



Bhutan Food Security and Accelerated Poverty Reduction Project

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ACRONYMS

AMC	Agricultural Machinery Centre
AMEPP	Agricultural Marketing and Enterprise Promotion Programme
CBSP	Community based seed production
DAMCO	Department of Agriculture Marketing and Cooperatives
FDI	Foreign Direct Investment
FFS	Farmer Feed Schools
GFC	Georg Field Coordinators
GNI index	Gross National Index
GNH	Gross National Happiness
GNHC	Gross National Happiness Commission
HDI	Human Development Index
MAGIP	Market Access and Growth Intensification Project
MoLHR	Ministry of Labour and Human Resources
MoAF's	Ministry of Agriculture and Forests
MDG	Millennium Development Goals
MOU	Memorandum of Understanding
M& E	monitoring and evaluation
NWFP	Non-Wood Forest Products
NKRAS	National key results areas
NPAG	Plan of Action for Gender
NPHC	National Post Harvest Centre
NSB	National Statistical Bureau
NPPC	National Plant Protection Centre
OGTP	One Geog Three Product Program
PDO	The project development objective
PMA	Planning and Monitoring System
PMU	Project Management Unit
PPP	Private Public Partnership
PSC	Project Steering Committee
PRSP	Poverty Reduction Strategy Paper
RGOB	Royal Government of Bhutan
RNR	Rural and Natural Resource
SAARC	Southern Asian Association for Regional Cooperation
SDGS	Sector Development Goals
SAARC	South Asian Association for Regional Cooperation
SKRAs	Sectoral Key Result Areas
RRCDP	Rural Communities Development Project
WUAs	Water User Association

PART I: Summary of Agriculture and Food Security Strategy and Investment Plan

1.1 Objectives, indicators, and past performance

Country and Sectoral Context:

1. **Bhutan is a small landlocked nation located in an ecologically risky area high in the Himalayan mountain range and remains vulnerable to internal and external shocks. However, its diverse ecosystems provide a basis for remarkable social, economic and cultural developments.** The country has a population of approximately 700 thousand people, Bhutan is divided into three altitude zones: The sub-Himalayan foothills; the inner Himalayas; and the greater Himalayas ranging from about 150 meters in the south to about 7000 meters in the north. Bhutan has a high percentage of forest cover (70.46%) - the highest proportion of forest cover of any Asian country. However, the amount of arable land is only 8% of the total land area, while areas under cultivation are only about 3%. Large areas are exposed to monsoons, floods, droughts, landslides and earthquakes. The topography and the ecology of the country is similar in the west and east. Close proximity to India and China offers trading advantageous.

2. **Bhutan has one of the highest Human Development Index (HDI) in the region and GNI index compared to South its Asian regional and lower middle income peers. However, despite progress, poverty is predominantly a rural phenomenon.** Under the 10th FYP Bhutan has achieved significant social and economic development. Its unique mountainous topographical terrain makes it difficult to uplift poverty and food insecurity in lagging regions. Over 30% of Bhutan's poor live in rural areas compared to around 2% poor living in urban areas. Almost 70% of the rural population are engaged in subsistence farming, and suffer from abject poverty, and food insecurity. Around 56% of the rural households live in more than one hour, 8% more than three hours, and 12% "rural households are a day or more walking distance from nearest motor-able roads.

3. **While nutritional indicators have improved, food security and malnutrition remains a challenge in the lagging regions.** Nearly 27% of Bhutanese households consume less than the daily minimum calorific requirement of 2,124 kcal. A survey of rural households in 2007 reported that about 35 percent of the respondents faced food shortage during the year, and of this figure, 51 percent faced food shortage for more than 4 months, while 49 percent had inadequate food for 3 months or less but as of recent showing improvement. In 2011 one in seven households have limited access to food for one or more months and face acute malnutrition, However, the number of stunted and under-weight children have decreased.

4. **Bhutan is predominantly an "agriculture-based society". However, increasingly the feminization of agriculture is cause for concern.** Agriculture sector is dominated by smallholder subsistence farmers who occupy the majority of the arable land and produce most of the crop and livestock products. As per the Labor Force Survey Report of the MoLHR, 2011, the RNR sector provides livelihood to 68.4 percent of the total population contributing to 14.3 percent of the total GDP. The feminization of the agriculture sector in the lagging areas is a key concern, given the migration of youth and men to urban areas. While the contribution of the RNR sector to GDP has been declining, it continues to be an important sector, particularly as a source of improved livelihoods, employment and reduced poverty levels. Notwithstanding some recent changes, the sector's growth remained insufficient to adequately address poverty, and attain food security.

5. **Comparative advantages in eco-climatic conditions, open trade regime, stable macroeconomic and political stability, increased private sector and donor participation has opened**

up internal and external markets. However, removal of supply and demand bottlenecks is imperative. The rural agriculture economy is gradually moving from subsistence farming to commercial cash crop economy. The diversity of agro-ecological zones and lack of pollution has provided opportunities for cultivating a variety of crops and rearing a wide range of livestock. Different farming systems are visible in each agro-ecological zone. On the wet sub-tropics, low-altitude rice is grown in rotation with mustard, wheat, pulses, and tropical fruits. This belt has greater potential in the future for farm mechanization that may result in large-scale production because of the flat terrain and relatively easy access to markets.

6. **The implementation of the “One Geog Three Product Program (OGTP) is resulting in increased production, opening of markets—which is very encouraging.** Bhutanese produce are in demand due to improving conditions, resulting from better connectivity. India is a key trading partner, but Bhutan is gradually penetrating other markets, thanks to private sector involvement. However, heavy dependence on imports is concerning. The rupee crisis has empowered the country to reduce imports.

7. **The rupee crisis presents an opportunity for the agriculture sector to increase domestic production in the short and medium term. However, the necessary investment resources are needed to be mobilised urgently, and unleash the full potential.** The sector has a huge potential to not only enhance food and nutrition security and alleviate poverty, but also to generate scarce exports earnings in INRs and to substitute for food imports. Since early 2012, Bhutan has been facing a significant Indian Rupee (INR) reserve shortage. This has serious implications for the economic welfare of Bhutanese people as most of goods and services for developmental activities, as well as many food items, are imported from India which requires payments in INRs. This resulted in the country’s stringent measures to improve the balance of payments with India. This action presages a long period of painful adjustment for the people of Bhutan. However, the Indian Rupee (INR) reserve shortage is not to be discounted, and there is a real risk that poverty and food security could be exacerbated unless the agricultural sector can significantly developed.

8. **Despite adoption of pro poor development policies and interventions, rising urban prosperity is accompanied by rising inequality, and social exclusion in rural areas.** It is expected that by end of 2013 about 15% of the total population will still remain below the national poverty line. Despite adoption of spatially targeted interventions, poverty traps are still evident in the lagging regions, and thwarts progress of the RNR sector. Going forward, fiscal constraint limit public sector led economic growth. Under the 10th FYP, public sector funding has seen a gradual decline, as funds have been rechanneled to promote other priority sectors, despite the agriculture sector being the backbone of the Bhutanese economy.

9. **Donor funding from GAFSP is critical to bridge the financing gaps resulting from limited fiscal space, with the objective to help Bhutan achieve self-sufficiency and alleviate poverty.** Bhutan’s ability to galvanize international and private sector funding is of critical importance, in order to continue the growth momentum, meet the MDG goals, and eventually achieve middle income status. The ability to potentially benefit from possible GAPSP is timely, and appreciated as it complements the progress made under the 10th FYP. The incoming 11th FYP is designed to complement, and enhance development activities through removal of constraints, and remains committed to addressing issues related to gender, environment and governance. With the help of financial support, the project promises to yield the expected impacts and results, and benefit a high proportion of impoverished women and children, while contributing to the overall development of Bhutan.

The Agriculture Strategy and Investment Plan

The Five Year Planning Process (FYP): The 10th FYP completed under the first democratic government has made commendable progress. The RNR sector is in the process of developing the 11th FYP (2013-2018). This plan will be designed to mitigate most all issues affecting the policy, legal and regulatory environment, as well as prepare Bhutan to any further global, contagion or domestic risks.

Bhutan has a long history of pursuing a systematic approach to planning, in all sectors of the economy. The development philosophy is in accordance with the guiding principle of Gross National Happiness (GNH).¹ The outgoing 10th FYP (2008-2013) is the first plan under the new elected governance system. *Bhutan 2020 – A Vision for Peace, Prosperity and Happiness*, is recognized as Poverty Reduction Strategy Paper (PRSP) by the World Bank that supported the 10th FYP. The country's national development goals and targets and in Bhutan 2020 are in essence fully compatible with the Millennium Development Goals (MDGs). The sector has prepared the RNR food security strategy paper and conducted a food security vulnerability mapping to achieve poverty alleviation, and has also identified the following objectives: 1) To enhance sustainable rural livelihood 2) To conserve and promote sustainable utilization of forest and water resources, 3) To promote sustainable utilization of arable agriculture and pasture land resources and 4) To enhance food security.

