IFAD
Investing in rural people

Kingdom of Bhutan

Commercial Agriculture and Resilient Livelihoods Enhancement Programme

Final Project Design Report

Main report and appendices

Mission Dates: 5-30 Novembre 2014
Document Date: 26-Nov 2015
Project No. 1739
Report No. 3900-BT

Asia and Pacific Division
Programme Management Department

Contents

Appendices

Currency equivalents

Currency Unit	=	Bhutanese Ngultrum
US$ 1.0	=	Nu. 55

Weights and measures

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

Terms and Definitions

Chiwog	Group of Villages for self-governance (sub-block)
Collection centre	It is a temporary structure or facilities at strategic production location where the RNR produce are collected from the farmers/producers to bulk up to transport to the processing plant or markets.
Collection shed	It is a simple structure that comes in a wide range of sizes, rooflines and siding options basically to offer growers with a space to temporarily store their RNR produce to be further marketed / dispatched to the processing unit/ value addition room / farm shops.
Dry land	Generally agricultural land where crops are grown without irrigation or on rain-fed.
Dzongdag	Administrative Head of Dzongkhag
Dzongkhag	District (there are 20 Dzongkhags in the country; 6 in eastern region where CARLEP will predominantly invest)
Dzongkhag Tshogdu (DT)	District Council
Farm shop	A Farm Shop is a business model that offers customers the convenience of having multiple needs met in one location. The presence of three distinct services best define the farm shop namely the buy back guarantee, farming inputs and groceries.
Farmers' groups	Farmers group means a group of not less than three (3) members deriving economic benefits from one or more economic enterprises related to Renewable Natural Resource Sector
Farmers' cooperatives	Cooperative is defines as one where a minimum of fifteen (15) natural persons who are Bhutanese citizens with common bond of interest in the area of operation of cooperative, join or organize to realize common economic needs of the members and communities by engaging in any of the business activities in production, processing, manufacturing, supply and marketing and financing.
Gewog	Block (sub-district) (there are 205 gewogs in the country; 70 gewogs in the 6 eastern Dzongkhags)
Gewog Tshogde (GT)	Block Council
Gup	Administrative Headed of a Gewog
Lyonchhoen	Prime Minister
Lyonpo	Minister
Thromde Tshogde (TT)	Municipal Council
Tshogpa	Village leader

Household	A person or group of persons operating as one economic unit, usually having a common arrangement for the preparation and consumption of food and share the same kitchen.
Household head	The most knowledgeable person of all the household members and one who takes decisions in the household.
Household size	Total number of person in the household.
RNR sector	Renewable Natural Resource (RNR) sector encompasses the administrative combination of the so-called sub-sector of agriculture-horticulture (including irrigation), livestock and forestry under one roof, and the farm and farmer level, many if not all aspects of the management of these sub-sectors are interlinked and inter-dependent.
RNR products	Any farm products of agriculture-horticulture, livestock including fishery, apiary and forestry.
Wetland	A terraced land and/or valley flat land having access to irrigation to grow paddy and other crops; there are also rain-fed wetlands that are terraced.

