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President's report on proposed grants under the global and regional grants window to CGIAR-supported international centres:

International Livestock Research Institute

International Maize and Wheat Improvement Center

Center for International Forestry Research

International Center for Agricultural Research in the Dry Areas

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For: Approval

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Abbreviations and acronyms

ASAP	Adaptation for Smallholder Agriculture Programme
CCAFS	Climate Change Agriculture and Food Security
CGIAR	Consultative Group on International Agricultural Research
CIFOR	Center for International Forestry Research
CIMMYT	International Maize and Wheat Improvement Center
CRP	CGIAR research programme
CSA	climate-smart agriculture
ICARDA	International Center for Agricultural Research in Dry Areas
ICRAF	World Agroforestry Centre
ILRI	International Livestock Research Institute
ISA	International Standards on Auditing
LEDS	low-emission development strategies
MRV	measuring, reporting and verification
NARS	national agricultural research system

Recommendation for approval

The Executive Board is invited to approve the recommendation for proposed grants under the global and regional grants window to CGIAR-supported international centres as contained in paragraph 5.

President's report on proposed grants under the global and regional grants window to CGIAR-supported international centres:

International Livestock Research Institute,
International Maize and Wheat Improvement Center
Center for International Forestry Research and
International Center for Agricultural Research in the
Dry Areas

Part I – Introduction

1. This report recommends the provision of four IFAD grants in the amount of US\$7,500,000 under the global/regional grants window to CGIAR-supported international centres. The grant proposal documents are attached in the annexes to this report.
2. The goal of IFAD grants is to significantly broaden and add value to the support provided to smallholder-farming and rural transformation, thereby contributing to rural poverty eradication, sustainable agricultural development, and global food security and nutrition. In order to achieve these goals, IFAD grants should adhere to three basic principles: (i) make a significant contribution to a global, regional or national public good related to IFAD's mandate; (ii) focus on interventions where grant financing has clear added value and a comparative advantage over regular loans; and (iii) not be used as a substitute for resources from IFAD's administrative budget.
3. The objectives of IFAD grant financing are to: (i) promote innovative, pro-poor approaches and technologies with the potential to be scaled up for greater impact; (ii) strengthen partners' institutional and policy capacities; (iii) enhance advocacy and policy engagement; and (iv) generate and share knowledge for development impact. Rural poor people and their organizations should be squarely positioned at the centre of each grant submission to fulfil IFAD's mandate to enable poor rural people to improve their food security and nutrition, raise their incomes and strengthen their resilience.
4. The proposed projects are in line with the goal and objectives of IFAD grant financing, as stated in the IFAD Grant Policy:
 - (i) International Livestock Research Institute (ILRI): Greening livestock: Incentive-Based Interventions for Reducing the Climate Impact of Livestock in East Africa. The goal of the project is to support public- and private-sector interventions that promote productive livestock systems while reducing the livestock sector's emissions and improving alignment with national low-emission development strategies. The project will identify, test and promote the adoption of climate-smart agriculture strategies with an appropriate measuring, reporting and verification (MRV) framework at the farm and county or district level in Kenya and the United Republic of Tanzania.
 - (ii) International Maize and Wheat Improvement Center (CIMMYT): Enhancing Smallholder Wheat Productivity through Sustainable

Intensification of Wheat-Based Farming Systems in Rwanda and Zambia. The project's goal is to contribute to food security, nutrition and rural incomes. Its objective is to enable smallholder wheat -farming systems to increase food security and draw lessons to feed into wheat sector development and scale up for increased wheat farm productivity. Further, outputs from work in Rwanda and Zambia are expected to generate lessons for scaling up in Madagascar, Mozambique and the United Republic of Tanzania. While the project's focus is on wheat, a farming systems approach will be adopted. In Rwanda, wheat-farming is based on rain-fed and labour-intensive smallholder production while in Zambia, the crop is produced using irrigation by small- to medium-scale capital-intensive commercial farmers. Therefore, the project will seek to optimize the productivity, production and commercial potential of the entire wheat-farming system.

- (iii) Center for International Forestry Research (CIFOR): Enhancing Smallholder Food Security, Incomes and Gender Equity within West Africa's Forest-Farm Interface. The goal of this project is to improve livelihoods, promote economic growth and reduce poverty among targeted smallholders in Burkina Faso and Ghana. Its objective is to identify practices and policy interventions that improve the incomes and food security of rural smallholders. The project will combine multidisciplinary biophysical and social sciences with participatory approaches that address the needs of smallholders at the forest-farm interface.
- (iv) International Center for Agricultural Research in the Dry Areas (ICARDA): Enhancing Food and Nutritional Security and Improving Livelihoods through Intensification of Rice-Fallow Systems for Pulse Crops in South Asia (Bangladesh, India and Nepal). The goal is to establish a sustainable integrated pulse production system in rice fallows to enhance pulse production and farmers' incomes, thereby contributing to food and nutritional security. The objective is to develop and test cropping systems and agro-technologies for improved production and productivity of lentils, grass peas and chick peas as second crops using residual moisture and fertilizer from the preceding rice crop.

The goals and objectives of these individual projects will directly contribute to those of the IFAD Grant Financing Policy.

Part II – Recommendation

5. I recommend that the Executive Board approve the proposed grants in terms of the following resolution:

RESOLVED: that the Fund, in order to finance, in part, the project Greening livestock: Incentive-Based Interventions for Reducing the Climate Impact of Livestock in East Africa shall provide a grant not exceeding two million United States dollars (US\$2,000,000) to the International Livestock Research Institute for three years upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board herein.

FURTHER RESOLVED: that the Fund, in order to finance, in part, the project Enhancing Smallholder Wheat Productivity through Sustainable Intensification of Wheat-Based Farming Systems in Rwanda and Zambia shall provide a grant not exceeding one million five hundred thousand United States dollars (US\$1,500,000) to the International Maize and Wheat Improvement Center for four years upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board herein.

FURTHER RESOLVED: that the Fund, in order to finance, in part, the project Enhancing Smallholder Food Security, Incomes and Gender Equity within West Africa's Forest-Farm Interface shall provide a grant not exceeding one million five hundred thousand United States dollars (US\$1,500,000) to the Center for International Forestry Research for three years upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board herein.

FURTHER RESOLVED: that the Fund, in order to finance, in part, the project Enhancing Food and Nutritional Security and Improving Livelihoods through Intensification of Rice-Fallow Systems for Pulse Crops in South Asia (Bangladesh, India and Nepal) shall provide a grant not exceeding two million five hundred thousand United States dollars (US\$2,500,000) to the International Center for Agricultural Research in the Dry Areas for four years upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board herein.