10. **The sector strategy has been designed based on the RNR triple gem concept of marketing, access and sustainable production.** The aim of the concept is to promote rural development through improvement of livelihoods, in turn improve GNH. The strategies identified to support the achievement of sector objectives were 1) the creation of an enabling policy and legal framework, 2) strengthening compliance to policy and legal frameworks, 3) improving planning and management of the programs, 4) improved information management and dissemination, 5) improving research services, 6) provision of basic services, 7) delivery of extension services, 8) creation of an enabling financial environment, 9) farm mechanization, 10) strengthening agriculture marketing, 11) developing adequate level of vital infrastructure, 12) diversifying the economic base of the sector, 13) enhancing the integrity of the natural resources, 14) promotion of economic growth and alternative employment, 15) strengthening human resources capacity and 16) improving the monitoring and evaluation of the programs. In order to achieve the sector objectives, the Ministry had identified 29 programs and 61 OGTPs.

11. **Under the 10th FYP, a number of sector and institutional reforms combined with sustainable programs and investments have led to sustainable economic growth, food security, and poverty reduction in Bhutan. However, the poverty alleviation and food security agenda is not over.** The sector strategies and activities have significantly contributed towards achieving the RNR sector objectives. The strategy of creating an enabling policy and legal framework has been the driving force to guide the successful implementation of the plans and programs designed to contribute to the overall goal of the 10th plan. The following new policies, legislations and strategies were promulgated and in some cases the existing ones were revised to address the challenges of the sector they include: The draft Food and Nutrition Security Policy 2012, National Forest Policy 1974 revised in 2011, The draft Subsidized Rural Timber Allotment policy 2012, A Strategy on Protected Agriculture Land, National Land Policy, 2011, National Community Forestry Strategy, Non Timber Forest Products interim framework, National Action Program on Land Degradation, Agriculture Marketing Master Plan, National Irrigation Policy, 2012, Framework for Wang River Basin Management, Land Act 2007 (under revision) and the Forest and Nature Conservation Act 1995 (under revision).

¹ The concept of Gross National Happiness (GNH) is the unifying spirit that guides Bhutan's long term development. The main development objectives of GNH are human development, culture and heritage, balanced and equitable development, governance and environmental conservation. Consequently, the promotion of enabling conditions for GNH has also been enshrined as an important principle of state policy under Article 9 of the constitution.

Progress and achievements of the objectives of the 10th FYP.

12. **Objective one: To enhance sustainable rural livelihood.** The one geog three products (OGTP) implementation has been carried out with the identification of 61 key products. Several FDI and private sector investment including in hazelnut production, a MOU was signed to promote coffee plantation and approximately 300 acres of land was identified for coffee plantation. Moreover, seven more potential partners have expressed interest to collaborate with the RNR Sector. The RNR sector has also initiated value addition for certain selected commodities and opened up Protected Areas (PAs) for Ecotourism and theme based ecotourism. Increased revenue from the export of five major cash crops (Mandarin Orange, Potato, Apple, and Mutsutake).

13. **Objective two: To conserve and promote sustainable utilization of forest and water resources.** The RGOB strengthened environmental conservation by increasing the area under protected area and nature reserves. Biodiversity Action Plan (2009) formulated and implemented. Bio-exploration and Research Unit established in NBC for bio-prospecting. Decentralized forest resource management was strengthened through increased community participation in community and private forestry and increased collaboration with hydro power companies.

14. **Objective three: To promote sustainable utilization of arable agriculture and pasture land resources.** Sustainable land management practices were mainstreamed and National Action Plan for Combating land degradation drafted.

15. **Objective four: To enhance food security** – Bhutan has achieved 50% rice self-sufficiency achieved (target 55%). Peri urban dairy farming was initiated with supply of milk and milk products to 18 towns. Domestic egg production is now able to meet internal demands. Accessibility enhanced through the development of farm roads, ICT and market infrastructure. Agriculture productivity increased through construction and renovation of irrigation channels. Farm machineries and implements supplied to reduce drudgery. Focused on farmers' groups and cooperatives. Human wildlife conflict management strategy implemented. Organic and Brand Bhutan: awareness, R&D and certification. Bio-security: containment of bird flu and other diseases.

16. **Objective five: Enhancing service delivery** - The RNR related services have been enhanced through: One-Stop Farmer Shops at strategic locations established (Bumthang OFFS recently burnt). Integration of Community Information centres (CICs) with OSFS. Geog Agriculture Machinery Centres established in 3 Geogs, E-forestry service for online application & delegation of power to park warden and range for permit of forest products.

17. **Overall, public institutions in the sector have undergone re-structuring to increase its efficiency and effectiveness of program implementation.** The Information and Communication Services (ICS) benefits from a wide outreach within the sector, which makes it easier to package and disseminate information to the stakeholders. Human resource has been viewed as an important component for efficient and effective delivery of services.

Performance: Agriculture Growth Nexus

18. **Slow or declining GDP share is not an indication of a poor performance, but due to economic diversification in other secondary and tertiary sectors. However, absolute GDP**

contribution by the RNR sector has seen a consistent growth between 2007-2010. While many policy, legal and regulatory changes were adopted, the impact on the overall economic growth has been less than expected. The annual growth in the RNR sector has been slow, despite a recognized potential for high-value fruit and vegetable production, its proximity to large, readily accessible export markets, and extensive support from government institutions. In the economic front, the RNR Sector's share of GDP declined from 22% in FY 2004/05 to 11.6% in FY 2011/12. This indicates a predominance of subsistence agriculture, and less agriculture diversification. A review of growth per commodities over the period 2000-2009 show that some have grown much faster than average agricultural growth, while others have grown more slowly. Rapid growth of a given commodity can validly be taken as an indicator of its relative attractiveness to producers, resulting from adaptation to agro-ecological conditions and policy changes. Vegetables appear to be more attractive for producers than bulk commodities such as paddy, wheat and maize.

19. **Despite the rough terrain and remoteness, Bhutan has been relatively successful as an agricultural exporter, and India is the major trading partner and market for Bhutanese agricultural produce.** The major agricultural commodities exported are mandarin orange, potato, apple and cardamom and also include Non-Wood Forest Products (NWFP). The total value of exports to India increased from Nu.4, 615.90 million in 2000 to Nu.29, 324 mn in 2010, growing at an average rate of 20 percent per year in current prices. The value of agricultural exports to India increased from Nu.645.8 mn (2000) to Nu.1,105.9 mn (2010), even though its share of total exports drastically declined from 15 percent in 2000 to only four percent in 2010. Agriculture export value to other countries have also increased in 2010. The major crops exported to other countries are apple, oranges and cardamom that accounted for almost 45 percent of the export value in 2010.

20. **Increasing imports, and lack of corresponding export growth is resulting in a trade deficit. Additional funding to the sector is likely reduce the country's balance of trade.** The value of total imports from India increased from Nu. 6,231 mn in 2000 to Nu.29, 329 mn in 2010. Similarly the value of food imports increased from Nu.1,493.3 mn to Nu.5,782.3 mn. The major food products imported from India include vegetables, fruits, nuts, coffee, tea, cereals, grains and seeds followed by processed food and beverages. The overall balance of trade of the RNR sector has worsened. In 2010, the trade deficit in the RNR sector contributed to 45 percent of the nation's total trade deficit. Of concern is the 2012 rupee crunch crisis, and likelihood of repetition.

1.3 Plan components to achieve the objectives

21. **Several policy, legal and regulatory constraints continue to stymie the development of the agriculture sector in the lagging regions, where women farmers suffer from abject poverty and food insecurity.** In addition to the predominantly substance pattern of production, key factors constraining the development of domestic markets have been the interdependent factors for poor physical access to production areas, dispersed and small scale production and or low product stemming from the poor agriculture practices, unproductive farm land, lack of access to markets, credit and technology, further compounded by pest and wild life encroachment. However, the RNR sector during the 11th plan would face the recurring challenges of decreasing public investment, loss of agriculture land for other development, lack of infrastructure such as irrigation and post-harvest storage, labor shortage, rural urban migration (RUM) and lack of credit opportunities and the scarcity of existing market traders and wholesalers.

22. **International trade over the last decade has been characterized by diversification of export markets, and a concentration of geographical import sources. Improved productivity and commercialization are key for success.** Agricultural and food exports are concentrated in terms of

products to only five items representing 75% of total agriculture exports. In addition to constraints imposed by highly seasonal demand in neighboring countries export marketing is heavily affected by post-harvest losses, particularly for fruits. The Bhutan exporters' association (BEA) estimated that packing losses was due to poor transport, while the remainder was derived from poor on-farm selection of produce. With the exception of the quasi commercial FCB, Bhutan lacks any domestic level commercial wholesaling function. Only export oriented wholesale markets exists, all or other close to border crossing points into India, commercial storage operations or refrigerated transport and the role of private sector participation in agricultural output marketing is very limited. Retail markets do exist usually in larger centers and along main transport routes but generally supplied by near-by producers, and any purchase at such markets for urban resale in small scale at best. Given the low cash incomes of most rural households, sale of the most basic food stuff (rice sugar tea and cooking oil in such areas are very small and probably could not justify commercial involvement. In Thimpu, Phuentsholing and similar urban centers, much agricultural produce on sale is sourced from India, although there are local suppliers in the market in Thimpu.