Abbreviations

ADB	Asian Development Bank
AFD	Administration and Finance Division
AMC	Agriculture Machinery Centre
AMEPP	Agriculture Marketing and Enterprise Promotion Program
AOS	Annual Outcome Survey
ASAP	Adaptation for Smallholder Agriculture Programme (IFAD)
AWPB	Annual Work Plan and Budget
BAWE	Bhutan Association of Women Entrepreneurs
BCCI	Bhutan Chamber of Commerce and Industries
BCR	Benefit Cost Ratio
BLSS	Bhutan Living Standards Survey (2012)
BOiC	Business Opportunity and Information Centre
CAHW/ CoHW	Community Animal Health Worker
CARLEP	Commercial Agriculture and Resilient Livelihoods Enhancement Programme
CEO	Chief Executive Officer
CGIAR	Consortium of International Agricultural Research
CIAT	International Center for tropical Agriculture
CNR	College of Natural Resources (Royal University of Bhutan)
COSOP	Country Strategic Opportunities Programme (IFAD)
CSA	Climate Smart Agriculture
CSO	Civil Society Organisation
CVCA	Climate Vulnerability and Capacity Analysis
DAMC	Department of Agriculture Marketing and Cooperatives
DLG	Department of Local Governance
DoA	Department of Agriculture
DoFPS	Department of Forestry and Park Service
DoL	Department of Livestock
DoT	Department of Trade
DT	District Council
EA	Extension Officers
EFS	Electric Fencing Scheme
ESP	Economic Stimulus Plan
FAO	Food and Agriculture Organisation
FCBL	Food Corporation of Bhutan Ltd.
FMSC	Farm Machinery Service Centre
FYP	Five Year Plan
GAO	Gewog Administrative Officer
GDP	Gross Domestic Product
GNH	Gross National Happiness
GNHC	Gross National Happiness Commission
GT	Block Council
HH	Household
HRDP	Horticulture Research Development Project
HWC	Human Wildlife Conflict
ICIMOD	International Centre for Integrated Mountain Development
IFAD	International Fund for Agriculture Development
ILRI	International Livestock Research Institute
IRR	Internal Rate of Return
JICA	Japan International Cooperation Agency
KIPL	Kofuku International Pvt. Ltd.
KM	Knowledge Management
LPA	Lead Project/Programme Agency
MAGIP	Market Access and Growth Intensification project

