres will be strengthened

⁶ See Appendix IX for additional information.



substantially under the programme; there has been a recent quantum jump in the technical manpower available at the centres. Participatory on-farm research and extension, with joint researcher-extensionist-farmer involvement is a key principle under the programme, with emphasis on on-farm rather than on-station trials and demonstrations. The programme's economic viability is not dependent on the introduction of **new** technology: the adoption of existing technologies would be sufficient for returns above the threshold. A programme implementation manual will be prepared, embodying the necessary guidelines and commitments for coordinated actions. The programme's monitoring and evaluation system (with full-time staff and technical-assistance support) will facilitate timely corrective actions. Lastly, the Flexible Lending Mechanism under which the programme will be implemented will enable the approach and targets to be adjusted prior to launching the second phase.

I. Environmental Impact

39. The programme envisages minimal use of artificial fertilizers and other agro-chemicals. Farmers will rely instead on organic manure, green manure, crop rotation and integrated pest management. The proposed on-farm testing and subsequent promotion of improved land-use systems for dryland and tsheri cultivation will include ley farming of orchard crops and soil-and-water conservation measures. The possible destabilizing effect that the building of irrigation channels may have on slopes in hilly areas will be mitigated through improved irrigation design and construction procedures, including prior environmental screening of the schemes, appropriate geo-technical research, design of catchment protection sub-components in the schemes, careful alignment of water conveyance structures, greater use of PVC or ferro-cement pipes, and community planting of trees and grass on the slopes. The technical assistance provided under the programme will address these aspects. Because of various environmentally favourable or other mitigating factors in the programme, the environmental screening carried out at the formulation stage placed the programme in Category B.

J. Innovative Features

40. The programme involves a number of innovative features vis-à-vis other IFAD-supported projects in Bhutan. (a) The GYTs, which are the village representative bodies, will increasingly be the focal points for local area development. Their capabilities for genuinely performing this role will progressively be enhanced through the gradual devolution of development functions. A "local initiatives fund" placed at their disposal will enable them to learn to plan and execute small-scale infrastructure and other local need-based activities after prior diagnostic study. The programme will mobilize temporary task forces to provide training and technical assistance to the GYTs, tapping the resources of all stakeholders – the Government, non-governmental organizations, the private sector, and farmer organizations – for this purpose. (b) Research and research trials will be taken out of research stations and brought down to the village level and farmers' fields as part of a quantum shift towards participatory on-farm testing and demonstration in which researcher, extensionist, farmer and trainer will all collaborate. To catalyse this closer linkage, extension programme units and extension programme officers have been added to the set-up in the RNR research centres. (c) The extension services will be divested of their responsibility for distributing farm inputs. Private-sector "commission agents" in the districts will be encouraged to take up these tasks and will receive support under the programme for this purpose. Opportunities for entrepreneurial development will be provided to farmers through contract-breeding of animals (contracted between the farmer and the Government's livestock centres), private "para-vet" practices and development of farmer-owned and managed nurseries. (d) A village-based group savings-and-lending scheme will be promoted by BDFC.



PART III - LEGAL INSTRUMENTS AND AUTHORITY

41. A loan agreement between the Kingdom of Bhutan and IFAD constitutes the legal instrument for extending the proposed loan to the borrower. A summary of the important supplementary assurances included in the negotiated loan agreement is attached as an annex.
42. The Kingdom of Bhutan is empowered under its laws to borrow from IFAD.
43. I am satisfied that the proposed loan will comply with the Agreement Establishing IFAD.

PART IV - RECOMMENDATION

44. I recommend that the Executive Board approve the proposed loan in terms of the following resolution:

RESOLVED: that the Fund shall make a loan to the Kingdom of Bhutan in various currencies in an amount equivalent to six million nine hundred and fifty thousand Special Drawing Rights (SDR 6 950 000) to mature on and prior to 1 September 2039 and to bear a service charge of three fourths of one per cent (0.75%) per annum, and to be upon such other terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board in this Report and Recommendation of the President.

Fawzi H. Al-Sultan
President

SUMMARY OF IMPORTANT SUPPLEMENTARY ASSURANCES INCLUDED IN THE NEGOTIATED LOAN AGREEMENT

(Loan negotiations concluded on 3 September 1999)

1. The rural financial services component of the programme will be carried out by BDFC and, for this purpose, the Government of the Kingdom of Bhutan (the Government) will make available to BDFC a part of the proceeds of the loan upon terms and conditions set forth in the loan agreement.
2. As soon as practicable after the date of the loan agreement but in no event after the effective date, the Government will open and thereafter maintain in the Thimphu branch of the Bank of Bhutan, or another bank acceptable to the Fund, a current account denominated in local currency for programme operations ("budget fund account").
3. The Government will transfer available funds and other resources called for in the annual work programme and budget (AWPB) to BDFC in accordance with the BDFC subsidiary agreement to be entered into between the Government and BDFC to carry out the rural financial services component.
4. The BDFC will prepare draft by-laws for the rural financial services component as soon as practicable. The credit by-laws will include, among other things, the following provisions: loan ceilings to individuals and groups; activities which may be financed; loan repayment terms; and that, for eligibility purposes, any loan which is technically feasible and financially viable, shall be eligible.
5. BDFC will establish and maintain a monitoring and reporting system whereby all net revenues from credits extended to programme beneficiaries financed (directly or indirectly) by the loan will be recorded. BDFC will extend further credits to programme beneficiaries in accordance with this agreement at least until such date as shall be specified in the BDFC subsidiary agreement or, if no date is so specified, until all loan service payments have been made in full. For purposes of this paragraph, the term "net revenues" means all repayments of principal and all payments of interest, less reasonable operating and other costs.
6. The Government and IFAD will jointly conduct a review of programme activities in the latter half of the third programme year (first-phase review). The results of the first-phase review will be the basis upon which IFAD will determine whether its funding for the programme will continue during the second phase of the programme (second phase). The Government acknowledges that unsatisfactory performance during the first phase, as evaluated according to and based on a review of the trigger indicators set forth in paragraph 8 below, may result in a decision by IFAD to delay the commencement of or cease funding for the second phase.
7. Should IFAD decide to:
 - (a) cease funding for the programme, any unutilized loan proceeds will be cancelled;
 - (b) delay the commencement of the second phase, the Government will make any necessary corrections/adjustments as recommended and communicated by IFAD. Such delay will be for a maximum of one year from the date of IFAD's decision. In the latter half of such year, a second review will be conducted. The results of such review will be communicated to IFAD which will then make a final determination of whether to continue to the second phase or to cease funding under the programme. In no event will the Government be entitled to receive funding from the loan relating to the delay period; and



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- (c) proceed with the second phase, a mutually acceptable action plan and design for the second phase, based on the findings of the first-phase review, will be prepared. Such action plan and design will result in reallocations of loan proceeds and modifications to the loan documents.

8. The specific indicators to be used as triggers for the confirmation of funding and subsequent detailed action plan and design of the second phase of the programme will be that:

- (a) programme mechanisms, procedures, staffing and participatory and collaborative arrangements for programme operations are in place and working satisfactorily;
- (b) the crucial reorientation and training sessions for participatory planning, communal and integrated resource use studies, and group formation and support have been completed;
- (c) annual reviews of BDFC interest rates to borrowers and of the cost of funds from the Government to BDFC have been conducted during the first phase, and any agreed-upon modifications resulting therefrom have been implemented;
- (d) demand-driven research, technology development and extension provision are established through a cohesive task force approach with all parties cooperating; and
- (e) the following key physical and financial targets for the first phase will have been achieved:
 - (i) 70% of the projected share of irrigation works and buildings constructed and/or renovated;
 - (ii) 10 community/catchment diagnostic studies and watershed plans conducted;
 - (iii) 30 trained and proficiently operating farmer/women's water user groups formed;
 - (iv) 10 marketing/storage facilities, 10 km each of roads and tracks, and 12 bridges/crossing, or the equivalent in other common infrastructure, constructed;
 - (v) 2 300 farming households have adopted improved practices;
 - (vi) 1 900 borrowers of individual or groups credit and/or 350 groups have taken up to USD 490 000 equivalent of funds;
 - (vii) BDFC has achieved an on-time recovery rate of at least 75%, and women borrowers are at least 25% of all loanees;
 - (viii) 18 workshops, liaison meetings and annual reviews held; and
 - (ix) programme reports, accounts and M&E data of adequate quality and timeliness to track these trigger points conducted.