23. **To stimulate inter and intra export growth in the region, the RGoB is protectively pursuing a more open and liberal policy towards promoting international trade through integration, and use of international and regional trading system, and benefit from a stable and conducive environment beneficial for the growth.** It is expected that private sector will be the engine of growth and economic dynamism in the export market. Bhutan's RNR sector has an impressive record of improving the rural livelihood and continues to contribute significantly to export earnings. It is also an important source of raw materials for many industries. Nevertheless, the overall performance remains rather modest when compared to other sectors.

24. **Measures have been adopted to accelerate the vegetable production to reduce the dependence on imports, as well as to enhance the income generating opportunities for the farmers to protect themselves from a future "rupee crunch".** While the country benefits from completely open trade regime with its two major neighbors, (India and Bangladesh), this also means that the horticulture production in Bhutan during this period November to April has no protection from lower cost imports and Indian imports dominate the market. 15 Dzongkhags have been extensively covered under this program to reduce dependence on imports. To further improve and increase rice productivity, the rice commercialization and mechanization program was launched for the Punakha-Wangdue Valley with about 75 members.

Incoming 11th FYP PLAN

25. **To achieve eradication of poverty to less than 10% by the end of 2018, the sector need to grow at an annual rate of 4% Therefore, despite challenges, the MoAF has set an ambitious target to achieve this growth rate by the end of 11th FYP.** It is expected that by end of 2013 about 15% of the total population will still remain below the national poverty line

26. **The 11th FYP is expected to adopt a multi-dimensional approach to develop the lagging regions.** The RNR Sector 11th Plan covers the period 2013-2018. This plan expects to build on the previous plans, retains much of its validity and embraces the GNH, and its four pillars.² It does not propose any major change in direction or in MoAF's unique mandate of improving food security and nutrition, improving rural livelihoods to overcome poverty, and sustainable management and utilization of

² In The National objective for the 11th plan is to achieve self-reliance through inclusive green socio-economic development where Self Reliance means being able to meet our socio-economic development expenditure through domestic revenue; Inclusive means Reducing Inequality by enhancing the standard of living and the quality of life especially the vulnerable section of our society and Green means Carbon development.

natural resources. Instead, the plan recognizes the need for MoAF to reposition itself, and to better leverage the comparative advantages of MoAF that was built since the 1st plan of working with rural people. Having worked with the rural communities, MoAF has plethora of experiences to face the global development scenarios, expanding opportunities, and new competitive pressure on MoAF's development effectiveness to achieve greater and more sustainable impact in its operations, and to better contribute to the pursuit of GNH.

27. **Based on lessons learnt, and use of best practices, the goals and objectives of MoAF for the 11th plan is strategically aligned to mitigate constraints, prioritize gender, governance and environment, and supported by improved monitoring and evaluation systems.** Although much has been achieved in the past plan periods, challenges still remain in achieving food security, poverty reduction, transformation of agriculture from subsistence to commercial farming, markets and efficient use of inputs. The overall macro strategy for poverty reduction in Bhutan include promoting economic opportunities through broad-based growth, and boosting critical sectors such as agriculture, tourism and rural enterprises.

28. **Going forward, The RGOB remains committed to achieving green economic growth, inclusive social development, poverty alleviation, climate smart sustainable management and utilization of natural resources.** These goals are expected to be achieved through fulfilling four specific objectives that are to: (i) enhance food and nutrition security; (ii) enhance sustainable rural livelihood; (iii) accelerate the RNR sector growth; and (iv) promote sustainable management and utilization of natural resources. . RGOB faces these challenges through adoption the proposed agriculture sectoral key result areas (SKRAs) and key strategies are inclusive, well designed and aligned to meet the goals of the 11th plan. The Government Performance Management System will be strengthened to promote an effective implementation of programs, and will also benefits from a monitoring and evaluation (M&E) system. Each program has measurable results that are cross-referenced to the MDG's and the Southern Asian Association for Development Cooperation Development Goals and goals of the 11h National Plan.

29. **Under the 11th FYP, increased public private sector participation through promotion of agriculture commercialization, diversification, foreign direct investment (FDI), market infrastructure development and value addition is expected to mitigate constraints.** The strengthening of the private sector is one of the main strategies of the 11th FYP. Increased resources and investments will be channeled into the promotion of sustainable income, and employment generating activities, expand access to international markets and enhance the quality of rural livelihoods. In the east, there is a focus to promote contract farming – a relatively new innovation in Bhutan – encourage by changes in the policy landscape. The new land act permits leasehold by land by foreign companies, no internal or export taxes are levied on agricultural production. All agricultural inputs are free of tax and agricultural income is not subject to income tax. Please see implementation schedule below which identifies the key stakeholders, including government ministries and entities that will be responsible for delivery. For that, the 11th considers interventions in the areas of agriculture commercialization and diversification, private sector participation through Foreign Direct Investment (FDI) and Private Public Partnership (PPP), market infrastructure development and value addition to export crops considering comparative advantages in eco-climatic conditions, open trade regime with India and Bangladesh and stable macroeconomic and political stability for FDI.

1.4 Planned composition and level of spending to implement components

30. **The slow growth and the relative decline in the proportionate levels of investment channeled into the RNR sector act as major deterrents as it stalls or slowdowns the growth momentum.** Comparatively, the share of total budget allocated to the RNR sector has declined from 15

% and 15.7% over the 6th and 7th plans to 12%, 10%, and 5.6% over the 9th, 10th, and 11th plans. Under the 10th plan, limited fiscal space has resulted in a drop in spending for the RNR sector, despite the sector being the highest employer of rural livelihoods, especially for women. The recent surge in prices, as well as the need for greater diversification, towards domestic oriented production brought about by the rupee crisis serves as a wakeup call for the sector to receive due attention given its importance and untapped potential.

31. The funding requirement for the RNR under the 10th Plan was estimated at 5.6% of total public expenditure. As Table below demonstrates an indicative funding requirement for RNR sector programs is US\$ 183.2 million, including potential external financing at US\$ 89 million. As of March 2012, external financing at US\$ 137.0 million had been identified leaving financial gap at US\$ 46.2 million.

1.5 Financing sources and gaps

32. **The funding requirement of the RNR under the 10th plan is estimated at 5.6% to total public expenditure.** As Table 1 demonstrates the program areas, total program costs, government resources committed, resources mobilized from other sources, total secured resources and the financing gap. The indicative funding requirement for RNR sector program is USD 183.2 million, including potential external financing at USD 89 million. As of March 2012, external financing at USD137 million has been identified. Funding allocation for the RNR sector under the 11th FYP is currently being developed and should be presented to parliament once it reconvenes following the upcoming elections.

Table 1: Funding requirements of the 10th FYP and the finance gaps as of 30 March 2012 (USD million)

Program areas	Total program costs	Govt. resources committed	Resources mobilized from other sources	Total secured resources	Financing gap
Agriculture Marketing and cooperative development programs	4.67	2.12	1.81	3.93	0.74
Bio safety and food regulations programs	14.6	12.00	1.54	13.54	1.06
RNR Research program Bhutan	16.8	12.03	2.24	14.27	2.53
Agriculture production programs	49.73	20.43	17.86	38.29	11.44
Forest conservation and utilizations programs	38.75	17.31	7.92	25.23	13.52
Livestock development programs	44.89	27.28	9.33	36.61	8.28
Biodiversity conservation and bio-prospecting programs	4.11	2.13	1.86	3.99	0.12
Rural Development Training programs	0.96	0.64	0.53	1.17	-0.21
Human Resources Development	8.73	0.00	0.00	0.00	8.73
Total	183.24	93.94	43.09	137.03	46.21

1.6 Process by which the strategy and investment plan were developed

33. **The planning process involved a decentralized participatory process, inclusive of all stakeholders and supported by effective monitoring and evaluation.** Post mid-year review (MTR) in 2005 led to the consultation and preparatory procedures for formulation of the 10th FYP Following extensive deliberation and consultations with various stakeholders, including small-scale farmers, farmer

organizations, and vulnerable groups including women. Input was also sought from the private sector, donors NGOs and local community organisations across the country. A preliminary set of guidelines were drawn up. These guidelines contain core objectives, priorities, strategies and resource allocation principles for the 10th FYP. The policy guidelines also incorporated key recommendations of the MTR and the Good Governance Plus Report. A document to guide preparation of the 10th FYP was subsequently circulated to all ministries, agencies, dzongkhags and geogs, which represented the broad policy framework for formulation of the various programs.

34. **Within the RNR sector, consultation, strategy preparation and investment planning were based on the OGTP approach, which relied heavily on the input of local communities, in concert with local authorities.** This community-based approach of planning resulted in geog-specific investment plans that form the basis for measures to reduce poverty, improve food security, protect the environment and eliminate gender gaps. On the contrary, the geog and dzongkhag plans are prepared by the local governments through extensive consultation with chiwog level representatives. The central agencies have no role in formulation of local plans, except for the compliance to the national planning guidelines. The central departmental plans are prepared by conducting annual departmental conferences and regional workshops. The sector plan is a result of aggregation of departmental and agency plans developed through national level sector planning workshops.