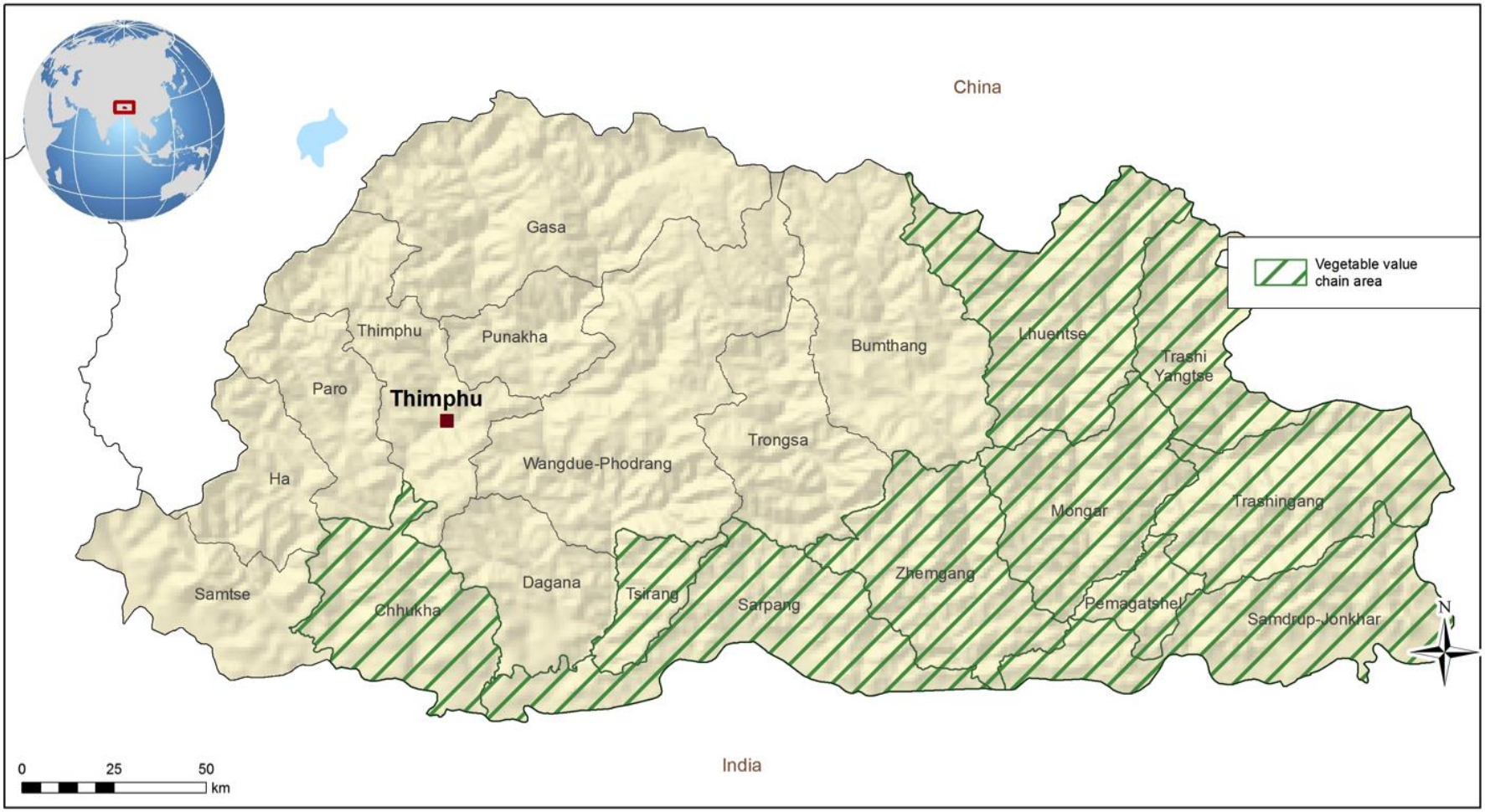
MDGs	Millennium Development Goals
MoAF	Ministry of Agriculture & Forests
MoEA	Ministry of Economic Affairs
MoF	Ministry of Finance
MoHCA	Ministry of Home and Cultural Affairs
M&E	Monitoring and Evaluation
MTR	Mid Term Review
NNBF	National Nublang Breeding Farm
NPD	National Programme Director
NPSC	National-level Programme Steering Committee
NPV	Net Present Value
NSB	National Statistical Bureau
NSC	National Seed Centre
NWFP	Non-Wood Forests Products
NYP	National Youth Policy (2010)
O&M	Operation and Maintenance
OSC	Operational Strategy and Policy Guidance Committee (IFAD)
OSFS	One stop Farmers Shop
PCR	Programme Completion Report
PlaMS	Planning and Monitoring System
PMO	Programme Management Office
PPD	Policy and Planning Division
PPP	Public Private Partnership
RAMCO	Regional Agriculture Marketing and Cooperative
RDTC	Rural Development Training Centre
RGoB	Royal Government of Bhutan
RIMS	Results and Impact Management System
RLDC	Regional Livestock Development Centre
RMBF	Regional Mithun Breeding Farm
RNR	Renewable Natural Resources
RNR RDC	Renewable Natural Resources Research and Development Centre
ROI	Return on Investment
RPBC	Regional Poultry Breeding Centre
RPIC	Regional Programme Implementation Committee
RSEBL	Royal Security Exchange of Bhutan Ltd
RUG	Road User Group
SAARC	South Asian Association for Regional Cooperation
SABAH	SAARC Business Association of Home based workers
SJI	Samdrup Jongkhar Initiative
SLM	Sustainable Land Management
SME	Small and Medium Enterprise
SNC	Second National Communication (Climate Change)
SNV	SNV Netherlands Development Organisation
SOE	Statement of Expenditure
ToR	Terms of Reference
TT	Municipal Council
TWS	Three window shop (FCBL)
UNICEF	United Nations Children' Fund
VVCP-E	Vegetable Value Chain Programme in the East
WA	Withdrawal Application
WFP	World Food Programme
WUA	Water Users Association (irrigation)

Map of the programme area – Dairy value chain

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

Map compiled by IFAD | 29-09-2014

Map of the programme area – Vegetable value chain



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

Map compiled by IFAD | 29-09-2014

Executive Summary[1]

1. **Introduction:** The Commercial Agriculture and Resilient Livelihoods Enhancement Programme (CARLEP) aims to facilitate the transformation of a subsistence-based rural agricultural economy into a sustainable value chain and market driven productive sector by promoting climate smart approaches in agriculture and strengthening capacities of communities and local institutions. It builds on prior and on-going IFAD interventions focused on increased agricultural production and makes a basic shift in approach towards marketing and climate resilient farming practices.