9. The Government will ensure that, should the Fund decide that the programme will continue to the second phase, the recommendations resulting from the first-phase review are implemented within the time specified therefor and to the satisfaction of IFAD. The Government agrees and understands that such recommendations may result in modifications to the loan documents or cancellation of the loan, and further agrees and understands that failure to implement the recommendations resulting from the first-phase review within the time limits specified may result in cancellation of the loan.

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10. The AWPB for programme year (PY) 1 will be prepared as part of the programme's start-up activities and submitted by MOA to IFAD within 90 days after the effective date.
11. The Government will, throughout the programme implementation period, replenish, quarterly in advance, the budget fund account from its own resources in accordance with the loan agreement and the AWPB.
12. Within 60 days after the effective date, PFO, in conjunction with the Policy and Planning Division of MOA, will prepare and submit to IFAD the baseline data, satisfactory to IFAD, that will be used as the benchmark for programme monitoring and evaluation (M&E).
13. All reporting, accounting and auditing requirements for the programme as set forth in the loan agreement will be punctual and submitted within the deadlines therein set forth.
14. No later than 150 days after the effective date, the systems, procedures and criteria – which will be objective, impartial and practicable – for the selection of target villages, communities and Blocks will be established, to the satisfaction of IFAD, by the PFO and approved by the Programme Coordination Committee (PCC).
15. The programme will facilitate the registration of groups to be formed under the programme with the relevant governmental office, once relevant legislation is in place.
16. The Government will timely make available any necessary staff/expertise from within its ministries/employ as may be co-opted to the task forces formed by the PFO.
17. The Government will ensure that the PFO and district administrations will adopt arrangements, satisfactory to IFAD, for programme resources received by them to be made available as grants for approved community projects in accordance with the AWPB.
18. The Government will arrange for additional funding to be made available to the programme to augment its investment in crucial infrastructure for access, market and community purposes in those Blocks as may be determined by the District Development Committees and Block Development Committees, which funding will be included in the Eighth Five-Year Plan budgets of the respective less favoured blocks.
19. The PFO will include the following information in its monitoring of the programme:
 - (a) delivery of services to programme beneficiaries;
 - (b) the use of services by programme beneficiaries; and
 - (c) the direct effects – benefits – from the use of such services.
20. Within 60 days after the effective date, the programme implementation manual (PIM) will be prepared and submitted to IFAD for its review and approval.
21. Within one year after the effective date, the MOA and IFAD will jointly review the functioning of the PFO and make any necessary adjustments thereto, including the need, if any, for the placement of an M&E officer within the PFO.
22. Within 30 days after the effective date, the Ministry of Finance will appoint a financial officer to the PFO.



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23. The following are specified as additional events of suspension of the right of the Government to request withdrawals from the loan account:

- (a) On or after the effective date, the agreement between the Government and SNV for a grant to assist in financing the programme (SNV Agreement) has failed to enter into full force and effect by the date or dates specified therein or a later date or dates established by SNV for that purpose and substitute funds are not available to the Government on terms and conditions acceptable to IFAD.
- (b) The right of the Government to withdraw the proceeds of the SNV grant has been suspended, cancelled or terminated, in whole or in part, and substitute funds are not available to the Government on terms and conditions acceptable to IFAD.
- (c) The credit by-laws, or any provision thereof, have been waived, suspended, terminated, amended or otherwise modified without the prior consent of IFAD, and IFAD has determined that such waiver, suspension, termination, amendment or modification has had, or is likely to have, a material adverse effect on the rural financial services component.
- (d) The PIM, or any provision thereof, has been waived, suspended terminated, amended or modified without the prior consent of IFAD, and IFAD has determined that such waiver, suspension, termination, amendment or modification has had, or is likely to have, a material adverse effect on the programme.
- (e) Any competent authority has taken any action for the dissolution of the BDFC or the suspension of its operations, or any action or proceeding has been commenced for the distribution of any assets of the BDFC among its creditors, which action, in the reasonable opinion of IFAD, may adversely affect the implementation of the programme.

24. The following are specified as additional conditions precedent to effectiveness of the loan agreement:

- (a) the programme facilitation officer, with qualifications and experience satisfactory to and acceptable by IFAD, shall have been duly appointed by MOA;
- (b) the programme steering committee and PCC shall have been duly established;
- (c) the Government shall have duly opened the special accounts and the budget fund account;
- (d) the Government shall have made an initial budgetary allocation of counterpart funds available to MOA;
- (e) the auditor of the programme shall have been duly designated or appointed; and
- (f) each district and programme party (e.g. MOA, BDFC, etc.) shall have made arrangements for, and confirmed to the Fund the opening of, their respective Government Project Letter of Credit Programme Operating Account.



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25. No disbursements shall be made in respect of expenditures under the rural financial services component from the loan until:

- (a) the credit by-laws, as approved by IFAD, shall have been adopted and a copy thereof, certified as true and complete by a competent officer of the Government, shall have been delivered to IFAD; and
- (b) the BDFC subsidiary agreement, approved by IFAD, shall have been duly entered into between the Government and BDFC; a copy thereof, certified as true and complete by a competent officer of the Government, shall have been delivered to IFAD; the signature and performance thereof by the Government and BDFC have been duly authorized or ratified by all necessary corporate, administrative and governmental action; and all conditions precedent to the effectiveness thereof, if any, shall have been fulfilled.

COUNTRY DATA

BHUTAN

Land area (km² thousand) 1995 1/	47	GNP per capita (USD) 1996 2/	390
Total population (million) 1996 1/	0.7	Average annual real rate of growth of GNP per capita, 1990-96 2/	2.0
Population density (people per km²) 1996 1/	20	Average annual rate of inflation, 1990-96 2/	9.3
Local currency	Ngultrum	Exchange rate: USD 1 =	BTN 42.0
Social Indicators		Economic Indicators	
Population (average annual rate of growth) 1990-96 3/	2.9	GDP (USD million) 1996 3/	321
Crude birth rate (per thousand people) 1996 3/	41	Average annual rate of growth of GDP 3/	
Crude death rate (per thousand people) 1996 3/	14	1975-85	6.9
Infant mortality rate (per thousand live births) 1996 3/	107	1986-96	5.2
Life expectancy at birth (years) 1996 1/	53	Sectoral distribution of GDP, 1996 3/	
Number of rural poor (million) 1/	n.a.	% agriculture	41.6
Poor as % of total rural population 1/	n.a.	% industry	32.2
Total labour force (million) 1996 3/	0	% manufacturing	11.6
Female labour force as % of total, 1996 3/	39.6	% services	26.2
Education		Consumption, 1996 3/	
Primary school gross enrolment (% of relevant age group) 1995 3/	n.a.	General government consumption (as % of GDP)	17.2
Adult literacy rate (% of total population) 1995 4/	42.2	Private consumption (as % of GDP)	42.9
Nutrition		Gross domestic savings (as % of GDP)	
Daily calorie supply per capita, 1995 4/	n.a.	Balance of Payments (USD million)	
Index of daily calorie supply per capita (industrial countries=100) 1995 4/	n.a.	Merchandise exports, 1995 3/	66
Prevalence of child malnutrition (% of children under 5) latest year available since 1990 3/	38.0	Merchandise imports, 1995 3/	91
Health		Balance of merchandise trade	
Health expenditure, total (as % of GDP) 1995 3/	n.a.	Current account balances (USD million)	
Physicians (per thousand people) 3/	0.2	before official transfers, 1996 3/	
Percentage population without access to safe water 1990-96 4/	42	after official transfers, 1996 3/	
Percentage population without access to health services 1990-95 4/	35	Foreign direct investment, 1996 3/	
Percentage population without access to sanitation 1990-96 4/	30		
Agriculture and Food		Government Finance	
Food imports as percentage of total merchandise imports 1996 3/	21.5	Overall budget surplus/deficit (including grants) (as % of GDP) 1995 3/	-3.2
Fertilizer consumption (hundreds of grams per ha of arable land) 1995 3/	8	Total expenditure (% of GDP) 1995 3/	48.2
Food production index (1989-91=100) 1996 3/	107	Total external debt (USD million) 1996 3/	87
Land Use		Present value of debt (as % of GNP) 1996 3/	
Agricultural land as % of total land area, 1994 3/	8.8	Total debt service (% of exports of goods and services) 1996 3/	
Forest and woodland area (km ² thousand) 1993 4/	23		
Forest and woodland area as % of total land area, 1993 4/	45.7	Nominal lending rate of banks, 1996 3/	
Irrigated land as % of cropland, 1995 3/	26.0	Nominal deposit rate of banks, 1996 3/	

n.a. not available.

Figures in italics indicate data that are for years or periods other than those specified.