35. **Despite forewarning, the 10th FYP had to be modified to respond to the food crisis:** The food crisis of 2007-08 took place when the 10th FYP was just launched and had some impact on the implementation of certain programs particular. The Government was challenged to increased food production, in order to attain national food security by; a) Placing greater emphasis on the productivity of prime agricultural land, including extra care in protecting this land from urban encroachment; b) Focusing on commercialization of agriculture through the OGTP programs and the creation of a Department of Agricultural Marketing and Cooperatives, while simultaneously moving to increase attention to environmental risks through a new Watershed Division; c) Exploring the potential for increasing the irrigated area through FAO-led studies on the southern zone of Bhutan, which has potential for paddy. Additional resource allocations have been made available for irrigation; and d) Establishing a system of national strategic rice reserves.

36. **The upcoming 11th plan has been submitted to all stakeholders, and expected to be approved in early August. Extensive dzongkhag level discussions with stakeholders were held to foster closer links between the programs and the district and sub-district (geog) plans.** To ensure consistency between the national and sub-national plans, discussions with the dzongkhags and geogs were organised and prioritized on a product basis according to the principle of OGTP. The OGTP plan provides the critical link between the programs at central level and local communities. Going forward, as of recent the 11th FYP was discussed with development partners and generated wide support and also benefitted from several private sector report, gender report, and other technical working reports.

1.7 Implementation arrangements and capacity to implement

37. **The implementation of the RNR programs involves the collective action of MoAF, its technical departments, non-departmental agencies, dzongkhags and geogs and subject to monitoring and evaluation.** Such programs as research, information and communication, national biodiversity and genetic resources, food and agriculture regulatory services, policy, planning, administrative and financial services are implemented by the respective non-departmental agencies. The departments, dzongkhags, and geogs specify their own roles and responsibilities in implementation of each plan. The departments provide regular technical and regulatory support to the dzongkhags and geogs. The dzongkhags, in turn, support geogs in

technical and administrative matters. Geogs implement field works. Every department, dzongkhag and geog defines programs for which tied grants are provided todzongkhags and geogs. They formulate joint implementation arrangements for the programs. External independent reviews have been conducted by the European Union and McKinsey. Regular internal reviews are conducted by the MoAF and the Gross National Happiness Commission (GNHC).

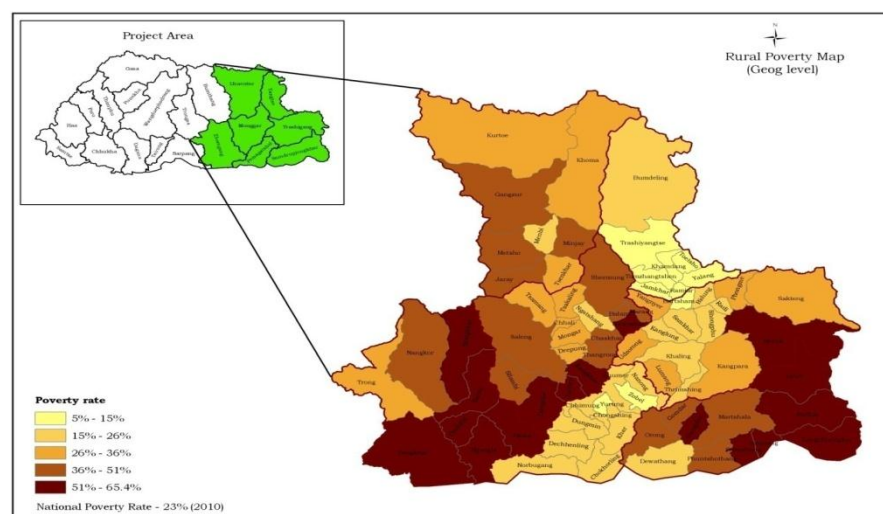
PART II: Specific Funding Proposal

2.1 Objectives, Results and Beneficiaries

38. **The project development objective (PDO)** is to increase the productivity and commercialization of agriculture in the seven of the poorest rural dzongkothags in Eastern Bhutan. The PDO is to be achieved by raising agricultural output through improved irrigation, water management, farm mechanization, and adoption of agriculture production technology. Market linkages will be strengthened by improving post-harvest and marketing infrastructure, combined with ICT. Risk and vulnerability will be mitigated by adoption of wild life damage mitigation technology, and improved access to finance. Technical assistance will be provided to support project management and institutional capacity.

39. **The project is compelling, as equitable and efficient distribution of economic and social gains have yet to reach a large percentage of poor, including women and children in the lagging regions of the East.** The project will target communities with the highest numbers of poor and food insecure households. 60% of most geogs in the east have enough grain from production to last until the next season. The highest production per capita in Eastern dzongkhags is in Samdrup, Jhongkhar, Pemagatchel and Monger.³ The proposed project will benefit around 39,000 households or 190,000 poor in 78 geogs of which 30% of target poor are women, and approximately 70,000 children. The project is expected to improve the income of 5,000 targeted poor households through one or other project activities identified section 2.1.

Rural Poverty Map of Project Target Areas



Expected results include improved food availability and nutrition for 39,000 food insecure households

- Increased agricultural productivity and improved income of 5,000 targeted poor households.
- Increase in productivity of crops by at least 20% in targeted irrigation systems
- Marketed value of agriculture production increased by 20% in targeted area.
- Improved access to infrastructure and incremental irrigation
- Increased farmer group organization.

³ FAO

40. **In the aftermath of the rupee crisis, a renewed focus to improve food security, achieve self-sufficiency in food, and combat rural poverty in target areas is imperative.** Overall, social and economic transformation taken under the 10th FYP have sustained GDP growth. While the overall poverty rate declined, it has been less satisfactory in the seven eastern dzongkhags. These dzongkhags represent 46% of the total rural poor population. As per the Rural Poverty Assessment in Bhutan (2010), poverty rate in the project area is 37% and above the national level at 29%. The Gini coefficient estimate within the project area is 0.248. Total farming population in the project area is estimated at around 121,500, of which around 34% are female farmers. Around 15% of children under 5 year in the project area are underweight, and dependency ratio (children under 14 and adult above 64) is about 37%.

41. **Several farm level, and non-farm level constraints continue to thwart the poorest Eastern region from unleashing its full potential.** The agriculture sector is considered an important sector in managing the health of the ecosystem. The government has played a critical role in trying to address producer's demands for inputs and services. However, increasing needs of the agriculture community is underscored by the lack of inputs, including service delivery systems to develop capacity building in human resources, productive infrastructure, equipment, and technology. More specifically, both subsistence and commercial farmers continue to be stymied by challenges such as crop damage by wildlife, damage by insects, and diseases, insufficient irrigation, labor shortage and shortage of land, followed by access to markets and unproductive land. Risks related to climatic changes remains a concern. Increasingly, the feminization of the agriculture sector is a concern given the migration of men and youth to urban or more developed rural areas.

42. **Food availability, securing access to foods and effective utilization of food can only be achieved through enhanced income due to increased agriculture productivity.** Improving livelihoods in the Eastern lagging regions involve the improvement of economic returns of forests, livestock and agricultural enterprises. Intelligent, sustainable utilization of and management will require productivity boosting technologies, mechanization of farming reduction of post-harvest losses, reduction of losses incurred from pest and diseases, application of information and communication technology, and improving vital farm infrastructure and production inputs. Equally important is the commercialization, improvement of farm enterprises, management of farm enterprises and associated training. Moreover, promotion of sustainable utilization of arable agriculture land and pasture land resources is needed to ensure food security.

43. **This project is aligned to support the MDGs, GNH pillars, NKRAs, and SDGs as means to accelerate poverty reduction in the targeted dzongkhags, towards the national target of 15%.** The RGOB remains committed to addressing multi-dimensional aspects of poverty, income inequalities, and malnutrition. The proposed project compliments, and is also congruent with the objectives and priorities of achieving self-reliance through inclusive⁴ green socio-economic development delineated under the forthcoming 11th FY agriculture strategy⁵ and investment plan, and in turn contributing to all four pillars of the GNH, the country's development philosophy. The relevant MDG/SDG programs supported will be MDG goal number 1: Eradicate Extreme Poverty and Hunger, SDG goal 1, 2, 3 Eradication of Hunger and Poverty, Halve the proportion of people of poverty, Ensure adequate nutrition and dietary improvement for the poor. The proposed interventions are timely, and justified as the challenges still remain in achieving food security and poverty reduction. The proposed project is expected to contribute to support key national key results areas (NKRAS) of poverty reduction, food security, income generation and employment generation. It is also linked to achieve sectoral key results areas (SKRAs)

⁴ Inclusive is defined as the reduction of inequality by enhancing the standard of living and quality of especially of the vulnerable section of the Bhutanese society.