Kanayo F. Nwanze
President

ILRI: Greening livestock: Incentive-Based Interventions for Reducing the Climate Impact of Livestock in East Africa

I. Background

1. In East Africa, livestock production provides between 40 per cent and 55 per cent of household incomes, and 26 per cent of human protein intake. Livestock is managed predominantly by smallholder farmers, with dairy the most important end market. The increasing demand for livestock products is an urgent concern that could lead to increased greenhouse gas emissions. However, improving productivity holds promise as a means to reduce greenhouse gas emissions.
2. Implementing mechanisms to compensate smallholders for increasing productivity requires policy support and private-sector engagement. The development of low-emission development strategies (LEDS) is a top priority for East Africa, with livestock as a promising target. The lack of reliable estimates on greenhouse gas emissions limits the implementation of LEDS. This project will provide evidence that can be used by public and private stakeholders to identify incentives for implementing LEDS in the livestock sector. Building on the potential for sequestering carbon to address land degradation, this project will explore investments in land rehabilitation and forest management. Kenya is considered a leader among East African countries, making it a logical first choice pilot country, with the United Republic of Tanzania well positioned to develop LEDS in the future.

II. Rationale and relevance to IFAD

3. The project will: (i) provide smallholders with options to improve livestock productivity while contributing to a reduction in greenhouse gas emissions; (ii) help to meet the IFAD Strategic Framework 2011-2015 objective on building a natural resource and economic asset base for poor rural women and men that is more resilient to climate change, environmental degradation and market transformation;¹ and (iii) advance IFAD's thematic focus on climate change adaptation and mitigation by enhancing environmental sustainability and resilience in small-scale agriculture.
4. The project is aligned with IFAD's Adaptation for Smallholder Agriculture Programme (ASAP) objectives by: (i) supporting smallholders' access to climate finance; and (ii) analysing the investment and incentives for adoption of climate-smart agriculture (CSA). It is directly in line with national climate change action planning in Kenya and the United Republic of Tanzania. The project will contribute to the ASAP outcome of improved land management and gender-sensitive, climate-resilient agricultural practices and technologies, with a reduction in emissions from livestock through feed and manure management, and land restoration. It should be noted that there is currently no ASAP project in Kenya and the United Republic of Tanzania with a focus on climate change mitigation through the livestock sector.
5. Within Kenya, the project will contribute to the 2013-2018 country strategic opportunities programme (COSOP) strategic objective 1: Improved natural resource management that is gender responsive, climate resilient, sustainable and community based. Since the project will involve working with the dairy sector, it will be linked to the second phase of the IFAD-funded Smallholder Dairy Commercialization Programme and to the Kenya Cereals Enhancement Programme

¹ The current Strategic Framework expires in 2015 and a new one will be submitted to the IFAD Executive Board in December 2015. The new Strategic Framework will capitalize on the global political will emerging from post-2015 discussions aimed at eradicating extreme poverty, hunger and malnutrition within a generation.

- Climate Resilience Agricultural Livelihoods Window (KCEP-CRAL). In the United Republic of Tanzania, the project will enhance government investments in livestock, forests and CSA. The project document will be an annex to the livestock project being developed in the United Republic of Tanzania.
6. The project will support integration of livestock and LEDS. Within Kenya, plans to include the dairy sector in Nationally Appropriate Mitigation Actions is attracting strong private-sector interest. In the United Republic of Tanzania, the CGIAR Research Program (CRP) on Climate Change Agriculture and Food Security (CCAFS) has been supporting the Vice-President's efforts to advance a climate change action plan. The project will also explore opportunities to capitalize on global climate finance instruments such as those managed by the Green Climate Fund and the United Nations programme on Reducing Emissions from Deforestation and forest Degradation (REDD+).
 7. This project is linked to CCAFS and will be embedded in its Mitigation via LEDS project with a focus on:
 - (i) Methods for measuring and assessing farming emissions and mitigation options; and
 - (ii) Regional priorities such as assessing mitigation options and potential trade-offs, and supporting national LEDS and finance, including analyses of the trade-offs among multiple objectives.
 8. The grant will contribute directly to the three system level outcomes (SLOs) of the CGIAR Strategy and Results Framework 2010-2015: sustainable management of natural resources; improving food and nutritional security; and reducing rural poverty.
 9. The project is aligned with the new IFAD Policy for Grant Financing by seeking to significantly broaden and add value to the support provided to smallholder-farming and rural transformation, thus contributing to rural poverty eradication, sustainable agricultural development and global food security and nutrition. The grant will contribute to a global, regional and national public good related to IFAD's mandate, and will have a comparative advantage over regular loans.
 10. The project will contribute to achieving the four IFAD grant financing objectives: (i) promote innovative, pro-poor approaches and technologies with the potential to be scaled up for greater impact; (ii) strengthen partners' institutional and policy capacities; (iii) enhance advocacy and policy engagement; and (iv) generate and share knowledge for development impact. Rural poor people and their organizations will be central to project implementation, contributing to IFAD's overall mandate.

III. The proposed project

11. The project's overall goal is to support public- and private-sector interventions that promote productive livestock systems while reducing the livestock sector's emissions and improving alignment with national LEDS. To achieve this goal, the project will identify, test and promote adoption of CSA strategies, with an appropriate measuring, reporting and verification (MRV) framework at the farm and county or district level in Kenya and the United Republic of Tanzania.
12. The target group includes 10,000 smallholder producers; the project will indirectly reach 100,000. It will also benefit national staff from the Ministry of Environment and Natural Resources' Climate Change Secretariat, and the Ministry of Agriculture, Livestock, and Fisheries in Kenya; the Vice-President's Office and Ministry of Agriculture Food Security and Cooperatives in the United Republic of Tanzania; and other public- and private-sector actors.

13. Strategy, approach and methodology

- (i) Support Kenya and the United Republic of Tanzania in integrating CSA for livestock production in smallholder systems;
- (ii) Tackle the lack of quantitative data for mitigation targets with productivity gains and information on incentives and implementation mechanisms;
- (iii) Build partnerships with smallholder associations, counties, districts, national governments and the private sector to ensure that incentives are practical, and to enhance partner capacity; and
- (iv) Integrate social science, economics and biophysical research science.

IV. Expected outputs

14. The project is expected to have the following outputs:

- (i) Output 1: Baseline and identification of promising CSA interventions based on productivity, management practices and associated emissions.
- (ii) Output 2: Social and institutional analyses of incentives to identify viable CSA interventions that address financial, social, market and technical barriers to adoption.
- (iii) Output 3: Experimentation and MRV testing of selected technical and institutional interventions identified under output 2, with technical support to facilitate implementation.