2. **Financing:** The total programme cost of US$ 31.526 million, over seven years, is financed by - IFAD (US$ 9.3 million), ASAP (US$ 5 million), RGoB (US$5.767 million), FCBL (US$4.802 million), Beneficiaries (US$ 0.659 million) and a financing gap (USD 6 million)[2].

3. **Strategic context and rationale**. Poverty in Bhutan is overwhelmingly a rural phenomenon as nearly 95% of poor people live in rural areas[3] with an overall population share of about 66%. Rural poverty in Bhutan has diverse causes, but most are linked to its rugged mountainous terrain. Many villages are still isolated, where people lack access to modern services and markets. Agricultural development has been 'input and technology driven', characterised by provision of production and marketing inputs, while community development and service delivery systems have received little attention. Consequently, farmer capacity for self-management is weak, outreach and sustainability of agricultural service delivery is limited and links between production and marketing are weak.

4. Degradation of land resources through erosion and landslides, exacerbated by climate change, is an added factor that threatens the sustainability of agriculture. Changing rainfall patterns and delayed monsoon rains often lead to long spells of drought and reduced water security, further increasing farmers' vulnerability. The RGoB's strategy for the Renewable Natural Resource (RNR) sector in its 11th Five Year Plan (FYP) includes: (i) a targeted and commodity focused approach; (ii) transition from subsistence to commercial agriculture; (iii) an enabling policy and legal framework; and (iv) promotion of private sector and contract farming.

5. CARLEP's approach is aligned with RGOB's 11th FYP strategy to (i) stimulate the pull factors driving climate resilient production; (ii) build value chain systems for vegetables and dairy and a comprehensive marketing system to enhance commercial viability of other agricultural products; and (iii) facilitate institutional linkages and policy dialogues towards commercialization of agriculture.

6. **Goal and Objective.** The goal is to sustainably increase smallholder farmers' incomes and reduce rural poverty. This will be achieved through climate resilient commercialized production of crops and livestock by programme households linked to nationally organized value chains and marketing systems. The objective is "increased returns to smallholder farmers through climate resilient production of crops and livestock in nationally organized value chains and marketing systems".

[1] Task Force Team from MoAF, RGoB: Mr. **Chhimi Rinzin**, Task Force leader, Chief Agriculture Officer, DoA; Mr. **Lhap Dorji**, Programme Director, RDC Wengkhar: Mr. **Naiten Wangchuk**, Chief Livestock Officer, DoL; Mr. **Kuenga Namgay**, Dy. Chief Planning Officer, P PD, MoAF; Mr. **Bhim Raj Gurung**, Marketing Specialist, RAM CO, Mongar (presently Marketing Adviser in FCBL); Mr. Karma Nidup, CEO, FCBL and Mr. **Sangay Wangdi**, Head Agricultural Marketing Department, FCBL; Ms. **Tashi Yangzom**, Planning Officer (IFAD focal official), PPD, MoAF.