⁵ The 11th plan encompass a) economic objective of enhancing food and nutrition security, and acceleration of the RNR sector growth, b) social objective of enhancing sustainable rural livelihood and c) environmental objectives of promoting sustainable management and utilization of natural resources.

such as National Field Crop Commodity development, National Agriculture Development, Agriculture Marketing Development Program, Cooperative Development Program, Policy Planning and Coordination Program.

44. **Approximately 33.7% of these rural households are headed by women in the East. The RGOB remains fully committed to address gender issues under the 11th plan even, though women having full and complete equality under the law.** The proposed project is to play a catalyst role mainstreaming gender dimensions and compelled by legitimate observations, and issues that need to be addressed urgently due to the feminization of agriculture. A large proportion of women in rural eastern region are living under the poverty line, and lack proper nutrition. They are not able to work full time, as they have to attend to household duties and child rearing. The 10th FYP have resulted in improved access to information, markets and services, off-farm employment opportunities, access to micro-credit and new skills training. The recently developed indicators for GNH will benefit from the efforts of the statistical office to collect gender-disaggregated data. The RGoB have drafted a National Plan of Action for Gender (NPAG) that will review discriminatory laws in order to achieve a harmonization with CEDAW efforts in the area of education, health, employment and especially the increase of women's participation in public life and administration will help to achieve the MDGs by 2015.

45. **Under the 11th FYP, environmental issues will be addressed in the context of national spatial planning, and focus on protection of biodiversity habitats, forest conservation, watershed management, soil conservation and land use.** Due to its geographical location, Bhutan is especially vulnerable to the adverse effects of climate change. Environmental impact assessments and the integration of integrated watershed and hazards management have been undertaken for the energy sector. Bhutan has been a strong advocate for environmental protection in its negotiations with the United Nations, and with the South Asian Association for Regional Cooperation (SAARC) In its National Adaptation Programme of Action, Bhutan has taken a number of measures to safeguard an environmentally sustainable development path and to mitigate the risk of natural hazards such as Glacier Lake Outburst Floods.⁶ The proposed project focus on eliminating wildlife damage as it affects food security.

46. **The readiness of the proposed project is underlined by the fact that this project compliments several projects in East, West and Central regions which share a similar development philosophy and programmatic structures – which shows promising results.** This project applies a pro-poor approach, incorporates lessons learnt, and adopted best practices to identify components, sub-components, and activities that can make use of efficient resource utilization, technologies, and improved capacity to maximize results and compliment ongoing development efforts in the lagging regions of the East, West and Central regions. In order to meet the demand and supply challenges, reap economies of scale, and benefit from comparative advantages, the proposed project has links, supports, and also offers comparative and competitive advantages to other projects supporting the lagging regions of Bhutan; which includes the rural livelihood project, market access and growth intensification project, the rural economy advancement program and the comprehensive land rehabilitation program⁷ and the ongoing decentralized rural development project. The readiness of the official support system to implement the project is also buttressed by the absorption and acceptance at official level of several comprehensive analyses that have been undertaken on the causes of and solutions to Bhutan's rural poverty challenge.⁸

⁶ Ibid

⁷ The two projects are funded respectively by the World Bank namely` RRCDD and DRDP. It is noted that the IFAD-funded MAGIP is located in the Eastern region but its core development objective is to expand commercial agriculture. Thus its main target is not poorest farmers.

⁸ (1) The Agriculture Sector in Bhutan: Issues, Institutions and Policies, May 2011, FAO-World Bank. (2) The Annual Review RNRSP Assessment of Sector Policy and Program Implementation & Validation of Performance Assessment Framework by EU.

Monitoring and Evaluation Framework

47. See Table 1 for the proposed Monitoring and Evaluation Framework which explicitly shows the number and type of targeted beneficiaries disaggregated by gender where possible.

Table 2: Monitoring and Evaluation Framework

Hierarchy of Objectives	Key Performance Indicators	Target Value (End of Project)
Project Development Objectives	Outcome/Impact Indicators/Sub-indicators	
To increase the productivity and commercialization of agriculture in the target areas.	<ul style="list-style-type: none"> ▪ Improved food availability and nutrition for 39,000 food insecure households through increased agricultural productivity ▪ Improved income of 5,000 targeted poor households 	Numbers of direct beneficiaries: <ul style="list-style-type: none"> ▪ Total: 39,000 HH ▪ Female: 57,000 women ▪ Children: 70,000
Project Components/ Subcomponents Output Indicators		
Component 1: Increased Agricultural Output and Productivity		
(1.1) Irrigation water management	<ul style="list-style-type: none"> ▪ Improved yields of irrigated crops ▪ Increased cropping intensity through improved irrigation water efficiency. 	<ul style="list-style-type: none"> ▪ At least by 10% ▪ From 65% to 100%
(1.2) Agriculture production technologies	<ul style="list-style-type: none"> ▪ Improved yields of maize and potato crops in targeted areas ▪ Reduced post-harvest losses for targeted farmers. 	<ul style="list-style-type: none"> ▪ At least by 20% ▪ At least for 20% ▪ 70 tons (cumulative)
(1.3) Farm mechanization services	<ul style="list-style-type: none"> ▪ Increased cropping intensity of targeted areas through improved access to farm mechanization services 	<ul style="list-style-type: none"> ▪ 50 %
Component 2: Linking Farmers to Markets		
(2.1) Post-harvest infrastructure	<ul style="list-style-type: none"> ▪ Improvement of post-harvest infrastructure 	<ul style="list-style-type: none"> ▪ At least by 20%.
(2.2) Food Marketing infrastructure	<ul style="list-style-type: none"> ▪ Increased volume of marketed agriculture produce through the project collection points 	<ul style="list-style-type: none"> ▪ At least by 30%
(2.3) ICT	<ul style="list-style-type: none"> ▪ Provision of localized close to real time data, information and knowledge services to increase productivity and incomes using IT enabled services to move from low input/low output production to knowledge based systems. 	<ul style="list-style-type: none"> ▪ Access to real time pricing, availability and weather related information.
Component 3: Reducing risk and vulnerability		

(3) An analysis of household food demand in Bhutan, August 2010, IFPRI/PPD, MoAF. (4) Food security and self-sufficiency in Bhutan, August 2010, IFPRI/PPD, MoAF. (5) Diagnostic – RNR Sector (Agriculture, Livestock and Forestry), July 5, 2010, McKinsey and Co.

(3.1) Wildlife damage mitigation technologies.	<ul style="list-style-type: none"> ▪ Implementation of risk mitigation technology based on best practice. 	<ul style="list-style-type: none"> ▪ Increase by 50%
(3.2) Access to finance	<ul style="list-style-type: none"> ▪ Improved access to credit lines 	<ul style="list-style-type: none"> ▪ Increase by 30%
Component 4: Technical Assistance		
(4.1) Project management (4.2) Capacity building of service providers	<ul style="list-style-type: none"> ▪ Number of training sessions 	<ul style="list-style-type: none"> ▪ By Reports

48. **Monitoring, Evaluation and Learning:** The Project Management Unit (PMU) will be responsible for overall monitoring and evaluation (M&E) activities related to the project, and will be supported by Dzongkhag Project Implementation Teams (PIT) in collection of project specific data. The key objectives of monitoring and evaluation activities are to: (i) measure input, output and outcome indicators (Table 1) (ii) provide information on project progress to achieve targeted results and to facilitate reporting to the Government and GAFSP; (iii) alert relevant managerial bodies on actual or potential issues in implementation to allow introduction of timely adjustments; (iv) determine whether project beneficiaries are responding as expected and intended by the project, and (v) provide a process whereby PIT can reflect and improve their performances.

49. **To achieve the objectives, the PIT will establish effective information systems that can produce reliable, timely, and accurate information for management decision-making.** Reliable baseline data will be required for all participating geogs. Bhutan has an impressive data collection system where the National Statistical Bureau (NSB) and the MoAF conduct annual surveys covering 10 percent of total population. The existing statistical data contain a wide range of information that allows the preparation of baseline indicators without the need to conduct extensive surveys for most of indicators. A small survey will need to be conducted to collect data on targeted household income and food security data. Broad survey coverage under the existing data collection provide data, specifically on yields of crops and livestock products, crop and livestock production, and cropping patterns, that can be used to measure some project outcomes. In order to enable accurate measurement of the project indicators, the PMU will need to develop participatory monitoring and evaluation procedures which involves beneficiaries. Project implementation progress and the results of M&E activities will be reported in quarterly and annual project implementation reports.

50. **Sustainability:** Project sustainability in terms of institutional, financial, technical and social and environmental capacities are described below.

51. **Institutional Sustainability:** The project implementation will be carried out by three levels of the government: national, dzongkhag, and geog, and by farmers at the ground level. *Dzongkhag Tshogdu*, the *Geog Tshogde and chiwog Development/User Groups* who will be the implementing entities at the dzongkhag, geog and chiwog levels. To facilitate the participation of local villagers, the Tshogpa (village head) will help to organize chiwog or development/user group meetings and facilitate in their mobilization, disseminate information regarding project-related activities and mobilize community feedback, and to participate in project investment planning, discuss and reach consensus on priority investments for the individual community members or user/development groups. In order to facilitate the management of irrigation schemes, Water User Associations (WUAs), and Farmer Feed Schools will be strengthened.