15. Project benefits:

- (i) Increased uptake of CSA practices to improve milk yields, increase incomes and lower greenhouse gas emissions;
- (ii) Direct reduction of emissions from animals and manures;
- (iii) Large-scale carbon sequestration in land restoration so that the sector becomes "green";
- (iv) Accessible climate financing; and
- (v) Provision of data to the public and private sector to attract investment.

V. Implementation arrangements

16. The International Livestock Research Institute (ILRI) will be the recipient of this grant, supported by the Center for International Forestry Research (CIFOR) and local partners. The project will be implemented jointly by ILRI with CIFOR to bring complementary technical expertise. ILRI will be the executing agency and will be accountable to IFAD for the use of grant funds. CIFOR will work through a sub-agreement subject to IFAD's prior review and approval.

17. ILRI will ensure that:

- (i) The entire project implementation period is covered by audit;
- (ii) Its institutional accounts are audited yearly in accordance with International Standards on Auditing and in compliance with IFAD financial guidelines, and submit to IFAD a copy of its audited financial statements, within six months after the end of each fiscal year;
- (iii) An audit opinion letter on the statement of expenditures submitted to IFAD is duly completed by its independent auditors, disclosing the amount of funds from various sources received and spent under this operation; and
- (iv) The annual audit report submitted to IFAD shall include IFAD funds combined with any cofinancing funds and shall consolidate expenditures incurred by

CIFOR, which will be accountable for the use of sub-grant funds and subject to normal audit oversight.

VI. Indicative project costs and financing

18. The project will be funded from the IFAD grant of US\$2,000,000. Expected cofinancing from other donors includes US\$3 million in cash and US\$2.9 million in in-kind contributions from CCAFS and associated projects. The total project budget is US\$7.9 million. The IFAD grant will be disbursed through the World Bank as Trustee of the CGIAR Fund, with the World Bank retaining 2 per cent cost-sharing percentage. In-kind contributions from associated bilateral projects are expected. Detailed project budgets by category, output and financier are presented in tables 1 and 2 below.

Table 1

Project costs by output and financier

(Thousands of United States dollars)

<i>Outputs</i>	<i>ILRI</i>	<i>CIFOR</i>	<i>Total</i>
• Baseline studies for identifying priority systems and support	180	270	450
• Estimation of potential gains in emissions reductions and productivity improvements from support	485	0	485
• Ex-ante analysis of CSA practices			0
• Estimation of leakage and land degradation	39	154	193
• Analysis of emissions reduction	0	132	132
• Identification of financial, social, market, and technical barriers to adopting appropriate CSA practices	209	0	209
• Analysis of economically and politically viable investment options	86	114	200
• Identification of governance arrangements and financing mechanisms	114	29	143
• Development of decision support tools	107	41	148
Total	1 220	740	1 960

Table 2

Project costs by expenditure category and financier

(Thousands of United States dollars)

<i>Budget category</i>	<i>IFAD</i>	<i>Cofinancier</i>	<i>Total</i>
Salaries and allowances	600	1215	1 815
Equipment and materials	207	114	321
Operating costs	151	306	457
Goods Services and inputs	126	248	374
Travel and allowances	200	97	297
Consultancies	147	705	852
Training	305	11	316
Workshops	77	53	130
Subtotal	1 813	2 749	4 562
Management fee	147	251	398
Cost-sharing percentage (2%)	40	0	40
Total	2 000	3 000	5 000

Appendix: Results-based logical framework

Greening livestock: Incentive-Based Interventions for Reducing the Climate Impact of Livestock in East Africa

Hierarchy	Objectives – hierarchy	Objectively verifiable indicators	Means of verification	Assumptions
Goal	To support public and private sector CSA interventions that promote productive livestock systems, reducing the sectors' emissions and improving alignment with national LEDS in Kenya and Tanzania.	Two target counties and two districts in Kenya and Tanzania implementing CSA interventions for livestock in their LEDS identified by the project	<ul style="list-style-type: none"> Policies and planning documentation by public and private sector have incorporated project recommendations 	<ul style="list-style-type: none"> There is political will to invest in livestock linking to the private sector. Livestock sector willingness to invest in CSA, land use sector programmes Financial mechanisms are available to support smallholders
Objectives	To identify, test, and promote CSA strategies (technical and institutional) with an appropriate framework for MRV at the farm and landscape level in Kenya and Tanzania.	<ul style="list-style-type: none"> 20% increase in productivity 10% reduction in GHG emissions from livestock sector of 10% 	<ul style="list-style-type: none"> Significant reduction of GHG emissions verified with the tested MRV 	<ul style="list-style-type: none"> Districts and counties in Kenya and Tanzania are capable of implementing plans and appropriate incentives are in place.
Outputs	Baselines of the potential for livestock systems emissions and an inventory of CSA practices for the livestock and land use and forest sector is available	<ul style="list-style-type: none"> Two baseline studies of livestock systems potential for GHG emissions reductions completed. Inventory of CSA practices for the livestock and land use sector available. 	<ul style="list-style-type: none"> Baseline with documentation publically available at ILRI/CIFOR website and inventory of CSA practices 	
	Alternative technical and institutional interventions that provide incentives for smallholders to adopt CSA practices are identified	<ul style="list-style-type: none"> Four evaluations of alternative governance arrangements for adoption of CSA in the livestock sector available. 	<ul style="list-style-type: none"> Two reports, 2 policy briefs on institutional arrangements and recommendations for MRV frameworks disseminated. 	
	Select interventions and associated MRV of the effectiveness of interventions are prioritized and tested.	CSA practices are tested in selected counties.	Case studies and evaluation reports.	

CIMMYT: Enhancing Smallholder Wheat Productivity through Sustainable Intensification of Wheat-Based Farming Systems in Rwanda and Zambia

I. Background

1. Urbanization, rising incomes and dietary diversification has led to an increase in wheat consumption in sub-Saharan Africa. However, domestic production in these countries covers only 30 per cent of wheat consumption, with the rest imported. In the past few decades, some wheat-importing countries have increased wheat production, but population and economic growth in most of these countries has increased wheat consumption at an even greater pace, necessitating more wheat imports.
2. In Rwanda, wheat is an important staple crop for smallholder farmers, but a large proportion of wheat consumed in the country is imported. The volume of wheat imported into Rwanda increased from 5,074 tons in 2006 to 82,745 tons in 2011 (Food and Agriculture Organization Of The United Nations, Statistics Division [FAOSTAT], 2012) costing from between US\$2.3 million and US\$33 million (Rwanda Revenue Authority, 2013). Zambia produced 274,000 tons of wheat – 10 per cent of the country's total cereal production – in 2013 (FAOSTAT, 2014), importing 12,000 tons and exporting 109,000 tons of wheat products. The average per capita wheat consumption was 12.1 kg.
3. Compared to other sub-Saharan African countries, Zambia consumes 71 per cent of its domestic wheat production (exceeded only by Ethiopia at 83 per cent and Nigeria at 73 per cent). Most of the wheat produced in Zambia is under irrigation by small- to medium-scale commercial farmers on up to 20 hectares (ha) of land; their average productivity is between 5.5 and 6.1 tons per ha. The goal is to develop wheat-farming systems that optimize production, with a focus on the potential within suitable agro-ecologies in Rwanda and Zambia. This will require investments in: improved technologies; high-yielding and adapted varieties; the precise application of inputs (including fertilizer, pesticides and water for irrigation); and timely planting. This project seeks to develop and test technologies, practices and strategies for developing sustainable wheat-farming systems, with a focus on boosting domestic wheat production and drawing lessons for scaling up.