1/ World Bank, *World Development Report*, 1998

2/ World Bank, *Atlas*, 1998

3/ World Bank, *The World Development Indicators CD-ROM*, 1998

4/ UNDP, *Human Development Report*, 1998



PREVIOUS IFAD LOANS TO BHUTAN

Project Name	Initiating Institution	Cooperating Institution	Lending Terms	Board Approval	Loan Effectiveness	Current Closing Date	Loan/Grant Acronym	Currency	Approved Loan/Grant Amount	Disbursement (as % of approved amount)
Small Farm Development and Irrigation Rehabilitation Project	IFAD	UNOPS	HC	04 Dec 80	18 May 81	31 Dec 89	G - I - 61 - BH	SDR	475 000	
Small Farm Development and Irrigation Rehabilitation Project	IFAD	UNOPS	HC	04 Dec 80	18 May 81	31 Dec 89	L - I - 50 - BH	SDR	5 450 000	69.4%
Tashigang and Mongar Area Development Project	IFAD	World Bank: IDA	HC	05 Dec 85	03 Mar 87	31 Mar 93	L - I - 178 - BH	SDR	4 450 000	57.4%
Punakha-Wangdi Phodrang Valley Development Project	IFAD	UNOPS	HC	15 Sep 88	01 Jun 89	30 Jun 97	L - I - 223 - BH	SDR	2 000 000	97.6%
First Eastern Zone Agricultural Project	IFAD	UNOPS	HC	14 Apr 92	23 Oct 92	30 Jun 99	L - I - 299 - BH	SDR	2 900 000	91.7%



LESSONS FROM EXPERIENCE

1. Some of the specific lessons emerging from IFAD's project experience in Bhutan include the following:
2. While "proven" on-the-shelf technology is available for some products and for some altitudes and niches, considerable knowledge gaps as well as adaptation gaps still exist. These need to be filled by (a) continuing FEZAP's support to strengthen the facilities at the RNR research centres and sub-centres, which still remain deficient in their facilities and which need a capacity building programme to enhance their capabilities for technology development; (b) orienting the research so as to make it more on-farm and participatory, better geared to the specific conditions and needs of individual locations and circumstances, and better linked with extension services.
3. Greater participation of rural communities in the planning of project activities at the village, *geog* and district levels would enhance the relevance and impact of such activities. The Geog Development Committees (GYTs) need to be strengthened in this respect through greater awareness-building and training in group formation, participatory methods and simple development planning – along with similar orientation and training for planning and extension staff.
4. The tradition of cooperation in rural areas has led to the formation of common-interest farmer groups or associations (such as water users associations, potato producers groups, etc.), but the viability and longevity of these organizations has in many cases been limited. With further support and training in administration, accounting and management, and continued availability of advice and services for problem-solving and exploiting new opportunities, local organizations could play an important role in development. A group approach is also likely to be the best mode for sustainable provision of financial services, crucial to intensification, diversification and commercialization.
5. Women's participation is handicapped by their lack of mobility compared to men. Extension activities and other services generally reach men more than women. Women have less access to information, as they can only be reached when their activities take place in the community. Project-provided training is open to both men and women, but the timings of the sessions often do not consider women's work schedules, nor are the training materials adjusted to women's special conditions, such as greater illiteracy. Women also do not participate much in local-level decision-making bodies, e.g., GYT's and DYT's.
6. Irrigation schemes have had to contend with difficult terrain, problems with conveyance capacity and inadequate dry-season supply, ruptures in canals, and repair beyond the financial and technical ability of beneficiaries. The technical design of irrigation schemes, even small-scale ones, need to give particular attention to the geo-technical conditions of the specific location, so that robust, long-lasting channels and structures are created. To assure sustainability and equity, the criteria for selecting irrigation schemes for rehabilitation should include: market access for cash crops; a reasonably effective water users' association (WUA); and resource-poor farmers sharing in the benefits that accrue. The skills of the irrigation engineers need to be enhanced in crop production and land use, crop water requirements, soil conservation techniques, the use of alternative irrigation methods, and on how to better understand farmers' decision rules. More masons need to be trained.
7. Farmers need credit facilities in order to intensify and diversify production and enhance their incomes. Typically, farmers' transaction costs for accessing credit from Bhutan Development Finance Corporation (BDFC) have been high. Greater outreach by BDFC and more easily accessible credit, with use of group collateral to reduce risk, would be necessary to provide a take-off for intensified production where a market is already available. Rural financial services could target first those *geogs* where a sufficient loan volume can be foreseen. The willingness and capacity of the BDFC to meet the credit and other financial-services requirements of smallholders on a sustainable basis needs to be strengthened.



PROGRAMME RATIONALE

1. In addition to the rationale outlined in Section I-C of the report, the following considerations lend further support to the programme's rationale.
2. The constraints to viable crop, livestock and forestry production include the scarcity of wetland, vulnerability of irrigation infrastructure to damage, susceptibility of dryland, forest and pastures to degradation, the vagaries of climate, and wild animal crop damage. Since projects would have only limited impact on these, productivity and living standards are likely to improve only gradually, be marginal rather than dramatic, and depend on a balanced and holistic approach to natural-resource utilization. Another set of constraints, however, includes those such as limited coverage and effectiveness of extension services, research, and back-up credit. For these, effective approaches are needed, and here the programme can have a more pronounced impact. At the same time, opportunities exist for increasing food production and raising incomes through intensification and diversification of production in sustainable ways. For some – such as improved varieties of major crops; export cash crops; enhancement of soil fertility for more intensive cropping; better water management systems; conservation and productivity measures for land management in dryland and shifting cultivation; and more sustainable practices for forest product use – technologies already exist, and mainly more effective dissemination through extension is needed. For others, e.g., women engaged in farm work, appropriate techniques need to be developed and adapted.
3. The basic institutional structure through which the technologies can be tested and better adapted to local conditions exists, but needs to be strengthened. Farmers have shown their willingness to adopt new practices and technologies and have strong cultural values that emphasize conservation. The Government is fully aware of the need to enhance research-extension-farmer linkages and has already embarked on a programme to bring this about. It is also fully cognizant of the necessity of improving market access for both domestic and export produce through more road, transport and storage infrastructure, and the desirability of promoting the private sector for input supply and the commercialization of farm enterprises.
4. Effective development in the present scenario requires a well informed, community-based and multisectoral approach that is entirely consistent with the decentralization, privatization and commercialization policies. Present capacity for project planning and implementation at the district and block level is limited; a major thrust is needed to build up these capabilities. IFAD is in a position to pull together the resources and agencies required, and to back up local-government efforts to expand the coverage and increase the impact of development in a sustainable manner.



PROGRAMME COMPONENTS

1. The following paragraphs provide some additional details on the programme's components described in section II-C of the report.
2. **Local Development Initiatives.** The training arranged under the component of the programme will encompass: training of trainers; orientation/technical training for planning staff, extension staff and village representatives/*gups*; training for group leaders/members on administration, accounting and financial management, as well as on specialized technical agricultural/livestock/forestry based activities and on non-farm enterprises. Local and foreign visits/study tours, especially on techniques for community participatory and group formation. The technical assistance will include a long-term component (totalling 36 months full time and 36 months part time) financed by the Netherlands Government, and executed by SNV, as well as short-term requirements to be identified during implementation.
3. **Community-Based Natural Resources Development.** A foundation for **rehabilitating the degraded catchments** will be laid through preparation of integrated watershed plans in selected locations, following the earlier diagnostic studies. The rehabilitation work would encompass rangeland rehabilitation, soil/water conservation, reforestation, forest management, and silviculture development through community-based natural resource mapping.
4. Building on achievements and lessons from the First Eastern Zone Agriculture Project (FEZAP), the programme will **rehabilitate or upgrade traditional surface irrigation systems** and introduce modern but simple low-cost gravity pressurized systems suitable for small-scale horticultural produce. Parallel activities will be undertaken for channel and catchment protection, improved water management, promotion of water user associations, and establishment of maintenance/investment funds at the water users' level.
5. **Crop intensification, diversification and sustainability** will be promoted through improvement and modifications to the traditional land-management systems – *chuzhing*, *kamzhing* and *tsheri* – through trials on technologies and practices such as: green manuring, ley farming, contour farming, strip cropping, vegetative contour strips, minimum or zero tillage, use of locally available inputs, hedgerows and cover crops, the Machobane Farming System (MFS), Sloping Agriculture Land Technology (SALT), and Sloping Agriculture and Ley Farming System (SALEY). Closely linked, farmer-participatory research/extension and farmer-to-farmer extension approaches will be tested and adopted. Research trials and demonstrations will mainly be on-farm rather than on-station. The modified production systems will be underpinned by maximum utilization of local resources. However, some increase in modern purchased inputs, including high-yielding crop varieties, is also envisaged, to meet growing food needs on a fixed land base. Supply of such inputs is to be streamlined and increasingly privatized through support to local “commission agents” operating at the district level and below. Potential small traders and entrepreneurs from within the local communities will be identified, encouraged, trained and provided with financial incentives (through commission and BDFC credit and overdraft facilities) to build up a business of handling an increasing number of crops and livestock. To enhance the value of the crops produced, post-harvest losses will be reduced through better storage and improved handling and marketing of the produce.
6. In the **livestock sector**, the programme will promote mainly backyard production of eggs, milk, and pork by introducing more appropriate breeds of poultry and pigs, better nutrition through more fodder production and urea-treated rice straw, better disease surveillance through improved communications, and provision of epidemiological kits to farmers, etc. The programme will provide motivation, training, technical support and in-kind investment support to prospective farmers to establish, on a pilot basis, farmer nurseries, contract growing of forage seed material, and contract



breeding of pigs and poultry for supply to local communities. These farmer-entrepreneurs will be backstopped technically by government farms and regional research centres, for example in providing the parent breeding stock to the farmers for multiplication and subsequent distribution. Suitable farmers will also be trained as para-veterinary workers to distribute inputs and veterinary services to the community on payment.