52. **Financial Sustainability:** The project design will ensure that satisfactory systems will be developed to ensure the government entities and the target beneficiaries will be committed to guaranteeing the operation and maintenance of rehabilitated irrigation infrastructures, farm machineries

and equipment, and any other long-term assets procured under the project. Institutionalization of credit line in the target areas will ensure continued access to capital.

53. **Technical Sustainability:** To ensure technical sustainability, the project will invest in technical and capacity building trainings for: (i) WUAs on operation and maintenance of irrigation systems; (ii) farm mechanization service provider groups on maintenance and repair of farm machinery and equipment; (iii) farmer groups, community forestry groups, and other beneficiaries on agricultural technologies; (iv) RNR and dzongkhag and geog staff on technology dissemination and other technical skills to ensure sustainability of project introduced technologies after the closure of the project.

54. **Social and Environmental Sustainability:** The project will target a marginalized farm population of which around 34% are women and disadvantaged and vulnerable groups. In terms of environmental sustainability, the project activities are not expected to have negative impact on environment as the project does not intend to develop new irrigation systems or introduce agricultural technologies with heavy use agri-chemicals.

2.2 Activities to be financed

55. **The project is expecting to finance four GAPSP compatible components, subcomponents and activities.** The components include: I) Raising agricultural productivity, II) Linking farmers to market, III) Reducing risk and vulnerability, and IV) Technical Assistance. Gender will crosscut these components. From a gender and social perspective, the overall implementation strategy will adopt a neutral approach. All interventions are highly selective in its choice of objectives, and have been selected based on the ability to improve food security and generate income based on best practices, and regional experiences. These activities are likely to yield the best results, and assessed against the expected life of the GAFSP Trust Fund (currently to end 2019), and the country's agriculture and food security strategy (2013-2018).

Component 1: Raising agricultural productivity

56. **Improving subsistence and commercial agricultural productivity is vital for improving self-sufficiency in food, and achieving food security through enhanced income, and also to protect from future rupee crisis.** To achieve these objectives, Component 1 is supported by three key sub-components and complementary activities. They include (1.1) Irrigation water management (1.2) Agriculture production technologies, and (1.3) Farm mechanization.

1.1 Irrigation water management improvement will be supported by two activities: 1.1.1 Rehabilitation of irrigation infrastructure and 1.1.2 Improved water management capacity and technologies.

1.1.1 Rehabilitation of irrigation infrastructure. There are approximately 8,200 hectares of irrigated areas in the seven target dzongkhags. Most of irrigation infrastructure is functional, but requires substantial rehabilitation. Evidence of the issue is provided by the low cropping intensity in the wetland areas of the seven districts (approximately 60%). This infrastructure has had some remedial works undertaken during the current and previous five-year plans. However, most of these investments have been relatively low, and require further work in order to significantly improve their efficiency in water delivery.

1.1.2 Improved water management capacity and technologies. The water user associations (WUAs), under the Water Act 2010 are designated as the managers of irrigation schemes in Bhutan. Under the proposed project, their water management capacity would be enhanced to take responsibility for the management and maintenance of the rehabilitated schemes, and other water

storage technologies that may be included in the overall scheme rehabilitation investment. Activities will include provision of training in water management and maintenance of the systems. The WUAs will also be strongly supported by local extension services to promote an integrated crop management approach with an intention on focusing on the promotion of infield water management that links closely to the water management of the overall irrigation scheme.

1.2. Improving agriculture production technologies.

Both subsistence and commercial farmers can benefit from better agriculture technology in the East. This sub-component will be supported by the following activities: 1.2.1 Access to quality seed, 1.2.2 Off-season vegetable production, and 1.2.3 Capacity building – Farmer Field Schools.

1.2.1 Access to quality seed. The proposed project envisages the promotion of about 50 seed producer groups. Such groups (averaging each about 25 farmers) would be formed by farmers willing to undertake a seed production business. Seed production technology would be an agreed technology formation subject within the FFS activities. Each farmer would crop an area of about 0.25 ha for seed production. It is estimated that a total of 264 ha would be used to produce quality Maize seed and 73 ha for quality seed potato. This dedicated area would produce seed sufficient for about 13,200 ha of Maize cropped area; and 950 ha of Potato cropped area.

Amongst cereals, maize and rice are the three most important commodities for Bhutan. Lack of quality seed of maize is a constraint. Maize is a cross pollinated crop and community based seed production (CBSP) is a special scheme that has been tested through research and found to be effective. It needs scaling up by organizing farmers into groups in strategic seed production areas. CBSP is now adopted as one of the strategic steps that will be used in maize seed production schemes. Furthermore due to outbreak of fungal diseases particular in higher elevations of 13 Dzongkhags, seed replacement of the affected farmers is urgently required. Most affected household are subsistence farmers with large family sizes and with limited means to switch to other crops.

1.2.2 Off-season vegetable production: This project will support farmers in the cultivation of both hybrid and open pollinated vegetable varieties of their choice based on market demand, and to increase quantity and quality of production. About 49 vegetable protected producing units (under plastic houses) one for each willing FFS, of 50 square meters each, equipped with drip irrigation facilities, will be facilitated by the proposed project. The project would provide for training, planting materials, inputs and tools, polyethylene and drip irrigation equipment and operational materials to willing undertakers. The most important vegetables grown in Eastern and Central Bhutan include potatoes, chilli, beans, and ginger. However, crops like cabbage, cauliflower, peas, asparagus, broccoli, and onions are also significantly contributing to farmers' increased cash income.

1.2.4 Farmer Field Schools (FFS). The proposed project envisages the creation of 346 FFS distributed in the seven districts, each with a membership of about 25 farmers. The total amount of farmers involved would be 8,650. The RGoB is promoting the establishment of farmers groups in the form of FFSs to promote the adoption of technologies and good farming practices⁹ by providing expert-led facilitation and peer-to-peer learning through regular extension sessions and field events and enhance the learning process, through the peer-to-peer dimension. This structure also ensures the best use of scarce public extension resources. This component requires a small amount of Technical Assistance to ensure that the required training of trainer facilitators of the FFS would be the RNR extension agents at geog level.

⁹ “Good” practices will also include the appropriate marketing of agricultural production and the exploitation of opportunities for income generation from other land and rural-based economic activities.

57. **Best practice show that an adoption of technology and knowledge can generate substantial internal social rates of return. Yet farmers, particularly the poorest in the targeted districts have had little, if any access to such technologies.** Bhutan's MoAF, and its extension arm has the primary role in assisting farms to adopt cutting edge technologies. There is a lack of institutional structures needed to accelerate the rate of technology adoption. The formation of FFS have proved to be a slow process. Incentives can be offered for farmers to join the group on a temporary basis, in lieu of implementing a number of key technologies and good-farming practices relevant to their own farms and to prepare a basic three-year production and marketing plan for their farms. The incentive would mainly be in the form of quality seed, or other inputs depending on an agreed technology. At the end of the cycle, it is expected that a significant advance will have been made. The impact of the adoption of these technologies and practices on farm productivity and output will long outlive the FFS cycle, and over the lifetime of the adopted technologies should satisfactorily repay the investment in the scheme. The expectation is that farmers after this period would be capable of facilitating further newly established "schools" and that the farmers involved in the scheme would want to remain as members of the "schools."

1.3 Farm mechanization:

58. **The RGOB envisages a key role for local farmers groups in managing the provision of machinery services to individual farmers.** DAMCO has successfully promoted and supported group-managed machinery services units in few districts. Sub component 1.3 expects to create group-managed machinery units and improve capacity building. Under the proposed project it is planned to support 2-3 group-managed machinery services units in each of the seven districts for a total amount of 17 units. Farmer groups provided help to purchase machines, and manage them on behalf of their members. Alternatively, they could choose to hire machinery services from private contractors. The RGOB Agricultural Machinery Centre (AMC) will provide machinery services to farmers, extend its outreach of farm machinery services to the remoter geogs in the target districts, and will provide quality back up support for repair and maintenance. In addition the AMC will extend its outreach of farm machinery services to the remoter geogs in the target districts and will provide quality back up support for repair and maintenance.

59. **One of the strategic objectives of MOAF is to transform subsistence farming to commercial ventures. Farmer associations are considered effective sustainable local development mechanics.** The topography of the country, the small size of the typical landholding, and limited access to formal and informal credit limits the ability of farmers to purchase critical productivity-enhancing inputs. There are only about 2 tractors per 1000 farms, and a little over 3 power tillers per 1000 farms.¹⁰ Men and youth migration is making access to farm mechanization a greater necessity. The lack of availability of farm machinery is particularly acute in the target districts, and in the majority of the geogs less than 2% of farm households have access to machinery. A greater availability of farm machinery and especially tractors and small power tillers will improve the accessibility by farmers in remote geogs to roads, and hence increase the potential for expansion in market outlets. Availability of power machinery will increase agricultural output by compensating for an emerging labor shortage in some geogs and through higher levels of productivity. While severe credit constraints affects the purchase of machines and machinery services, it is equally a huge fiscal drain and results in the economic inefficiency that subsidies entail. Some of the economic inefficiencies will be alleviated where state financial support is mediated through farmers groups, rather than individual farmers. This would serve the additional advantage of spinoff benefits that will stem from the establishment of farmers groups in areas such as knowledge and technology transfer and in the marketing of agricultural products.