II. Rationale and relevance to IFAD

4. The project is aligned with the goals and objectives of the IFAD Strategic Framework 2011-2015, and will contribute to IFAD's Agricultural Research for Development focus areas, especially sustainable systems at the farm and landscape levels to: intensify production while conserving the natural resource base; and support innovative research programmes that deliver pro-poor global public goods and capacity-development of partners, knowledge management and sharing, and policy dialogue.
5. The project is a component of the CGIAR Research Program (CRP) on Wheat. It will directly contribute to two system level outcomes of the CGIAR Strategy and Results Framework on improved food security and reduced rural poverty. It will indirectly contribute to the system level outcome on sustainable management of natural resources at the system level and to the achievement of four intermediate development outcomes of the CRP.
6. The project is aligned with the new IFAD Policy for Grant Financing by seeking to significantly broaden and add value to the support provided to smallholder-farming and rural transformation, thus contributing to rural poverty eradication, sustainable

agricultural development and global food security and nutrition. The grant will contribute to a global, regional or national public good related to IFAD's mandate. It should be noted that this is the first time IFAD is supporting wheat-based farming systems in East and Central Africa.

7. The project will contribute to achieving three of IFAD's grant financing objectives:
 - (i) Promote innovative, pro-poor approaches and technologies with the potential to be scaled up for greater impact;
 - (ii) Strengthen partners' institutional and policy capacities; and
 - (iii) Generate and share knowledge for development impact.

III. Proposed project

8. The project's overall goal is to contribute to food security, nutrition and rural incomes. Its objective is to establish the potential of smallholder wheat-farming to increase food security, reduce wheat imports and draw lessons to inform wheat-farming systems.
9. The target group includes 16,400 farming households, extension staff and market and policy institutions in the public and private sectors.
10. Strategy, approach and methodology. The project will:
 - (i) Adopt a wheat value chain approach in which project activities link agricultural innovation platforms at the community level to domestic urban wheat consumers;
 - (ii) Develop a wheat-farming system based on participatory approaches with all stakeholders involved in identification of bottlenecks and opportunities;
 - (iii) Build on the ongoing wheat research and past research outputs in the region;
 - (iv) Achieve buy-in from the Governments of Rwanda and Zambia in line with the adoption by the African Union's Executive Council of the 2012 Wheat for Food Security in Africa Conference declaration, with endorsement by African Union heads of state in January 2013;
 - (v) Adopt different implementation modalities in the participating countries that reflect differences in the wheat production systems; and
 - (vi) Establish strong public-private-producer partnerships.

IV. Expected outputs

11. The project is expected to have the following outputs:
 - (i) Technical and socio-economic success factors established for profitable wheat production by smallholder farmers in participating countries and spillover countries (Madagascar, Mozambique and the United Republic of Tanzania):
 - Conduct a literature review, and hold focus group discussions and key informant interviews to identify actors and map their linkages along the wheat value chain in core countries;
 - Establish innovation platforms with major stakeholders to strengthen the wheat value chain;
 - Assess production and marketing cost structures, and examine the competitiveness of smallholder wheat production in both core and spillover countries; and
 - Conduct a gap analysis to identify the critical factors for increased smallholder wheat productivity.

- (ii) Proven appropriate wheat technologies and management practices identified for smallholder wheat producers in participating countries:
 - Make an inventory of improved wheat technologies available for direct scale up to smallholders in the targeted areas of wheat potential;
 - Validate the suitability of selected packages of improved wheat technologies at the farm level through the establishment of farmer-managed demonstration and adaptation trials;
 - Facilitate farmers' access to pre- and post-harvest technologies, saving labour in wheat production; and
 - Facilitate the dissemination of improved wheat seed and other complementary inputs to the target communities.
- (iii) Capacity and effectiveness of key actors in the wheat value chains are built in participating countries:
 - Assess and identify capacity gaps in technology use and management practices in wheat production systems and value chains;
 - Train farmers and extension agents on wheat seed and grain production and management practices, post-harvest handling and marketing; and
 - Train stakeholders in building innovation platforms and team dynamics.
- (iv) Business cases for investment in wheat production and markets are established:
 - Document and share new knowledge and information generated on sustainable and competitive smallholder wheat production and marketing to strengthen the business cases for investment; and
 - Organize farmer-to-farmer exchange visits in participating countries to observe and share performance data on wheat technologies and market linkages.

12. Project benefits include:

- (i) Improved wheat-based incomes;
- (ii) Improved food security;
- (iii) Policies and strategies to boost domestic wheat production; and
- (iv) Savings on foreign exchange.

V. Implementation arrangements

13. The International Maize and Wheat Improvement Center (CIMMYT) is the grant recipient responsible to IFAD for all technical and fiduciary issues. CIMMYT, in collaboration with the Centre for Coordination of Agricultural Research and Development for Southern Africa (CCARDESA), will work in partnership with the Zambia Agriculture Research Institute and the Rwanda Agriculture Board. The partners will undertake their specified activities under the direct supervision of CIMMYT. CIMMYT will invest in developing the capacity of these partners.

14. CIMMYT will ensure that:

- (i) The entire project implementation period is covered by audit;
- (ii) CIMMYT's institutional accounts are audited yearly in accordance with International Standards on Auditing (ISAs) and in compliance with IFAD financial guidelines; and a copy of its audited financial statements is submitted to IFAD within six months after the end of each fiscal year;

- (iii) An audit opinion letter on the statement of expenditures submitted to IFAD is duly completed by its independent auditors, disclosing the amount of funds from various sources received and spent under this operation; and
- (iv) The annual audit report submitted to IFAD shall include IFAD funds and any cofinancing funds, and shall consolidate expenditures incurred by sub-grantees, which will be accountable for the use of sub-grant funds and be subject to normal audit oversight.