7. Selected **non-timber forest products** (such as mushrooms, lemon grass, medicinal and aromatic plants – especially *chirata* and *pipla* – bamboo/rattan, pine resin, lac and daphne paper) will be promoted for their income-generation potential through improved resource-management (based on improved harvesting practices, enrichment planting in degraded forests, and on-farm cultivation), quality improvements (based on improved preservation, storage, processing, grading and packing), and market development (based on price information; identification of customer preferences, especially in the export markets; and the promotion of village associations). The knowledge, skills and capacities of RNR staff and farmers will be enhanced through training and technical assistance. Besides the forest-based produce, other small-scale **income-generating activities** (e.g., value-adding agro-processing activities, traditional artisanal activities, women's weaving crafts) will be promoted through training, technical assistance and marketing/input supply, linked with support under the programme's credit component. Similar to these will be contract-growing arrangements, with credit and other support, between the Bhutan Agro-Processing Company and programme farmers for the growing of traditional or new horticultural produce for the local and export markets.

8. **Renewable Natural Resource Services.** The basic institutions that such provided services are the regional RNR research centres/sub-centres and the district agricultural and livestock extension centres. All existing facilities are currently deficient in terms of laboratories, office space, equipment, irrigated plots for research, and in capacity to produce and maintain breeder seed and plant propagation germplasm. For example, due to the lack of facilities and overcrowding, the collection of medicinal and aromatic plants at Mongar Centre is in jeopardy unless a suitable alternative permanent site is developed to relocate the collection of 60 species. Without a minimum level of facilities, programme investments in and benefits from natural-resource management are likely to suffer considerable delays. The problem of overcrowding and shortage of facilities in the various centres has been exacerbated lately by the quantum jump in scientific/technical staff (returning from foreign training). The facilities are deficient especially for the mid-altitude zone, where 70% of the agriculture is practised.

9. **Rural Financial Services.** Since Government policy calls for all crop inputs, breeding stock, veterinary medicines, etc., to be supplied to farmers on a cash-and-carry, full cost-recovery basis, further demand is being created for credit financing. BDFC, which is the only source of agricultural credit in Bhutan at present, is facing a serious resource crunch in implementing its programme during the Eighth Five-Year Plan. UNCDF's proposed support of USD 1.5 million (for the whole country) is not adequate to bridge the resource gap. The programme will provide a credit line to BDFC to bridge this gap. IFAD funds are to be utilized only to provide credit facilities to the IFAD target group in the Eastern Zone. BDFC could provide loans to other beneficiaries in the programme area utilizing its own resources or UNCDF funds. There will be no specific targets by loan purpose: any loan that is technically feasible and financially viable would be eligible. This would provide flexibility to the credit programme. Programme loans are expected to be small, starting at about BTN 5 000 (USD 120) for a 12-month duration or less, but rising to BTN 20 000 per group member after a satisfactory loan record is established, i.e., up to BTN 200 000 (USD 4 760) for a group.

10. The programme's Local Development Initiatives component and the technical assistance provided under the programme will assist BDFC in the organization and training of groups. Support for institutional capacity-building, training and technical assistance will also be provided under the UNCDF/SNV-financed Micro-Credit Project covering the whole country.

LOGICAL FRAMEWORK

Narrative Summary	Performance Indicators	Means of Verification	Assumptions
<p>Goal: Standard of living for rural households in Eastern Zone improved.</p>	<ol style="list-style-type: none"> 1. Household incomes increased. 2. Household nutritional status improved; numbers of low weight births, stunting and wasting cases reduced. 3. Health status improved. 	<p>Baseline review data and periodic follow-up household and community surveys and case studies.</p>	<p>Macroeconomic and political factors remain stable and favour continued devolution, market liberalization.</p>
<p>Development Objective: Farm households and communities increase productivity, output, food security and marketable surplus using sustainable, community-based, integrated resource-use systems.</p>	<ol style="list-style-type: none"> 1. Increased staple food – cereals, pulses, vegetables – livestock, forest and non-timber forest products production by household, by volume (domestic and export) and by value. 2. Changes in cropping patterns, intensity and yields. 3. Volume and value of sales, including auction commodities. 4. Forest cover of 60%, land use and stream flow maintained; degradation and land slips reduced. 5. Agricultural imports to the region reduced. 6. Labour burden reduced; earnings per unit labour increased. 7. Targeted households have access to food year-round <p><u>Leading Indicators at End of Phase I (June 2002):</u> Overall wetland cropping intensity increased. Yields increased by 15%: maize-1091 kg/acre, wheat-800 kg/acre. Of the universe of participating households, at least 25% using integrated production technologies. Pig and poultry contract breeders; farmer-operated nurseries producing and selling. Input supply commercialized through district “commission” agents</p>	<p>Surveys and studies as above, plus: Annual stakeholders’ feedback workshops.</p> <p>Semiannual donor and performance review/improvement sessions.</p> <p>Records of offtake, production, sales and revenues from district, line agency and market statistics.</p> <p>Quarterly, biannual and annual programme M&E and MIS reports.</p>	<p>Health and Education Ministry programmes (including male and female literacy and numeracy) implemented effectively.</p> <p>No serious adverse weather conditions.</p> <p>Strikes in Assam do not affect auctioning.</p> <p>Market prices are an incentive to sell, and post-harvest/market losses are reduced by better storage/handling.</p>
<p>Outputs: 1. Local Development Initiatives initiated, fostered and supported; and related investments made.</p>	<p><u>Performance Indicators at End of Phase I (June 2002):</u> 1. Six planning officers and selected extension staff from each block trained and task forces mobilized; and undertaking community-based natural-resource and economic development planning through GYTs. 2. Twenty block/catchment diagnostic studies completed.* 3. Other studies of development opportunities undertaken as required. 4. Seventy farmer/water user/women’s/marketing groups formed and registered; up to 700 members trained in administration, accounting and management; and operational.* 5. Crucial infrastructure/marketing schemes for up to 20 blocks – possibly to include access roads and tracks, bridges, stores, markets – identified, studied and matching grant investment made or prepared for 9FYP.</p> <p>*tentative figures, to be reviewed at project start-up.</p>	<p>Reports and surveys as above, plus: PFO review of output performance.</p> <p>Inventories, agreements made and completed, on-site inspections.</p> <p>Group interviews, records, accounts.</p> <p>Block and district (sector head) records and reports.</p> <p>Contract award, progress and completion documents.</p>	<p>Full beneficiary participation as expected.</p> <p>Legislation available for group recognition.</p> <p>Collaboration of government agencies.</p> <p>Local administrators, GYTs and DYT support programmes.</p>
<p>2. Community-Based Natural Resource Development established.</p>	<ol style="list-style-type: none"> 1. Common-property resource management and catchment land-use and conservation plans in place for up to 20 blocks and about 2 000 km². 2. Participatory, needs-based research, technology generation and farmer-farmer extension programmes developed and under way for crop, livestock, forest and NTFPs management/commercialization. 3. Improved water resources management for rainfed, wetlands and 	<p>Reports and surveys as above, plus: Meetings with GYTs and DYT.</p> <p>Site visits and document and performance reviews.</p>	<p>Farmer willingness or incentive present.</p> <p>Adequate water available at site.</p> <p>Druk Seed Corporation supplies necessary inputs.</p>