¹⁰ RGOB Agricultural Census, 2009.

Component 2: Linking farmers to markets

60. **Improving and the promoting market access is key to enhancing the effectiveness of subsistence farming and commercial agriculture production.** Therefore, Component 2 is supported by three activities: 2.1) improvement of post-harvest infrastructure, 2.2) creation food marketing infrastructure 2.3) Improved private sector provision of ICT to promote knowledge management (pricing, availability and vulnerability).

2.1 Improvement of post-harvest infrastructure

61. **Many groups and communities are unable to obtain full value for their agricultural production due the lack of marketing facilities - such as agriculture produces collection points which can link farmers with district national and regional value chains.** Under sub-component 2.1, the project is expecting 1,200 post-harvest and small storage developed technologies to be established at community level in the targeted districts. The National Post Harvest Centre (NPHC) of MOAF has developed appropriate low-cost technologies to address these issues. Under this project, it is expected one agriculture producers collection center will be created under in each of the seven districts at a strategic location that would be identified by DAMCO. The farmers groups are expected to contribute to at least 40% of the balance funds in cash, which may be sought through credit. The project activities have also been selected as export marketing is heavily affected by high rates post-harvest losses, particularly for fruits. The Bhutan export association estimated that packaging losses for oranges commonly reached 40% of which some 10% was due to poor transport, while the remainder derived from on farm selection of produce.

62. **Post-harvest losses are high due to inadequate storage and pests, which in turn threatens the food security of the subsistence and commercial farming communities.** The development of markets is constrained by the difficulty to develop reliable external contacts for marketing, and by limited availability of poor post-harvest infrastructure. The domestic market has a relatively low degree of organization. The most common way of marketing agricultural produce is through direct sales to consumers and trader at the farm gate and the weekend markets that can be found in almost all the Dzongkhags. Roadside sheds have also sprung up in a number of places for sale of farm produce. Most of these transactions are made on relatively small quantities. This way of marketing makes it difficult for domestic produce to compete on the growing urban markets whose demands are met through well-organized import channels that bring in goods in bulk. These deficits substantially explain the virtual absence of product aggregation in the food value chain in Bhutan. Improved storage will contribute to the reduction in the aflatoxin present the maize stored by poor households; which adversely affects the quality of animal feed and animal performance.

2.2 Creation of food marketing infrastructure

63. **The remoteness of individual farm households is a major constraint on the commercialization of the agricultural sector.** Under sub component 2.2, it is proposed under this project to create one agriculture producers collection center in each of the seven districts at a strategic location that would be identified by the Department of Agriculture Marketing and Cooperatives (DAMCO). Farmers groups will be required to contribute at least 40% of the balancing funds in cash, which may be sought through credit.

64. **Basic marketing infrastructural deficits in the target dzongkhags inhibit a drive towards the achievement of potential commercialization levels.** These infrastructural deficits substantially explain the virtual absence of product aggregation in the food value chain in Bhutan. Many groups and communities in the more vulnerable areas are unable to obtain full value from their agricultural production due the lack of marketing facilities such as agriculture produces collection points which would permit them to link effectively with district national value chains.

2.3 ICT to improve knowledge management

65. **There is a need for greater coordination between rural, urban, farmers, wholesalers, and retailers regarding the availability of agriculture produce, pricing and competitors also compels the need for improved knowledge management.** This subcomponent will entail providing localized close to real time data, information and knowledge services to increase productivity and incomes, using IT enabled services and devices to link rural farmers markets. This will allow farmers to move from low input/low output production to knowledge based systems.

66. **There is a disconnect between various actors in the value chains. This may apply to upstream activities, such as the provision of agricultural inputs and services, as well as downstream activities such as marketing, storage and processing.** Increased use of ICT to promote knowledge management (pricing, availability, competition) among domestic and regional farmers, wholesalers, and retailers and to keep the farmers informed of weather related risks and new agricultural production and technologies. This project expects private sector to play a critical role in supplying ICT training and products. Overall the above interventions are likely to address the gaps related to the remoteness of individual farm households and basic marketing infrastructural deficits in the target dzongkhags inhibit a drive towards the achievement of potential commercialization levels.

Component 3 Reducing risk and vulnerability

This component will support two sub-components (3.1): Wildlife damage mitigation technologies, and 3.2) Access to finance

3.1 Wildlife damage mitigation technologies.

67. **Crop wildlife damages are ranked highest issues by farmers as confirmed by 56% of the households.** In order to reduce risk sub component 1.3 expects to promote anti-wildlife protection and insurers encouraged to develop new adapted products. The NPPC is planning to establish integrated fencing demonstrations (using electrical, solar and sound repellents systems) in the seven districts. It is expected that seven demonstrations (one in each target district) aimed at raising farmers' awareness on the availability of effective wildlife damage defense systems would be pursued under the proposed project. Typically, an entire community will be identified encompassing some 120-130 households, and their farm landholdings would all fall within the protected perimeter. These will have an average protected area of 6 to 8 kilometer perimeter.

68. Moreover, 36% of the households claim that they need to leave land fallow due to wildlife incursions. Indeed, the amount of land left fallow (in a country which has only 8% of arable land), has reached the prohibitive figure of 26% of the total land holding area.¹¹ Electric fencing is considered to be an immediate mitigation method to control most species of crop raiding animals without harming humans and the animals when implemented properly. The Wengkhhar Research Development Center has developed low cost energizers, and fencing materials from locally available materials, which has proven

¹¹ The RNR Census, 2009, MOAF August 2010

effective on long-tested on-farm trials. The National Plant Protection Centre (NPPC) has been recently mandated to coordinate all such activities.

3.2 Access to finance

69. **Farmer's access to finance is a major impediment to undertake new production or to develop the existing products.** Under this sub component, loan capital would be made available through an appropriate financial intermediary (*via* a subsidiary agreement between intermediary and the MoF) for on-lending, primarily on a basis of group guarantees, to applicants presenting a viable business plan for investments. Implementation would be largely the responsibility of the participating financial institution, supported where appropriate with technical input by geog-level MoAF staff. Lending would be primarily targeted at formally organized farmers groups but individual farmers and entrepreneurs could also apply. Appropriate ceilings on loans would apply at both individual and group level. It is envisaged that loan periods would be in the range 3-5 years. As funds would be recycled by the financial institution, benefits would continue beyond the duration of the project. Detailed criteria for loan-application selection, loan amounts and duration, interest rates and repayment schedules will be specified in the subsidiary loan agreement between the MoF and the selected financial institution.

Component 4: Technical Assistance for Project Management and Capacity Development.

This component will support 4.1) Project management, and 4.2) Capacity building activities.

4.1. Project Management: This component supports project management, including the monitoring and evaluation functions of the project. It covers (a) technical and financial management, (b) procurement, and (c) supervision of compliance with environmental and social safeguards. This component will strengthen capacity of the MoAF to effectively coordinate implementation and provide procurement support to local communities as needed. This component will also support mid-term and end of project monitoring surveys that would provide project performance information and at the activity, output, and outcome levels to meet the requirements of the existing RGob monitoring system and the PLAMS (Planning and Monitoring System).

4.2 Capacity Building: Activities to be financed will include: (i) building skills and technical expertise of all related stakeholders (government, NGOs and private sector), (ii) strengthening analytical capacity, research and improved sectorial planning and (iii) support capacity building of farmers, farmer groups and other partner organizations,

2.3 Implementation arrangements

70. **National Level: Overall implementation of the project will be coordinated by the MoAF.** The MoAF will be fully responsible and accountable for project specific activities, while providing oversight, technical support and guidance to the dzongkhag and geog RNR staff, who will guide the implementation of project activities on a day-to-day basis. A dedicated Project Director, appointed by MoAF, will be assisted by part time Component Coordinators, who will be senior MoAF technical staff drawn from relevant departments within the MoAF as well as technical staff from other agencies that are relevant to the implementation of specific components of the Project. These part-time Component Coordinators will be individually responsible for overseeing and guiding the implementation of specific components or sub-components of the project.

71. **Given, the multi-sectoral and multi-level nature of the project, a Project Steering Committee (PSC) will be established to facilitate cross-sectoral coordination and improve institutional mandates in support of the many inter-related project activities.** The PSC will be

chaired by the Secretary of MoAF and include representatives of the Departments of Forestry, Agriculture and Livestock, the MoF, GNHC, and other relevant agencies necessary for the coordination of the project activities. The PSC will provide policy guidance, support the alignment between project activities and the respective national sectoral plans and projects of the government, help coordinate with the Department of Budget and Accounts on matters relating to fund flow and project accounting, and facilitate coordination with the Royal Audit Authority on project audits.