VI. Indicative project costs and financing

15. The total project cost is US\$1.8 million, of which IFAD will contribute US\$1.5 million and CIMMYT will contribute US\$300,000 in-kind. All funds will be disbursed through the World Bank as Trustee of the CGIAR Fund with the World Bank retaining a 2 per cent cost-sharing percentage. A cost breakdown is provided in tables 1 and 2 below.

Table 1
Costs by output and financier
(Thousands of United States dollars)

<i>Outputs</i>	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>	<i>Total</i>
(i) Technical and socio-economic success factors for profitable wheat production by smallholder farmers established in Rwanda and Zambia and spillover countries (Madagascar, Mozambique and the United Republic of Tanzania).	225	135	90	450
(ii) Proven appropriate wheat technologies and management practices identified for smallholder wheat producers in participating countries.	236	158	131	525
(iii) Capacity and effectiveness of key actors in the wheat value chains are built in participating countries.	60	180	60	300
(iv) Business case for investment in wheat production and markets are established.	18	41	166	225
Total	539	514	447	1 500

Table 2
Costs by expenditure category and financier
(Thousands of United States dollars)

<i>Expenditure category</i>	<i>Total</i>	<i>Co-funding (in-kind)</i>	<i>Total</i>
Salaries and allowances	450	135	585
Equipment and material	60		60
Operational costs	116	38	169
Consultancy	30		30
Travel expense	115		115
Training	344		342.5
Workshop	248		155
Subtotal	1 363		1 456
Management fees (7%)	108	121	230
Cost-sharing percentage (2%)	29	5.9	35.4
Total	1 500	300	1 800

Appendix: Results-based logical framework

Enhancing Smallholder Wheat Productivity through Sustainable Intensification of Wheat-Based Farming Systems in Rwanda and Zambia

Hierarchy	Objectives – hierarchy	Objectively verifiable indicators	Means of verification	Assumptions
Goal	To contribute to food security and nutrition and rural incomes	<ul style="list-style-type: none"> • Change in the number of food secure households • Change in household income for wheat producing smallholder farmers • Change in the wheat import bills 	<ul style="list-style-type: none"> • National wheat production and consumption data from the two target countries • Wheat import bills 	<ul style="list-style-type: none"> • Stable socio-political conditions
Objectives	To establish the potential of smallholder wheat-farming system to increase food security, reduce wheat imports and draw lessons to inform wheat sector development and subsequent for scaling up for increased wheat farm productivity.	<ul style="list-style-type: none"> • 4,000 men and women smallholder farmers adopt improved wheat technologies • 40 farmer-managed trials established • 4,000 individuals participate (disaggregated by gender) in any of the capacity-building activities undertaken 	<ul style="list-style-type: none"> • Field monitoring and supervision reports in the targeted communities • Farm household survey data 	<ul style="list-style-type: none"> • Stable socio-political conditions
Outputs	<ol style="list-style-type: none"> 1. Technical and socio-economic success factors for profitable wheat production by smallholder farmers in Rwanda and Zambia (participating countries) and spillover countries (Tanzania, Mozambique and Madagascar) established 2. Proven appropriate wheat technologies and management practices for smallholder wheat producers in relation to the participating countries identified. 3. Capacity and effectiveness of key actors in the wheat value chains are enhanced in the two participating countries 4. Business case for investment in wheat production and markets established 	<ul style="list-style-type: none"> • At least three key success factors identified • At least 3 proven wheat technologies identified • 4,000 individuals and stakeholders (including farmers) receive trainings • At least 6 business cases for investment documented. 	<ul style="list-style-type: none"> • Project biannual reports • Field monitoring reports 	<ul style="list-style-type: none"> • Stable socio-political conditions

CI FOR: Enhancing Smallholder Food Security, Incomes and Gender Equity within West Africa's Forest-Farm Interface

Background

1. Smallholder livelihood systems in much of the dry belt across West Africa involve integrated use of cropland, forests and livestock, with sustainability linked to conservation. In the mosaic landscapes they occupy, it is difficult to separate agricultural land use from tree and forest components at the forest-farm interface. Burkina Faso and Ghana have separate forest and agricultural institutions and policies, but now need policies and institutions designed to support rural smallholders in managing integrated systems. Smallholders depend on the provisioning and regulation of ecosystem services for food and nutrition security, income, fodder and energy.
2. This project will generate evidence of how integrated smallholder systems provide effective, efficient and equitable livelihood options for rural people. It will also identify science-based strategies on strengthening capacity for providing income and secure food sources for the people who rely on them.

I. Rationale and relevance to IFAD

3. The project is linked to the IFAD Policy for Grant Financing and organizational priorities through outputs that illustrate the effectiveness of integrated smallholder management systems in providing food security and income-generation options, while maintaining environmental and social sustainability. It will also contribute to the IFAD Strategic Framework 2011-2015 objectives on supporting poor rural women and men, and their organizations, and influencing policies and institutions that affect their livelihoods; and enabling institutional and policy environments to support agricultural production and the full range of related non-farm activities.
4. The project will contribute to IFAD country programmes and ongoing projects in the target countries.
5. The project seeks to:
 - (i) Generate evidence on the effectiveness of integrated smallholder management systems in providing food security and income generation;
 - (ii) Equip policymakers, practitioners and smallholders with knowledge and tools to support integrated strategies adapted to local mosaic landscapes; and
 - (iii) Strengthen communication, negotiation and understanding between policymakers and smallholders through dialogue and learning platforms, and enhance the capacity of poor women and men to influence policy formation.
6. The project is a component of the CGIAR Research Program (CRP) on Forests, Trees, and Agroforestry, and will provide vehicle for scale up by enhancing how trees and forests contribute to smallholder livelihoods. The project will directly contribute to three strategic level outcomes of the CGIAR Strategy and Results Framework: improved food security; reduced rural poverty; and sustainable management of natural resources.
7. The project is aligned with the new IFAD Policy on Grant Financing by aiming to significantly broaden and add value to the support provided to smallholder-farming and rural transformation, thus contributing to rural poverty eradication, sustainable agricultural development and global food security and nutrition. The grant will contribute to a global, regional or national public good related to IFAD's mandate.
8. The project will contribute to achieving all four of IFAD's grant financing objectives;

- (i) Promote innovative, pro-poor approaches and technologies with the potential to be scaled up for greater impact;
 - (ii) Strengthen partners' institutional and policy capacities;
 - (iii) Enhance advocacy and policy engagement; and
 - (iv) Generate and share knowledge for development impact.
9. Rural poor people and their organizations will be central to project, and will therefore contribute to achieving IFAD's overall mandate.