Design Team from IFAD: Mr **Hendrik Visser**, Team Leader (Jul 16-Aug 8; Aug 19-23; Nov 1-28, 2014); Mr **Benoit Thierry**, IFAD Country Programme Manager (July 16-21, 2014); Ms **Lakshmi Mo**ola Country Programme Manager (Jul 16-26, 2014; Aug 15-21, 2014; Nov 1-23, 2014; Mar 23-27, 2015); Ms. **Mylene Kherallah**, IFAD, Lead Technical Specialist (PTA) – Lead Advisor (Nov 1-16); Ms **Lisa Hubert**, Economist and Financial Analyst (July 16-30, 2014); Mr. **Deep Joshi**, Institutional and Enterprise Development (Aug 7-23, 2014; Mar 28-Apr 5, 2015 & Dy Team Leader); Ms. **Eloisa De Villalobos**, IFAD, Technical Specialist (PTA) – Economic and Financial Analysis (Nov 1-14, 2014); Ms. **Irene Li**, IFAD, Finance Officer (CFS) – Financial Management (Nov 1-16, 2014); Mr. **Sriram Subramaniam**, IFAD, Programme Support Analyst – Procurement (Nov 1-17, 2014); Mr. **Rami Salman**, IFAD, Climate Environmental Expert (ECD) – ASAP Financing (Nov 1-8, 2014); Ms. **Meeta Punjabi**, Consultant, Value Chain Specialist – Dairy and Vegetable Value Chains (Nov 1-19); Mr. **Roshan Cooke**, IFAD Regional Climate and Environment Specialist & ASAP Financing (Mar 21- Apr 1, 2015); Mr **Vittorio Silvestri**, IFAD – COSTAB Specialist (April 3-10, 2015); Mr. Tika Bhandari – Economist and Financial Analyst (May 16-23, 2015); Mr **Vincent Darlong**, IFAD ICO - Poverty, Gender, M&E, KM (Jul 20-August 3; Aug 7-23, 2014; Mar 23-Apr 5, 2015 & TL).

[2] USD 6 million financing gap to be covered by IFAD11 performance-based allocation system (PBAS) cycle or through co-financing subject to availability of fundsand priorities of the RGoB's 12th Five Year Plan.

[3] Asian Development Bank, Country Partnership Strategy: Bhutan, 2014–2018

7. **Geographic area and targeting.** The programme will target selected Gewogs in six eastern Dzongkhags (Lhuentse, Mongar, Pergatshel, Samdrup Jongkhar, Trashiyangtse and Trashigang) with high production and marketing potential in the selected value chains. The programme will benefit 28 975 smallholder households, of which 7 115 HH will directly benefit from vegetable and dairy value chains.

8. **Scaling up.** In its second phase, the programme will also include Gewogs with high production and marketing potential for the vegetable value chain in the south-central and south-western dzongkhags, adding 7 500 direct beneficiaries (1 500 HH).

9. **Component 1: Market–led Sustainable Agricultural Production**. The three outputs envisaged to increase market-led farm production are:

a. *Increased production resilience, diversification and innovation* to be achieved by (i) promoting climate smart agriculture production, crops and livestock diversification and management practices; (ii) strengthening existing farmers' groups and establishing new groups; (iii) strengthening extension services and increasing their outreach, including through lead farmers; (iv) support for agricultural inputs, including seeds; (v) developing water use efficient irrigation by upgrading 700 acre of existing dysfunctional irrigation systems and piloting three lift irrigation systems in four southern dzongkhags, (vi) agricultural innovations (e-agriculture and permaculture); and (vii) a pilot to strengthen local institutions for increased smallholder climate resilience.

b. *Intensification and expansion of vegetable production by* (i) strengthening 120 existing vegetable producers' groups and promoting and capacitating 300 new groups; (ii) providing climate resilient vegetable seeds and 1 900 sets of sprinkler or drip irrigation systems; and (iii) supporting vegetable seed research and production.

c. *Intensification and expansion of dairy production* by (i) strengthening 43 existing smallholder dairy farmers' groups and establishing 150 new groups; (ii) improving service outreach for livestock including Community Animal Health Worker (CAHW) model; (iii) supporting fodder and feed production; (iv) providing 2 000 crossbred cows and materials to construct cowsheds; and (v) installing 800 bio-gas units.