	<p>erosion prevention in place in 20 watersheds.</p> <p>4. Irrigation development completed at a minimum of 4 000 households.</p> <p>5. 38 WUAs formed and registered, with 400 members trained, managing irrigation schemes (with in-kind contributions), supported by 36 trained staff.</p> <p>6. 800 acres, 750 HH under irrigation system, assured timely crop cultivation, monsoon independent.</p> <p>7. 12 new canals constructed and 30 rehabilitated schemes operational, maintained by WUAs; catchment areas protected.</p> <p>8. Farm input and equipment supply in 20 blocks, 5 pig/poultry breeders and 9 plant nurseries completely commercialized.</p>	<p>District and line agency records of training sessions/demonstrations and participant feedback.</p>	<p>Seedlings, fertilizers available.</p>
<p>3. Renewable Natural Resource Services evolved to achieve more effective delivery</p> <p>(Collaborative, integrated extension services provided; and on-farm, demand-driven research and development outcomes generated.)</p>	<p>1. Participatory, need-based on-farm research plan developed annually at community/watershed levels with collaborative priority-setting and management, fully integrated into extension plans, supported with on-farm protocols, 132 kits disseminated at GYT level and 60 collaborative on-farm trials (varietal and crop-management oriented) conducted annually.</p> <p>2. On-station trials limited to phytopathology, variety adaptation, seed multiplication, plant propagation.</p> <p>3. Twenty GYT community-based technology generation trials carried out (building on indigenous knowledge systems) and dissemination programmes established.</p> <p>4. Up to ten tested, validated technologies proven and information disseminated in gender-specific, local-language packages through integrated research, extension and farmer services.</p> <p>5. RNR Service Centres rehabilitated (Linmethang, Khangma) or constructed (Wyengkhar, satellite centre at Nangkhor); staff trained, operational and providing services.</p> <p>6. RNR-RC (research centre) extension programme units established, staff trained and operational.</p> <p>7. Economics and feasibility information on backyard pig and provided to growers; economics of technology and commodity price structure in local and regional markets made available.</p> <p>8. Grading and packing standards defined and promoted.</p> <p>9. Weekly retail and auction prices of major agricultural commodities broadcast by region; quarterly local-language marketing bulletin distributed to all blocks and subscribers.</p> <p>10. Two marketing and post-harvest specialists posted to regions.</p> <p>11. Fifty village animal health workers trained per year, and working.</p> <p>12. Sixty farmer/village extensionists trained per year in agriculture production: pest management, water management, seed growing, nurseries, fodder production, and horticulture.</p> <p>13. Existing livestock-breeding farms strengthened as open-nucleus genetic-conservation centres to backstop; provide parent stock to breeders, and maintain national quality standards;</p> <p>14. Livestock health services progressively operating on cost recovery basis and fully by year five.</p> <p>15. Regional Animal Health and Production Support Centre strengthened, equipped; staff trained to perform 5 000 faecal and serum samples per year.</p>	<p>Site inspections and agency records.</p> <p>Field visits and farmer interviews.</p> <p>Programme reports.</p> <p>Contract documentation.</p> <p>District/agency personnel records.</p> <p>Extension reports and leaflets well distributed.</p> <p>Standards review and site inspections.</p> <p>Market price/volume information</p> <p>Training course records/feedback.</p> <p>Focus group meetings proceedings.</p> <p>Interviews with commission agents and district records.</p> <p>Centre records.</p>	<p>MTI agro-industrial development programmes implemented.</p> <p>Success in new technology development geared to farmer needs.</p> <p>AMC labour-saving devices available.</p> <p>IHDP, TFDP and ESP projects effective.</p> <p>Market prices are an incentive to produce.</p> <p>Central Marketing Unit will collaborate, use information for broadcasts and produce bulletin.</p> <p>Feed is available and affordable.</p> <p>Farmer interest gained.</p>
<p>4. Rural Financial Services enhanced</p>	<p>1. At least 2 760 borrower groups/individuals — e.g., women's</p>	<p>BDFC, GYT and DYT records.</p>	<p>Government, UNCDF, SNV capacity/systems</p>

and group lending implemented.	groups, contract growers, small/medium enterprises, commission agents, nursery operators - active and borrowing (920 per year). 2. Loan volume of up to USD 200 000 per year taken up. 3. Repayment rates, savings rates, outstandings maintained at viable levels. 4. Block-level credit facilitation staffed and operational.	Meetings with BDFC branches and review of credit performance. Discussion with borrowers and groups.	support to BDFC continues. No administrative delays or obstacles to funds release. Sufficient demand continues to exist for group credit.																																			
5. Collaborative Programme Facilitation and Management systems established and operational.	1. Comprehensive beneficiary consultation programme established with semiannual information and feedback meetings (in the GYTs/DYTts), and annual donor coordination meetings. 2. Programme promotion and annual performance improvement, planning and risk management measures internalized. 3. Output-to-development objective strategy monitored annually, work progress and disbursement monitored quarterly, trigger points identified for further commitments. 4. AWPBs properly produced on a timely basis. 5. Administration and accounting capability and operational efficiency of PFO strengthened by staff appointment/new systems. 6. Programme management responsibilities devolved over time. 7. Proactive, dynamic leadership, inter-agency and inter-district coordination provided daily	Results from feedback, workshops and internal management records. Programme progress and M&E reports. Submission records of PFO and AFD. MOA policy/management papers. PFO workplan and records.	Trained people are posted and not transferred. Other agencies and projects collaborate fully.																																			
<p>Activities</p> <p>Reorientation and training followed by participatory/integrated planning for communities/watersheds. Group formation, training and continuing support, including technical assistance. Community-service infrastructure construction (e.g., roadsstores). Irrigation scheme upgrading. Agriculture, livestock, forest, NTFP, conservation development. Farmer training/demonstrations. Construction/renovation of research and extension centres. Revision of services approach to collaborative, demand-driven and cohesive task force deployment. Funding for small-farmer group credit scheme of BDFC. Premises renovation, systems and staff strengthening of PFO. Programme liaison with stakeholders (including blocks and districts), performance review and monitoring and evaluation all geared up to greater frequency and higher effectiveness.</p>	<p>Inputs</p> <table border="1" data-bbox="555 651 996 1077"> <thead> <tr> <th rowspan="2"></th> <th colspan="3">USD million</th> </tr> <tr> <th>Phase One</th> <th>Phase Two*</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>1. Local Dev. Initiatives</td> <td>0.98</td> <td>0.35</td> <td>1.33</td> </tr> <tr> <td>2. CBNR Dev.</td> <td>3.01</td> <td>3.28</td> <td>6.29</td> </tr> <tr> <td>3. RNR Services</td> <td>3.79</td> <td>2.86</td> <td>6.65</td> </tr> <tr> <td>4. Rural Financial Services</td> <td>1.05</td> <td>0.53</td> <td>1.58</td> </tr> <tr> <td>5. Programme Facilitation and Management</td> <td>1.20</td> <td>0.77</td> <td>1.98</td> </tr> <tr> <td>Total Programme Costs</td> <td>10.05</td> <td>7.78</td> <td>17.83</td> </tr> <tr> <td>IFAD Funding</td> <td>5.45</td> <td>4.06</td> <td>9.51</td> </tr> </tbody> </table> <p>*Phase Two figures are tentative and are included here for purposes of loan value estimation only.</p>		USD million			Phase One	Phase Two*	Total	1. Local Dev. Initiatives	0.98	0.35	1.33	2. CBNR Dev.	3.01	3.28	6.29	3. RNR Services	3.79	2.86	6.65	4. Rural Financial Services	1.05	0.53	1.58	5. Programme Facilitation and Management	1.20	0.77	1.98	Total Programme Costs	10.05	7.78	17.83	IFAD Funding	5.45	4.06	9.51	<p>Appraisal report.</p> <p>Loan agreement.</p> <p>Programme operations and supervision reports; monitoring feedback and evaluation studies.</p> <p>Government/Ministry statistics.</p>	
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COSTS AND FINANCING

EXPENDITURE ACCOUNTS BY FINANCING AGENCIES (INCLUDING CONTINGENCIES) (USD million)

	IFAD		SNV		UNCDF		Beneficiaries		Government		Total		Foreign	Local
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Exchange	(Excl. Taxes)
1. Investment Costs														
A. Civil Works – Building	2.12	100.0									2.12	11.9	0.18	1.94
B. Civil Works – Irrigation	0.92	59.5					0.62	40.5			1.54	8.6	0.12	1.41
C. Equipment	0.63	100.0									0.63	3.5	0.59	0.04
D. Vehicles	0.29	100.0									0.29	1.6	0.28	0.02
E. Training	1.36	100.0									1.36	7.6	0.31	1.05
F. Rural Finance	1.05	66.7			0.53	33.3					1.58	8.8	1.58	
G. Technical Assistance			2.11	100.0							2.11	11.9	2.11	
TOTAL INVESTMENT COSTS	6.37	66.1	2.11	21.9	0.53	5.5	0.62	6.5			9.63	54.0	5.18	4.45
2. Recurrent Costs														
A. Operating Expenses	3.14	75.0							1.05	25.0	4.19	23.5	0.35	3.84
B. Incremental Salaries									4.01	100.0	4.01	22.5		4.01
TOTAL RECURRENT COSTS	3.14	38.4							5.06	61.7	8.20	46.0	0.35	7.85
TOTAL DISBURSEMENT	9.51	53.4	2.11	11.9	0.53	2.9	0.62	3.5	5.06	28.4	17.83	100.0	5.53	12.30

a/ Discrepancies in totals are due to rounding.