II. The proposed project

10. The overall goal of the project is to improve livelihoods, support economic growth and reduce poverty for targeted smallholders in Burkina Faso and Ghana. The objective is to identify practices and policy interventions that improve the income and food security of rural smallholders.
11. Strategy, approach and methodology. The project will:
- (i) Combine multidisciplinary biophysical and social sciences with participatory approaches so that results are relevant for smallholders at the forest-farm interface. It will focus on two multi-village landscape sites that are representative of biophysical, demographic and socio-economic conditions in the region.
 - (ii) The project will employ six methodologies:
 - (a) Participatory action research combining local knowledge and scientific expertise;
 - (b) Polyscape methodology to engage local stakeholders in the mapping of ecosystem structure and function;
 - (c) Agroforestry knowledge toolkit methodology for socio-economic household surveys and focus group interviews to characterize livelihoods and variations in livelihood strategies;
 - (d) An analytical gender framework for forest value chain analysis to examine access and control over resources, and evaluate the gender-disaggregated impacts of resource use on food security and income;
 - (e) Multi-stakeholder dialogue through the formation of learning platforms involving rural households, policymakers and scientists in the creation of environments that support smallholder livelihoods and the management of mosaic landscapes; and
 - (f) Promoting the active participation of policymakers and development planners with CGIAR scientists and local research staff to ensure scale up.

III. Expected outputs

12. The project is expected to have the following outputs:
- (i) Output 1: Increased village-level participation in social learning, problem solving and dialogue:
 - Document local management knowledge and assist village representatives in preparing for multi-stakeholder dialogue.
 - Engage local stakeholders in village-level evaluation groups to facilitate self-assessment and evaluation of existing practices.

- (ii) Output 2: Greater understanding of productivity and diversity:
 - Conduct multidisciplinary research on how biophysical, socio-economic and gender characteristics affect the productivity and diversity of smallholder management systems;
 - Evaluate impacts on environmental services at landscape sites and identify local use of forest and tree products;
 - Undertake socio-economic assessment of smallholder production systems and document variations in livelihoods and levels of dependence on forest products; and
 - Conduct gender analysis of non-timber forest product value chains and assess the participation of women and young people, and their access to benefits from this trade.
 - (iii) Output 3: Evidence of how policies and programmes shape rural producers' behaviour:
 - Evaluate how policies shape rural producers' behaviour in order to identify strategies that support reforms;
 - Identify constraints and opportunities for smallholder livelihoods within forest-farm landscapes; and
 - Assess the influence of tenure rights on farmers' decisions to adopt or abandon integrated management.
 - (iv) Output 4: Engagement of policymakers, practitioners and village representatives:
 - Engage policymakers, practitioners and village representatives to identify strategies for policies to strengthen livelihoods of local resource managers.
13. Project benefits will include:
- (i) Sustainable management of natural resource assets, poverty alleviation and sustainable livelihoods; and
 - (ii) Improved livelihoods, greater economic growth and increased incomes of target groups.

IV. Implementation arrangements

14. The Center for International Forestry Research (CIFOR) is the grant recipient and executing agency for the project, and is accountable to IFAD for the use of all grant funds. CIFOR will lead project implementation in collaboration with the World Agroforestry Centre (ICRAF) and Tree Aid, a non-governmental organization with expertise in African dryland development.
15. CIFOR will ensure that:
- (i) The entire project implementation period is covered by audit;
 - (ii) Its institutional accounts are audited yearly in accordance with International Standards on Auditing and in compliance with IFAD financial guidelines, and submit to IFAD a copy of its audited financial statements within six months after the end of each fiscal year;
 - (iii) An audit opinion letter on statements of expenditures submitted to IFAD is duly completed by its independent auditor, disclosing the amount of funds from various sources received and spent under this operation; and

- (iv) The annual audit report submitted to IFAD shall include IFAD funds and any cofinancing funds, and shall consolidate expenditures incurred by sub-grantees, which will be accountable for the use of sub-grant funds and be subject to normal audit oversight.

V. Indicative project costs and financing

16. The project will be funded from IFAD's grant of US\$1.5 million and from an CIFOR and ICRAF contribution of US\$360,000; the total project budget is US\$1,860,000. The IFAD grant will be disbursed through the World Bank as Trustee of the CGIAR Fund with the World Bank retaining 2 per cent cost-sharing percentage. Detailed project budgets by output, category and financier are presented in tables 1 and 2.

Table 1

Costs by output and financier

(Thousands of United States dollars)

<i>Outputs</i>	<i>IFAD</i>	<i>CIFOR/ICRAF contribution</i>	<i>Total</i>
(i) Increased village-level social learning, problem solving and dialogue	385	92	477
(ii) Greater understanding of productivity and diversity	634	153	787
(iii) Evidence of how policies and programmes shape rural producers' behaviour	246	59	305
(iv) Engagement of policymakers, practitioners and village representatives.	235	56	291
Total	1 500	360	1 860

Table 2

Costs by expenditure category and financier

(Thousands of United States dollars)

<i>Expenditure category</i>	<i>IFAD</i>	<i>Cofinancier</i>		<i>Partner contribution</i>	<i>Total</i>
		<i>CIFOR</i>	<i>ICRAF</i>		
Salaries and allowances	403	110	75	185	588
Operating costs	97	26	18	44	141
Equipment and material	61	10	0	10	71
Training	169	0	0	-	169
Workshops	161	10	0	10	171
Consultancies	220	0	0	-	220
Goods, services and inputs	52	0	0	-	52
Travel and allowances	199	0	0	-	199
Total direct costs	1 362	156	93	249	1 611
Overhead (CIFOR)	108	83	28	111	219
Cost-sharing percentage (2%)	30	0	0	0	30
Total	1 500	239	121	360	1 860

Appendix: Results-based logical framework

Enhancing Smallholder Food Security, Incomes and Gender Equity within West Africa's Forest-Farm Interface Background