10. **Component 2: Value Chain Development and Marketing.** Programme activities would contribute to three outputs to develop value chains and marketing infrastructure to commercialize smallholder agriculture:

a. *Resilient vegetable and dairy value chains developed* (i) by designing and implementing a strategy and business plan to strengthen the capacity of Food Corporation of Bhutan Ltd (FCBL) to develop value chains; and (ii) through design, implementation and expansion of vegetable and dairy value chains and business plans by FCBL.

b. *Agricultural commercialization and enterprise development* strengthened through (i) support for agriculture enterprise development by building organization and business capacities of farmers' groups, cooperatives and individual entrepreneurs, particularly the youth; (ii) facilitation of access to institutional finance; (iii) social inclusion in producer groups; (iv) support for market-linked production; and (iii) development of multi-stakeholder platforms and networks to share opportunities and address bottlenecks.

c. *Development of community-driven market infrastructure* by (i) planning, design and installation of value chain infrastructure for dairy and vegetable value chains, including 90 milk collection sheds, 24 milk collection centres with chillers and 4 milk processing units; (ii) developing business plans to set up 12 'Farm Shops'; (iii) providing investments for vegetable value chain infrastructure; and (iv) providing investments for dairy value chain infrastructure.

11. **Component 3: Institutional Support and Policy Development.** Programme activities in addressing RNR institutions and policy issues pertaining to horticulture and livestock with a focus on vegetable and dairy value chains would lead to two outputs to build strong Agricultural Institutions and sound Policies for Improved and Resilient Agricultural and Marketing Practices.

a. *Strong value chain and marketing knowledge and communication* by (i) strengthening Department of Agricultural Marketing and Cooperatives (DAMC[4])'s market information system; and (ii) upgrading curriculum of RNR training and education institutes.
b. *Climate change resilience and value chain development lessons mainstreamed in agricultural policies and sector strategies* through (i) participatory policy development and monitoring; (ii) mainstreaming climate resilience and value chain development lessons in agricultural policies; and (iii) developing a regulatory framework conducive for private sector development and Public Private Partnership.

12. **Programme implementation.** Ministry of Agriculture and Forests (MoAF) with overall responsibility will lead the programme implementation in coordination with Ministry of Finance (MoF) as the borrower. MoAF will provide policy guidance, the required technical staff for implementation from its pool of civil servants and technical backstopping through its line departments and field agencies. A Programme Management Office will coordinate all activities and ensure that specific departments within MoAF will be directly responsible for results under Components 1 and 3 and FCBL be directly responsible for achieving the results in Component 2.

13. **Monitoring and evaluation.** The Programme Management Office (PMO) will establish an M&E unit to support progress monitoring by implementation units, FCBL, service providers and others. The M&E system will harmonize with RGoB's Planning and Monitoring System (PLaMS) as mandated from 11th FYP onwards. The M&E unit will ensure that all output, outcome and impact indicators of CARLEP are dovetailed in the PLaMS.

14. **Financial analysis.** All crop and farm models analyzed are profitable, yielding positive NPV. Net benefits from farm models are higher than the rural poverty line of BTN 40 150 and returns on labour are higher than the rural daily wage of USD 3.25. Economic analysis of the Programme, based on the financial models, using economic prices shows it to be profitable with an estimated NPV of BTN 404 million or USD 7.3 million and an IRR of 16% at a discount rate of 10%.

15. **Fiduciary Management**. MoAF's financial management systems are adequate. Annual budgeting will be done in line with RGoB's budget framework and timetable. Programme implementation will follow RGoB's PLaMS, Finance Manual and financial reporting formats, and IFAD's norms. RGoB's Royal Audit Authority (RAA) is mandated to audit all foreign funded loan projects and will establish the external auditing arrangement for CARLEP. As per the IFAD General Conditions, procurement of goods, works and services financed by IFAD loan and grant funds under Components 1 and 3 shall be as per the provisions of the RGoB notified Procurement Rules & Regulations (PRR) and under Component 2 in as per the provisions of FCBL's PRR to the extent consistent with the IFAD Procurement Guidelines.