EXPENDITURE ACCOUNTS BY COMPONENTS – BASE COSTS
(USD million)

	Local Development Initiatives	Community-Based Natural Resource Development	Renewable Natural Resource Services	Rural Financial Services	Programme Facilitation and Management	Total	%	Physical Contingencies
I. Investment Costs								
A. Civil works-Building	0.43	-	1.20	-	0.02	1.65	10.0	0.17
B. Civil Works-Irrigation	-	1.13	-	-	-	1.13	10.0	0.11
C. Equipment	-	0.22	0.36	-	0.03	0.61	-	-
D. Vehicles	-	0.01	0.23	-	0.04	0.28	-	-
E. Training	0.23	0.49	0.44	-	0.40	1.16	-	-
F. Rural Finance	-	-	-	1.54	-	1.54	-	-
G. Technical Assistance	0.50	0.50	0.43	-	0.63	2.06	-	-
Total Investment Costs	1.15	2.34	2.27	1.54	1.13	8.43	3.3	0.28
II. Recurrent Costs								
A. O&M-Building-Vehicle-Equipment	-	1.77	1.43	-	0.30	3.50	-	-
B. Salaries and Allowances	-	1.06	1.87	-	0.30	3.23	-	-
Total Recurrent Costs	-	2.83	3.30	-	0.60	6.63	-	-
	1.15	5.17	5.57	1.54	1.73	15.16	1.8	0.28
Physical Contingencies	0.04	0.11	0.12	-	0.00	0.28	-	-
Price Contingencies	0.13	1.01	0.96	0.04	0.25	2.39	2.3	0.05
	1.33	6.29	6.65	1.58	1.98	17.83	1.9	0.33
Taxes	-	-	-	-	-	-	-	-
Foreign Exchange	0.68	1.09	1.34	1.58	0.85	5.53	0.5	0.03





ORGANIZATION AND MANAGEMENT

1. The programme's implementation arrangements were briefly described in section II-F of the report. The organization and management structure (see Chart 1) is similar to that of FEZAP, but with a heightened role and more staff for the Programme Facilitation Office (PFO) to enable it to marshal resources and set up task forces (combining external inputs with the block and district staff) to assist with: needs analysis at the community and block levels, diagnostic surveys and special studies of area potential and constraints, catchment and community development planning, and the supervision of sub-project activities.

2. The PFO will consist of: the Programme Facilitation Officer, with senior secretarial/personal assistance; the part-time services of the programme manager of the Third Forestry Development Programme, who replaces the Programme Facilitation Officer in his absence; the Financial Officer, a new appointment, with attendant support from the M&E Officer, Accountant and secretarial staff; the Administration Officer; a technical cadre comprising three officers for agriculture, livestock and irrigation in the programme units; and the Technical Assistance Team, with long-term inputs in community-based natural-resource management, local development and extension, and planning, and short-term inputs in water management and irrigation and non-timber forest products development. Members of the Technical Assistance Team will be posted to key district locations.

3. The PFO will be responsible for liaison with the district administrations and block development committees primarily for the purposes of promotion of programme activities and arrangement of the necessary services to enhance community, block and district planning effectiveness. His principal contacts will be with district administrators, planning officers and block headmen. The financial officer will be a well-qualified accountant and will be responsible for all routine accounting, administration, monitoring, evaluation and reporting matters involved in programme management. His main contacts will be with BDFC as the credit provider, the district administration and finance officers and block headmen, as well as with directors or heads of other implementing agencies. The financial officer will have direct line contact with the Policy and Planning and Administration and Finance Divisions of the Ministry of Agriculture. It is understood that the monitoring and evaluation officer will be appointed under the auspices of the Planning Commission as part of the new national M&E programme.

4. The technical officers in the programme units will be responsible for ascertaining the feasibility of schemes and sub-projects submitted for funding assistance. The staffing of this activity in the PFO is seven people, including two forestry specialists. Responsibility for screening proposals will be progressively delegated to specialist inputs available from RNR-RC or other agencies or projects, so that the PFO technical staff can be reduced. The main activities of the Technical Assistance Team will be orientation, training, capacity-building and field support for existing staff at the district and block level, particularly in the approach and techniques for local community involvement, group formation and management, and integrated resource-use planning. The team will also play a major role in the mobilization and supervision of task forces for block and area planning, and it will participate in these exercises.

5. Development and planning bodies at all levels - village, block and district - will be fully involved in the sub-project acquisition and selection process and in wider matters of development consistency and impact. The PFO will arrange for one or more of its members to attend a representative number of block and district development committee meetings according to a programme worked out with the district administrators and block headmen concerned. The PFO will also attend workshops in each district, involving all the implementing agencies, beneficiaries and



participants, to review progress, discuss problems and opportunities, assess needs for change in the pattern of activities and chart the direction for the subsequent stages of implementation.

Implementation of Programme Components

6. Some of the organizational and management aspects of the individual programme components are described below.

7. **Local development initiatives.** Government and programme staff will be sensitized to community participation and group formation through training and field visits to *inter alia* relevant projects in neighbouring countries. At the same time, a preliminary selection of blocks and communities will be undertaken, and their interest in/agreement to programme assistance will be ascertained. This will be done by the PFO and district staff. When a satisfactory understanding is reached, and training by the trainers of block extension staff allows, the formation or upgrading of groups for various activities will follow. The PFO will mobilize the necessary task force inputs for diagnostic studies of block or community areas with participation of the local population, and prioritization of critical sub-projects or programmes for community betterment. These will be elaborated for submission through the GYT to the DYT. Inputs and costs for operation, maintenance and replacement of the facility, and any revenues, will be calculated and presented with transparency for community decision.

8. There will be continuing training and support of community organizations, provided to the extent possible by local staff and technical assistants, including that for the UNCDF/SNV Micro-Finance Project and supplemented where necessary by task force inputs. Training will include administration, accounting and financial management and reporting; specialist technical matters in community and area planning or agricultural or non-farm businesses; and adult literacy, health and welfare topics, as demanded. In the case of activities for which other donor organizations or projects active in the programme area appear to possess a greater degree of experience or competence (e.g., maternal and child health, literacy, etc.), the programme will collaborate with these other donors or projects, or entrust/sub-contract these activities to, rather than attempting to carry them out itself.

9. Initial plans will derive from participatory consultation among villagers with full involvement of block officers and traditional leaders. Communities will need to demonstrate their commitment by coherence of organization and self-help contribution of money, materials or labour. Investment proposals will be prepared for technical content by relevant block, district or task force staff and then submitted to the GYT; once it has been verified that they comply with economic norms, plans will be forwarded for DYT approval. The main areas of intervention are expected to be: access roads and tracks, bridges and crossings, storage and marketing facilities, other village-level infrastructure, systems of better organization of production and marketing, and essential supplies and services, such as grain banks, adult literacy programmes and maternal and child health services. Whenever possible, infrastructure will be operated and maintained on a commercial, or at least a cost-recovery basis.

10. **Community-based natural resource development.** The programme will mount the task force assistance and meet the direct costs of facilitation, logistics, allowances and materials for integrated planning of community/block areas following the diagnostic studies.

11. The activities will comprise the supply of equipment, materials and the funding of direct expenditures for a comprehensive programme of officer training, farmer training, on-farm trials, demonstrations, and extension services reorientation. The operating and maintenance costs of all these services will also be covered.



12. The main focus of the productive activities involved will be: (i) in crop production, the modification of cropping patterns and intensity by introducing new cultivars and techniques; marketing and improvement of presentation of produce for sale; the revitalization of ley farming and agro-forestry practices and reinforcing land-management principles in traditional dryland systems; (ii) in livestock, support for the commercialization of small breed improvement and production systems, including fodder supply and husbandry; and (iii) in forestry, better community management of forest resources, agro-forestry and utilization of non-timber forest products. Women's on-farm and off-farm initiatives will be included in all of these areas. The training and deployment of village extension workers in crop husbandry and protection and in animal health and production will be piloted in conjunction with the extension support project.