	Objectively Verifiable Indicators	Means of Verification	Assumptions
Goal: Improved livelihoods, higher economic growth and reduced poverty for targeted smallholders	Policies and programmes address the needs of smallholders managing the forest-farm interface. Reports of secure access to natural resources by smallholders. Increases in income and secure access to nutritious food.	<ul style="list-style-type: none"> - National programme guidelines and reports - Official statistics 	<ul style="list-style-type: none"> - Policymakers will adopt project recommendations
Objective: To identify practices and policy interventions that improve the income and food security of rural smallholders	<ul style="list-style-type: none"> - 120 policymakers and practitioners participate in multi- dialogue platforms. - 1,000 smallholder farmers participate in research to develop input for multi-stakeholder dialogue platforms. - 30% of target group are female. - 12,000 rural people benefit from policy interventions. - 50% of policymakers engaged by project report better understanding of smallholder management approaches. 	<ul style="list-style-type: none"> - Project reports and publications - Survey report of participants - Agency reports. Two national synthesis reports of results from multi-stakeholder platforms 	<ul style="list-style-type: none"> - Target groups will participate in project activities. - Policymakers will adopt innovations for dissemination.
Output 1: Increased village level participation in social learning, problem solving and dialogue	<ul style="list-style-type: none"> - 12 village-level NRM evaluation groups formed - 12 village-level self-assessment reports completed. - 300 residents actively participate in NRM evaluation groups. - 50% of village NRM evaluation groups headed by women. - 30% of participants in NRM evaluation groups are women. At least 1,800 villagers indirectly influence by PAR activities. 	<ul style="list-style-type: none"> - Reports and field observation - Evaluation group reports - Participation lists 	<ul style="list-style-type: none"> - Representative village groups will collaborate with implementers. - Local power relations and conflicts will not inhibit participation.
Output 2: Greater understanding of productivity and diversity	<ul style="list-style-type: none"> - 12 village level farm-forest landscapes characterized through interdisciplinary research. - 600 households directly consulted by researchers to improved understanding of livelihood strategies and resource use. - 12 village level forest-farm landscape management assessments formulated. At least 5000 ha of mosaic forest-farm land under strengthened management rights in participating villages. 	<ul style="list-style-type: none"> - Papers and briefs published 	<ul style="list-style-type: none"> - Methods proposed will be effective in identification and evaluation of local management approaches. - Target groups are able to participate in project activities.
Output 3: Evidence of how policy and programmes shape rural producer behaviour	<ul style="list-style-type: none"> - Two national synthesis studies completed on policies, programmes and institutions influencing smallholder livelihoods and land-use in forest-farm mosaics. - Two national summary reports on effects of policy and official programmes on smallholder livelihoods and governance institutions prepared - Two articles submitted for peer review. 		<ul style="list-style-type: none"> - Clear synthesis is possible - Policymakers will accept recommendations.
Output 4: Engagement of policymakers, practitioners and village representatives	<ul style="list-style-type: none"> - Four multi-stakeholder knowledge-sharing workshops organized - 120 policymakers and development practitioners participate in workshops. - 400 village level representatives participate in workshops. 		<ul style="list-style-type: none"> - Policymakers and practitioners are willing to participate. Village level representatives will participate and will engage effectively with policymakers and practitioners.

ICARDA: Enhancing Food and Nutritional Security and Improving Livelihoods through Intensification of Rice-Fallow Systems for Pulse Crops in South Asia (Bangladesh, India and Nepal)

I. Background

1. In South Asia, 47 per cent of the population is undernourished. Pulses are a major source of protein and essential nutrients. However, domestic production cannot meet the daily requirement of 80 grammes (g) per person per day (at just 35g in India, 13g in Bangladesh and 23g in Nepal). The region has a deficit of between 6 million and 7 million tons every year. But pulse production can increase in rice monoculture lands where different pulses (including lentils, grass peas and chick peas) are produced as a second crop, thus increasing cropping intensity and generating extra income. In India, 3 million hectares (ha) of fallow rice-growing land can be used to cultivate pulses, while pulses can be grown on 300,000 ha in Bangladesh and 240,000 ha in Nepal.
2. The genebank of the International Center for Agricultural Research in Dry Areas (ICARDA) holds more than 35,000 germplasm of food legumes. India and ICARDA's expertise will be used to develop improved cultivars and disseminate them to farmers in South Asia. An integrated approach involving farmer-preferred varieties and improved production technologies will be adopted to ensure the sustainability of this rice-based cropping system.

II. Rationale and relevance to IFAD

3. The project is aligned with the IFAD Strategic Framework 2011-2015 objective to achieve a natural resource and economic asset base for poor rural women and men that is more resilient to climate change, environmental degradation and market transformation.
4. The project is a component of CGIAR's Research Program (CRP) on Dryland Systems (CRP 1.1), which provides avenues for scale up as the regional flagship project of South Asia.
5. The project will contribute directly to:
 - (i) Three system level outcomes of the CGIAR Strategy and Results Framework – improved food security, reduced rural poverty and sustainable management of natural resources; and
 - (ii) Five intermediate development outcomes of CRP 1.1.
6. The project is aligned with the new IFAD Policy for Grant Financing by seeking to broaden and add value to the support provided to smallholder-farming and rural transformation, thus contributing to rural poverty eradication, sustainable agricultural development and global food security and nutrition. The grant will contribute to a global, regional or national public good related to IFAD's mandate, will have a comparative advantage over regular loans and will not be used as a substitute for resources from IFAD's administrative budget. Indeed, the project will contribute to achieving IFAD's grant financing objectives.

III. The proposed project

7. The project's goal is to establish a sustainable integrated pulse production system in rice fallows to enhance pulse production and income of nearly 15,000 farmers in India, Nepal and Bangladesh. This will create food and nutrition security for more than 75,000 family farm members. The objective is to develop and test technologies for improving the production and productivity of rice-fallow systems by promoting agro-technologies for lentils, grass peas and chickpeas as second

crops exploiting residual moisture for improved household nutrition, income and soil health.

8. The target group includes 15,000 farmers and 75,000 members of farm families.
9. Strategy, approach and methodology. The project will:
 - (i) Use the integrated systems approach to ensure a better understanding of trade-offs and their solutions;
 - (ii) Use geo-informatics applications to determine crop suitability;
 - (iii) Adopt and implement the innovation platforms approach;
 - (iv) Utilize farmers' participation; and
 - (v) Utilize practices for scale up in project design with fieldwork combined with on-farm testing of genetic materials.

IV. Expected outputs

10. The project is expected to have the following outputs:

Output 1: Germplasm identification:

- Identification of suitable early maturing germplasm of lentils, chickpeas and grasspeas;
- Conventional and molecular breeding methods for germplasm genotyping and phenotyping in field conditions in collaboration with partners in national agricultural research systems (NARS);
- Development and testing of integrated crop management options, including resistant varieties, application of insecticides, agronomic practices, landscape management and beneficial organisms;
- Assessing the utility and profitability of weed control methods and approaches; and
- Characterization of rice-fallow lands using geographic information systems (very high resolution imagery) to develop feasibility plans for crop intensification and diversification.

Output 2: Scaling up technologies:

- Participatory rural appraisal and quantitative surveys to establish consumer and farmer preferences, and understand farmers' production needs, perceptions of the crops and cropping systems;
- Conduct cluster demonstrations (on 8–10 ha plots) of improved technology in farmer fields in partnership with NARS;
- Multiply quality seeds and develop seed delivery systems; and
- Monitor project activities.