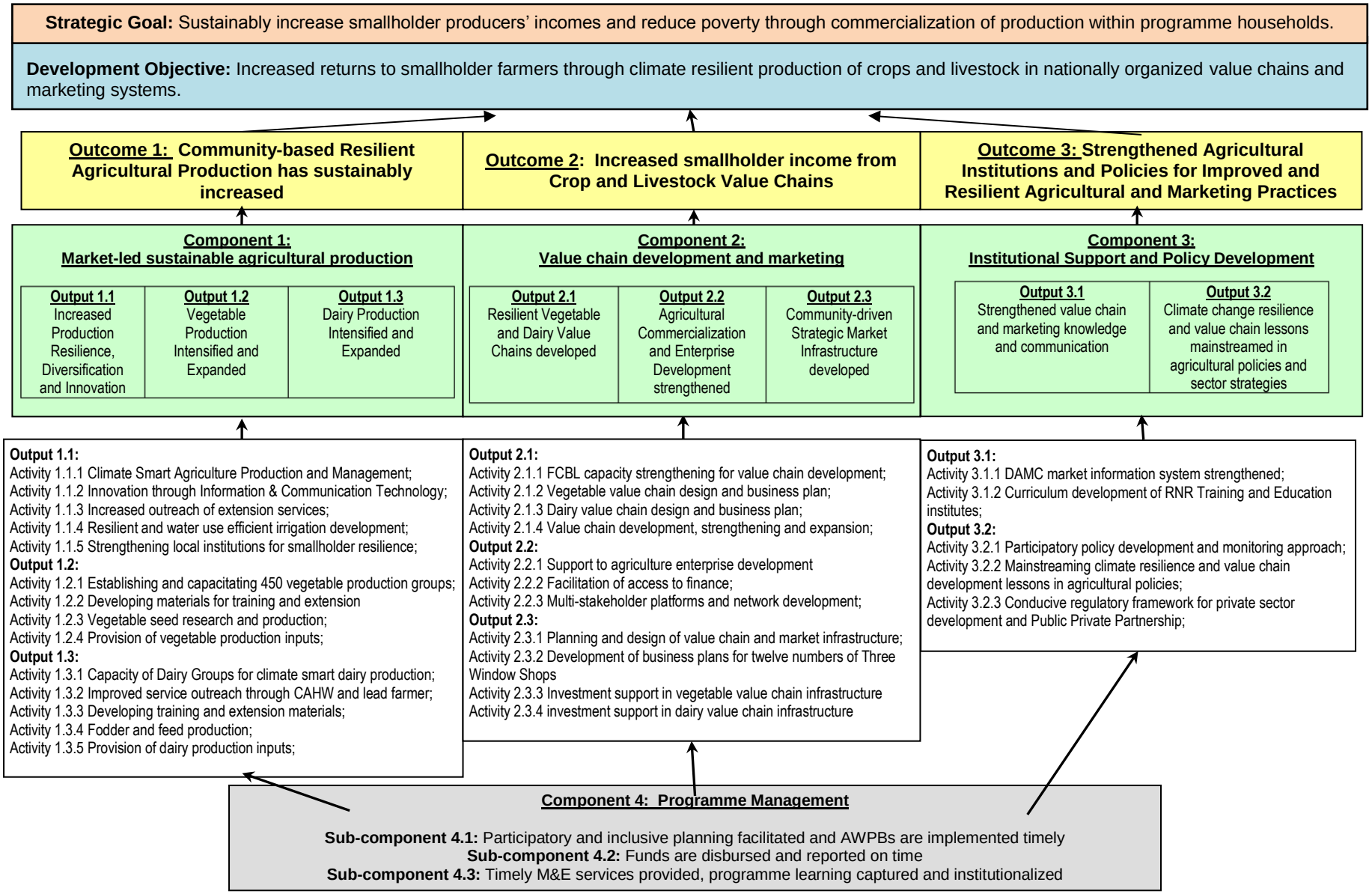
16. **Governance and dispute resolution**. A National Programme Steering Committee (NPSC) will provide policy direction to facilitate implementation and give guidance to the Programme management. A Regional Programme Implementation Committee will steer AWPB synchronization and implementation at Gewog, dzongkhag and regional level. NPSC will resolve any structural programme management issues and disputes concerning programme implementation; unresolved issues may be referred to the Minister of MoAF.