13. Irrigation interventions will be undertaken in response to beneficiary demand; provision by the programme has been estimated from current plans and projections of District Irrigation Departments. Irrigation development for upgrading or rehabilitation and self-help schemes will be confined to those that meet agreed criteria of small and poorer farmer focus, units costs and coverage. Funding will be provided for physical works and for associated catchment protection and small ongoing works, most of which will be carried out by force account with substantial farmer labour inputs. Provision for equipment, significant farmer and officer training and demonstrations of water management and cropping improvement is included.

14. The implementing unit of the irrigation sub-component will be the district irrigation sections. The districts are the level of government below the central level and have a certain degree of autonomy. District irrigation sections are headed by a district irrigation officer (DIO) and are answerable both to the district officer and to the RNR-RC in Khangma. The DIO will be technically backstopped by the RNR-RCs. Since works for more than BTN 100 000 (USD 2500) cannot be authorized by the DIO (because of their perceived technical complexity), the PFO Irrigation Officer approves them. This procedure may change, following delegation of the PFO's responsibilities to decentralized administrative structures.

15. **Renewable natural resource services.** This sub-component will provide for new buildings at 14 centres and renovation of buildings at 39 centres for agricultural outreach at the block level. These investments are seen as essential for enhancing the extension impact that is required for support of programme activity. Associated site preparation costs, such as fencing and services are included. The programme will also fund the requisite equipment, supplies and operating costs for running the centres and the revised extension system, and one new vehicle per district for field work.

16. Site development and new buildings for the proposed Wyengkhar RNR-RC and satellite centres at Nankor and Lingmethang will be funded, as will renovation of existing premises at Khangma, Tashiyangphu and Arong. Equipment, facilities - particularly for laboratories and rooms and stores for investigative work associated with on-farm trials, technology development and improvement of non-timber forest products commercialisation and marketing are included in the estimated costs. A wide schedule of training for officers and farmers is also included, as are the operating and maintenance and staff costs for all facilities and services, including the provision of a produce marketing information service, to be developed and launched on a pilot basis under the programme.

17. **Rural financial services.** The IFAD-funded credit line under the programme will be for a total of just over USD 1 million, in a first-phase tranche of about USD 700 000, released in stages over three years; and a second-phase tranche of USD 350 000, subject to satisfactory performance of the BDFC group guarantee lending and savings scheme, which will be the main conduit for the IFAD funds. Fund releases will be monitored from year to year in conjunction with the BDFC Board and the Ministry of Finance and adjusted to suit conditions. The Government will on-lend funds to BDFC under a subsidiary loan agreement, initially at an interest rate of 1% and with repayment due in 30



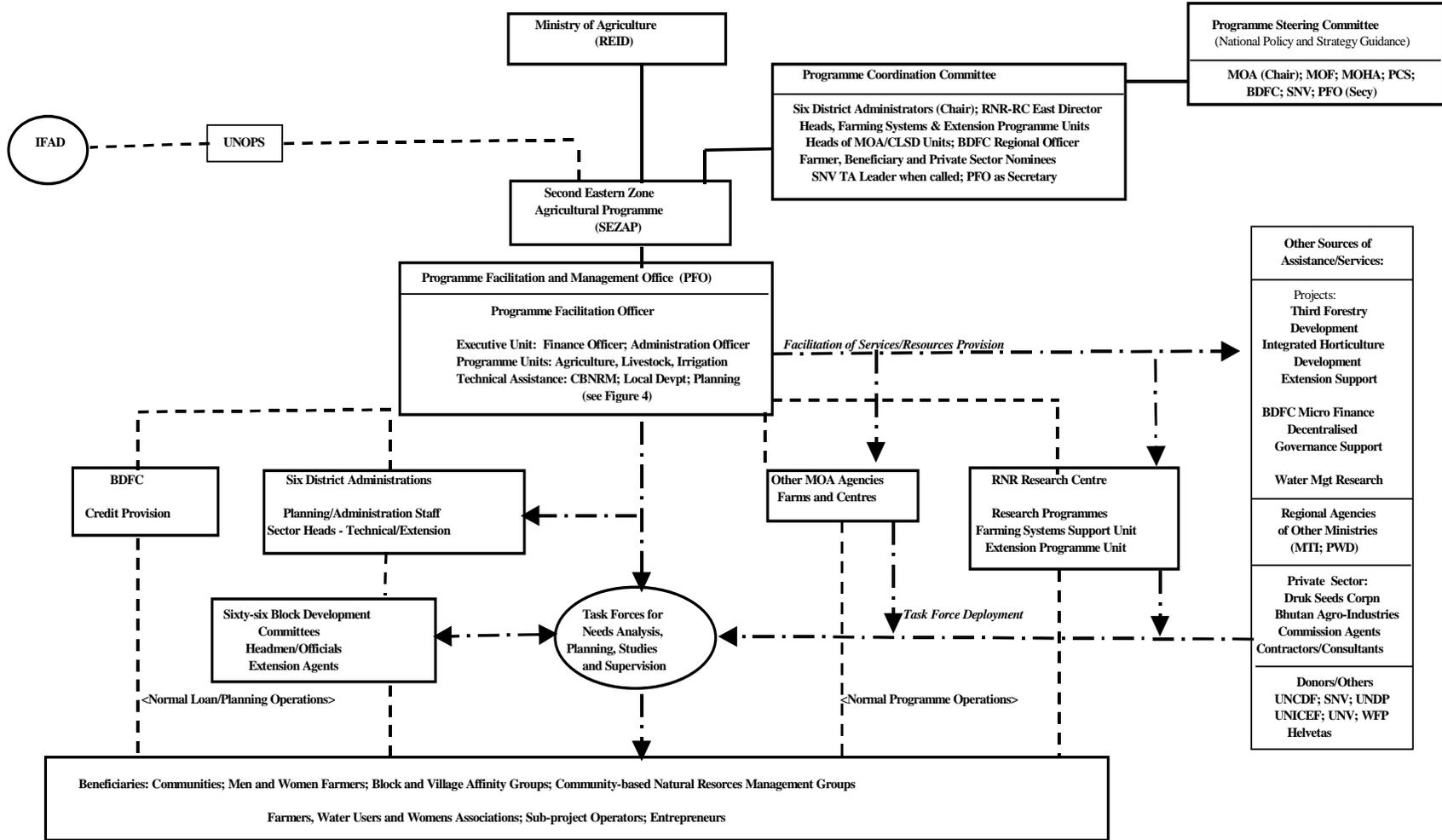
years following with a grace period of ten years. Additional credit would be available from UNCDF (the indicative figure being USD 0.5 million over five years). UNCDF and SNV would provide organization, systems, administrative and capacity-building support to BDFC in the Eastern Zone, as well as nationally under the Micro-Finance Project. Loan amounts will be small, ranging from BTN 5 000 to BTN 20 000 per individual, depending on the stage of group development and loan history. The interest rate to borrowers will be 13% for agriculture loans in the first instance.

18. The process of credit provision will evolve from the progress of group organization and savings activities and the generation of demand. BDFC and district and block staff will launch awareness and information campaigns in areas where they already have, or expect to have, lending operations under way; the campaigns will be complemented by programme activity under the Local Development Initiatives component. Initial enquiries for credit, particularly in programme blocks having established activities and community organizations will emerge from both ongoing and new developments. Enquiries are likely to be directed in the first instance to block extension agents, who, after assessing the seriousness of the enquiry, will make sure that they are forwarded to the appropriate BDFC District Credit Assistant. The credit assistant will arrange to meet with the potential borrower, advise on credit viability, liaise with the block credit committee and, if appropriate, assist in preparing a loan application. The systems for supervision, monitoring and evaluation of credit operations and furnishing the associated management information will be adapted from those in use under the UNCDF/SNV Sustainable Micro-Finance Programme.

19. **Programme facilitation and management.** The PFO will form the core of an improved planning and development capability at the regional level. Links between the operating staff and the regional, district and block authorities will be as short and direct as possible. The programme management cadre will be small, and can be supplemented by tapping the personnel and resources of other regional and district departments and private contractors on a task force basis. The PFO will be based at Khangma, in the same premises as FEZAP, which will be refurbished, extended and equipped, including communication and office equipment, vehicles and substantial operating and maintenance costs for all its purposes.