11. Project benefits include:

- (i) Improved incomes;
- (ii) Improved food security; and
- (iii) Household diet diversification for improved nutrition and health.

V. Implementation arrangements

12. ICARDA will be the grant recipient responsible for all technical and fiduciary issues, and accountable to IFAD. The project will be implemented in partnership with local institutions including: Bidhan Chandra Agricultural University, Tagore Society for

Rural Development and Indira Gandhi Agriculture University in India; the Bangladesh Agricultural Research Institute and Bangladesh Institute of Nuclear Agriculture in Bangladesh; and the National Grain Legumes Research Program and the Forum for Rural Welfare and Agricultural Reform for Development in Nepal. The project will be directly supervised by IFAD.

13. ICARDA will ensure that:

The entire project implementation period is covered by a financial audit;

- (i) ICARDA's institutional accounts are audited yearly in accordance with International Standards on Auditing and are in compliance with IFAD financial guidelines;
- (ii) A copy of its audited financial statements is submitted to IFAD within six months after the end of each fiscal year;
- (iii) An audit opinion letter on the statement of expenditures submitted to IFAD is duly completed by its independent auditors, disclosing the amount of funds from various sources received and spent under this operation; and
- (iv) The annual audit report submitted to IFAD shall include IFAD funds and any cofinancing funds, and shall consolidate expenditures incurred by sub-grantees, which will be accountable for the use of sub-grant funds and subject to normal audit oversight.

VI. Indicative project costs and financing

14. The project cost is US\$4.5 million: a grant of US\$2.5 million is requested from IFAD and US\$2 million will be cofinanced by CGIAR (including through the CRPs on Grain Legumes, and Agriculture for Nutrition and Health), the Government of India and OCP Foundation. Details are provided in tables 1 and 2.

Table 1

Costs by output and financier

(Thousands of United States dollars)

<i>Outputs</i>	<i>IFAD</i>	<i>Cofinancing</i>	<i>Total</i>
Germplasm acquisition, field testing, genetic enhancement and integrated crop management	490	392	882
Crop suitability mapping	107	84	191
Baseline survey, participatory rural appraisal	112	90	202
Cluster demonstration	675	503	1 178
Training	198	100	298
Village-based seed enterprise development and quality seed production	387	310	697
Meetings, workshops, farmers' field days	202	162	364
Adoption and impact studies	74	120	194
Publications	132	140	272
Travel and allowances	125	100	225
Total	2 500	2 000	4 500

Table 2
Costs by expenditure category and financier
 (Thousands of United States dollars)

<i>Category</i>	<i>Total IFAD</i>	<i>Cofinancing</i>	<i>Total cost</i>
Salaries and allowances	648	400	1 048
Equipment and materials	166	133	299
Operating costs	200	160	360
Goods, services and inputs	540	432	972
Travel and allowances	105	200	305
Consultancies	72	96	168
Training	377	302	679
Workshops	165	132	297
Total direct costs	2 273	1 854	4 127
Management fee	182	146	328
CGIAR cost-sharing percentage	45	0	45
Total	2 500	2 000	4 500

Appendix: Results-based logical framework

Enhancing Food and Nutritional Security and Improving Livelihoods through Intensification of Rice-Fallow Systems for Pulse Crops in South Asia (Bangladesh, India and Nepal)

	Objectives	Objectively verifiable indicators	Means of verification	Assumptions
Goal	To establish a sustainable integrated pulse production system in rice fallows to enhance pulse production and farm income directly of nearly 15,000 farmers in India, Nepal and Bangladesh resulting in food and nutritional security of more than 75,000 farm family	<ul style="list-style-type: none"> - 1 000 farmers involved in the project in different countries - Adoption of sustainable pulses varieties, technologies and pulse production systems in rice-fallow lands - Enhanced pulse productivity and production (15-20%) and farm income increase by 20% - Incremental food and nutrition security (15-20%) - Increased soil health; Soil biomass and fertility is increased in pulses crops grown lands 	<ul style="list-style-type: none"> - Project database with details of farmers, variety and production technologies used - District pulse production system plans - Baseline and End line study reports - and control plots 	<ul style="list-style-type: none"> - No adverse weather conditions or security crises - Evolving technologies and varieties may be more time-consuming than anticipated
Specific Objectives	Development and testing of cropping systems and agro-technologies to for improved production and productivity of lentil, grasspea and chickpea as second crop in rice- fallows for improved food and nutrition security, farm income and soil health.	<ul style="list-style-type: none"> - 15,000 smallholder farmers; have access to pulses as a winter crop - Evidence that adoption of production of pulses in winter leads to positive food security, nutritional outcomes documented from at least 3 case studies. - Evidence pulses constitute a Food Group of the project target groups. - At least 10 000 farmers adopt winter pulses as part of their farming systems. - At least 2 studies and articles published in peer reviewed journals focusing on pulses as winter crops. 		<ul style="list-style-type: none"> - Three years are adequate to develop cultivars suitable for winter cropping - ICARDA and India expertise will be used in the process of germplasm selection, multiplication, and identification
Outputs	Output 1: Germplasm identification	<ul style="list-style-type: none"> - At least 5-6 suitable early maturing germplasm of lentil, chickpea and grasspea each will be identified within 6-8 months of start of the project - Seed of these desirable germplasms used to develop appropriate cultivars - 30% of targeted farmers have access to developed cultivars within 18 months after start of project) - At least 3 (one per country) newly constructed genotypes tested in multi-location by project partners - At least 3-4 improved varieties of lentil, chickpea and grasspea available for the use by smallholder farmers in rice-fallow cropping systems - At least 3 ICM, improved CA & production technology trials in rice-fallow lands - At least three Crop suitability maps (one per country) developed for rice fallows 	<ul style="list-style-type: none"> - Project progress reports - CRP 3.6 Progress reports - NARS progress reports - Published papers - Brochures, leaflets developed 	<ul style="list-style-type: none"> - Genetic material and technology developments are climate and agro-ecosystem responsive, hence there may be variations in varying conditions

	Objectives	Objectively verifiable indicators	Means of verification	Assumptions
	Output 2: Out-scaling of Technologies	<ul style="list-style-type: none"> - 50-60 cluster demonstrations conducted in Bangladesh and Nepal and 100-120 of such cluster demonstrations in India. - At least 15000 farmers will be selected, given seeds produced in cluster demonstrations for sowing in their field 		
		<ul style="list-style-type: none"> - Increase of 25-30% in pulses production by targeted farmers - Quality pulse seed produced by VBSE - Capacity of farmers, women, youths, and village institutions developed on Pulse System in Rice fallows and Pulse Seed System - Field supervision visits, periodic reviews, and workshops 		