72. **Local Government Level:**The *Dzongkhag Tshogdu* will be responsible, in particular for **implementation of irrigation and marketing infrastructure related activities**. In terms of the community activities, including improving community assets of existing user groups, establishing community infrastructure, and community investments, *Georg Tshogde* will be fully responsible for implementation of these sub-components. It will also liaise with other government and private agencies involved in the respective project activities in order to facilitate project implementation and to enable access to technical support and financial resources from other projects and programs that are active in the area. The GT will ensure that appropriate technical guidance is provided through the geog RNR staff or dzongkhag staff for specific project related activities.

73. **At the chiwog level, mobilization and organization of communities or chiwog Development/User Groups.** The selection of priority community investments or activities would be undertaken by a small team consisting of the Georg Field Coordinators (GFC), geog RNR staff and *Tshogpa* (village head). This team would co-opt technical staff from other government institutions and private sector institutions for supporting specific project activity and investment option as and when needed. In order to facilitate the participation of local villagers, the *Tshogpa* will help organize chiwog or development/user group meetings and facilitate in their mobilization, disseminate information regarding project-related activities and mobilize community feedback, and along with the GFC and geog RNR staff will undertake social and environmental screening of proposed community investments and socio-economic surveys. While all relevant chiwog households, either comprising the identified development/user groups or chiwog village committees will be invited to participate in the project, the chiwog community or relevant user/development group will elect an executive committee to participate in project investment planning, discuss and reach consensus on priority investments for the individual community members or user/development groups, facilitate development of community and individual proposals, and reach agreement on the management and regulation of land, and forest use within the chiwog areas, as appropriate. In order to facilitate the management of irrigation schemes, WUAs will be established or existing associations will be strengthened through the project. This will entail training and capacity building related to water management and maintenance of irrigation systems, and will address the institutional issues related to registration, elections, and financial management. Farmer organizations will be responsible for implementation of the identified activities above.

2.4 Amount of financing requested

74. **The proposed project, while complementary to the upcoming 11th Plan, will require the deployment of additional measures - both in scale and scope so as to ensure the acceleration of poverty reduction in the target poorest regions.** The need for additional funding is heightened under the 11th plan, as there has been a shift in public investment to priority areas, which has resulted in funding gaps for the agriculture sector. Going forward, the anticipated trust funds are to finance the goals, gaps in country, agriculture and food security strategies, keep up with the ongoing growth momentum achieved under the previous plans, ensure sustainability, and to achieve MDGs 1 to cut hunger and poverty by half by 2015.

75. The total project cost is estimated at US\$ 10.8 million, including RGoB's contribution at around US\$ 1.4 million, beneficiaries' contribution at US\$ 1.02 million and the GAFSP contribution at US\$ 8.4 million. The project cost summary by components is shown in the below table. The project cost is estimated at 2012 prices and based on the average unit prices that prevailed during the proposal preparation. Details on project costs by components and subcomponents as well as priority ranking of project activities are presented in Table 3.

Table 3: Project Costs by Components and Subcomponents ('000 US\$)

Project Component/Subcomponent	Total cost	Financiers:			Priority (***) -
		Beneficia	RGoB	GAFSP	
1. Increased Agricultural Output and Productivity					
1.1 Irrigation Water Management Improvement					
1.1.1 Rehabilitation of irrigation infrastructure	3,800		380	3,420	***
1.1.2 Water management capacity and	228		23	205	***
1.2 Agriculture Production Technologies					
1.2.1. Access to quality seed	132			132	***
1.2.2 Off season vegetable production	123			123	***
1.2.3 Farmer Field Schools	378			315	**
1.3 Farm Mechanization	1020	456	63	514	**
Subtotal	5681	456	466	4708	
2. Improving Market linkages					
2.1 Post Harvest	600			600	***
2.2 Marketing Infrastructure	1400	560		840	***
2.3 ICT (Knowledge Management)	150	13		150	***
Subtotal	2150	573	0	1590	
3. Risk and Vulnerability					
3.1 Wildlife damage mitigation technologies	83			83	**
3.2 Access to finance	1383			1383	***
Subtotal	1466	0	0	1466	
4. Project Management Technical Assistance					
4.1 Project Management	825		825		***
4.2 Capacity Building of Service Providers	700		132	700	***
Subtotal	1525	0	957	700	***
Total Cost	10822	1029	1423	8464	***

2.5. Preferred supervising entity and government team

76. **World Bank and FAO to play a key role in supervising project implementation.** The World Bank (WB) is preferred as the supervising entity for the investment component and FAO as the preferred supervising entity for the Technical Assistance built into the various components. These agencies have been chosen because of their technical and investment expertise in the RNR sector in Bhutan. Both agencies have well-established administrative capacity in Bhutan and an excellent working relationship between themselves and with the government, including the. As a local agency, the latter will help to ensure effective project implementation.

2.6 Time frame for proposed support

77. **The project will be implemented in seven districts during the 11th plan and spread over a five years period (2013-2018).** This is deemed realistic and necessary given the nature of the interventions envisaged and remoteness of target dzongkhags. A shorter time frame would significantly increase the risk that these organisations cease to operate after project completion

2.7 Risks and risk management

78. As required for all World Bank projects, potential risks, and related mitigating measures have been systematically identified which clears the project from any disruption.

Table 4: Risks and Risk Management

Critical Risks	Risk Mitigation Measures
Increasing feminization of agriculture sector-where female rural farmers who are poor and lack nutrition and resulting in limited farm activity.	Risks are mitigated by improving nutrition and mechanization
Local government capacity and resource constraints	Proposed project design would involve active local government support accompanied by an adequate allocation of project resources to guide and support local governments.
Inactive participation in project activities by prospective beneficiaries and slow adoption of new farming technologies	Project preparation and implementation will be supported by a needs and constraints assessment of the rural communities in the proposed project areas. In the poor, remote regions of Bhutan, farmer-to-farmer extension, and seed production and distribution systems offer the fastest and most reliable way to introduce new crops, varieties and production technologies. The proposal also makes provision for judicious supply of small-scale farm equipment, which may not be available in remote rural communities.
Price instability could lead to the loss of assets and incomes for the project beneficiaries	By raising productivity it is expected that the project will enhance producer capacity to withstand such risks. The product diversification module included in project design should also help to reduce this risk.
The proposed project may impinge on existing activities funded by other donor agencies	Active coordination on the selection of targeted areas and beneficiaries can reduce these conflicts. The RGoB has already instituted mechanisms to harmonize donor assistance in the RNR sector
Producers are unable to access credit	Selection of qualified and experienced PFI which has an adequate outreach capacity and pro-poor financing policy will reduce this risk
Vulnerability to future rupee crunch	Achieving self-sufficiency in food production

2.8. Consultations with local stakeholders and development partners.


79. **The activities if implemented will complement other activities identified under the proposed 11th FYP, including that of the agriculture strategy.** The availability of additional resources will both

supplement and leverage critical existing measures in order to maximize the impact on the target dzongkhags in the medium to long term. The proposed project is highly selective in its choice of targeted interventions.

This proposal, its activities have benefited from extensive consultation with all relevant stakeholders, has been endorsed, and ready to be implemented. The proposed activities in this project involved extensive stakeholder discussions, including technical working group meetings. Individual meetings were held with each department and agency of the MoAF, and with the GNHC Secretariat (equivalent to Planning Commissions in other countries) to discuss the investment gaps in the projects that those agencies were delivering, and to obtain their views on the barriers to reducing poverty and food insecurity in Bhutan. A similar round of meetings was conducted with resident donors and development partners¹² to capture their views and experiences. An outline of the proposed project and an initial draft proposal are been discussed with the Directors of MoAF departments and agencies on two occasions to obtain their feedback and guidance. On the receipt of the first full draft of the proposal, the MoAF undertook a further round of consultations with local MoAF officers, representatives of the RNR research community, NGOs, poor rural households and farmer groups and organisations. The MoAF also engaged in further consultation with the development partners that have been assisting the Ministry.

80. **The proposed project has also benefitted from external review of FAO, IFAD.** The WB also reviewed the first full draft of the project proposal. Particular importance in these discussions was given to the recently designed *Market Access and Growth Intensification Project (MAGIP)*, a successor to the recently closed *Agricultural Marketing and Enterprise Promotion Programme (AMEPP)*, both under IFAD financing. MAGIP will also address many of the key household security issues dealt with in this proposal, but lacks the resources to respond to the needs of all food insecure households. Collaboration is thus of mutual interest particularly where similar project activities are to be used such as FFSs and market access development. Extensive consultations were also undertaken with the formulation mission of the World Bank funded *Remote Rural Communities Development Project (RRCDP)*. This consultation process will be extended during formulation and final project design, to ensure that maximum benefit will be gained from the investment and that all environmental, social and economic issues have been considered. This document has been endorsed by the donor food security technical working group on June 3, 2013.

Declaration by the Royal Government and Donor Food Security Technical Working Group


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¹² Helvetas, JICA, SNV, UNDP, The Government of India