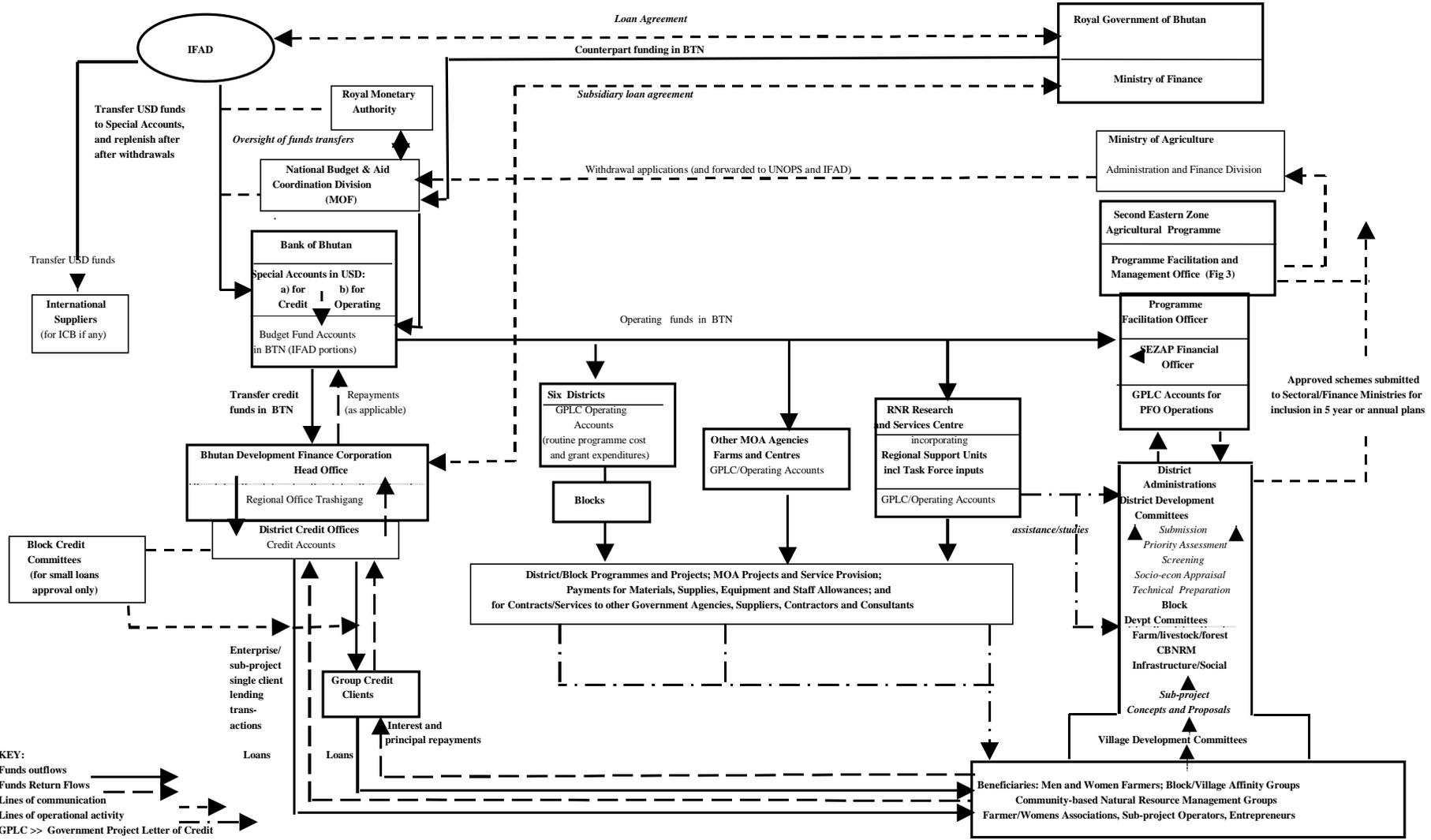
20. The programme's collaborative, participatory approach will be based on regular consultation among all partners and stakeholders. The formal parts of these proceedings will consist of promotional and support activities, including attendance by PFO staff at DYT and GYT meetings; workshops and seminars; performance reviews, including the first-phase review and design of the second-phase programme; as well as ongoing monitoring and evaluation activities and ad hoc studies.

Programme Facilitation and Management Chart



Notes:
 Lines of authority/answerability
 Lines of liaison/technical communication
 Lines of operational activity

IFAD and Government Funds Flow and Programme Operations Chart



FINANCIAL AND ECONOMIC ANALYSIS

1. The programme is expected to generate higher incomes and food availability through increased agricultural production, reduced crop losses and enhanced values, brought about through: improved crop husbandry; improved crop nutrition through enhanced fertilizer use, including mineral as well as organic fertilizer; improved land and soil fertility management in the dryland and shifting cultivation areas; rehabilitation/upgrading of irrigation structures and improved water management practices through the water users' associations; improved foodcrop varieties; export of cash crops; improved forest-produce management; enhanced product quality, reduced losses and improved marketability through better storage and handling of the produce; and availability of credit for crop inputs purchase and as working capital for possible microenterprises.
2. The projected incremental crop yields under the programme are modest, summarized below:

Crop Yields (Kg per acre)

CROP	Without Project 1 - 20	With Project 5 - 20	Incremental Yield %
Rice - chuzhing	915	1 600	75
Maize - kamzhing	1 083	1 632	51
Maize - tsheri	985	1 200	22
Chilli - chuzhing	3 000	3 600	20
Beans - kamzhing	390	450	15
Potato - kamzhing	7 500	8 500	13
Mustard - tsheri	296	450	52
Citrus - orchard	4 800	9 000	88

From the above, it is anticipated that the annual incremental cereal production of the target households from year ten in the programme area would be: rice - 6 384 mt, and maize - 8 mt. Benefits from other crops, such as chilli, beans, potato and mustard, would be 76 mt, 166 mt, 1 515 mt and 505 mt respectively.

3. The table below presents the expected uptake of programme interventions by those beneficiary households that adopt all or most of the relevant advice and recommended packages. These total 5 750 households.

Project Uptake Projections

Farm model	Yr	no. of households								
		1	2	3	4	5	6	7	8	9-20
Rice		900	1200	1650	2200	3050	3050	3050	3050	3050
Mixed		610	765	960	1200	1500	1500	1500	1500	1500
Horticulture		200	250	320	400	510	510	510	510	510
Livestock		280	350	440	550	690	690	690	690	690



APPENDIX IX

4. The purpose of the financial analysis is to evaluate the financial impact on farmers investing their labour and resources in productive, programme-supported activities so as to be confident that the net incremental revenue will provide them with sufficient financial incentive to participate, to adopt extension recommendations, to repay any loans taken, and to generate a healthy return on their investment of capital and/or labour. Using indicative crop and livestock budgets and financial prices, three cropping models and one livestock model were constructed. These have been designed to reflect the actual land holdings and resources available to farm households within the programme area. The financial analysis undertaken for these models showed that, in all cases, the return per labour day increased significantly, and compared favourably with the average rural wage of BTN 50. The net household incomes, expressed in USD terms, are set out in the table below:

Net Household Incomes and Returns on Labour

FARM MODEL	USD		
	Without	With	% change
Rice	799	1272	59
Mixed	156	321	106
Horticulture	324	1188	267
Livestock		267	100

5. Crop budgets and the livestock models provided the basis for estimating incremental production, incremental input requirements and incremental net benefits. This provided the basis for the economic analysis of the programme. The analysis includes the quantifiable incremental costs and benefits associated with programme investments in activities such as: rehabilitation of irrigation, improvement of technology, refinement of extension services and introduction of proper water management techniques. Incremental benefit streams were based on crop and livestock budgets constructed for the financial analysis and the same assumptions as to area and yield development and expected uptake. A twenty-year period of analysis was considered. Financial prices were converted to economic prices by valuing all internationally traded agricultural inputs at their border prices. These inputs are being traded in the Eastern Zone and were thus adjusted to allow for domestic transport and costs between the border and the district and blocks, to give an economic import parity value at the farmgate. The standard conversion factor of 0.92 (World Bank estimate) was applied to adjust the financial prices of non-traded items and minor commodities. Economic value of labour was taken at BTN 46. The economic internal rates of return (EIRR) were calculated for the various models and, based on quantifiable benefits, the overall EIRR for the project is estimated at 13%.

6. The sensitivity analysis indicates that in general the models are largely insensitive to decreased benefits or increased costs. The combination of a 10% increase in cost and a 10% decrease in revenue would result in a small reduction of the EIRR in all models. Delays of 1 or 2 years in the realization of benefits has a more marked effect in all cases, the latter reducing returns by about 40%.