17. **Key risks**. (i) Limited present FCBL capacity to develop value chains, enterprises and public private partnerships is a risk, being mitigated by allocating resources for strategy and capacity development and Technical Assistance, and assigning autonomous role to FCBL to implement Component 2 in the programme design. (ii) Difficulty in harmonizing divergent individual-community and present-future stakes can hamper implementation of climate smart strategies. Provision of resources to strengthen climate-smart farm management practices, farmer group development, community-based service outreach, strengthening local institutions and Technical Assistance is expected to mitigate the risk.

18. **Sustainability**. Limiting the number of value chains would ensure adequate resources to successfully design and establish these. Interlinking of production, marketing and enterprise development would create shared stakes between farmers and private sector to remain engaged.

[4] Re-structuring of RNR Sector is in progress. In the event that DAMC becomes a division/section within the Policy and Planning Division (PPD) under MoAF, it will continue to have the mandate of gathering/providing market information system to closely work with FCBL.

Involvement of communities in design and implementation, development of groups and setting up of community-based O&M systems is expected to ensure sustainable use and management of assets built under the Programme. Environment protection and conservation issues have been incorporated in production models through value chains, are compatible with local production activities and profitable with full accounting of operating and capital costs. Strong grassroots institutions and locally accountable support services envisaged in the Programme are the most effective means to ensure sustainability beyond the implementation phase. Strengthening FCBL and creating stakes for it to work with farmers to fulfill its own mandate would incentivise it to remain engaged with local communities while forging ground for enhancing private sector participation.


Strategic Goal: Sustainably increase smallholder producers' incomes and reduce poverty through commercialization of production within programme households.
Development Objective: Increased returns to smallholder farmers through climate resilient production of crops and livestock in nationally organized value chains and marketing systems.
Outcome 1: Community-based Resilient Agricultural Production has sustainably increased
Outcome 2: Increased smallholder income from Crop and Livestock Value Chains
Outcome 3: Strengthened Agricultural Institutions and Policies for Improved and Resilient Agricultural and Marketing Practices
Component 1: Market-led sustainable agricultural production
Output 1.1 Increased Production Resilience, Diversification and Innovation
Output 1.2 Vegetable Production Intensified and Expanded
Output 1.3 Dairy Production Intensified and Expanded
Component 2: Value chain development and marketing
Output 2.1 Resilient Vegetable and Dairy Value Chains developed
Output 2.2 Agricultural Commercialization and Enterprise Development strengthened
Output 2.3 Community-driven Strategic Market Infrastructure developed
Component 3: Institutional Support and Policy Development
Output 3.1 Strengthened value chain and marketing knowledge and communication
Output 3.2 Climate change resilience and value chain lessons mainstreamed in agricultural policies and sector strategies
Output 1.1:
Activity 1.1.1 Climate Smart Agriculture Production and Management;
Activity 1.1.2 Innovation through Information & Communication Technology;
Activity 1.1.3 Increased outreach of extension services;
Activity 1.1.4 Resilient and water use efficient irrigation development;
Activity 1.1.5 Strengthening local institutions for smallholder resilience;
Output 1.2:
Activity 1.2.1 Establishing and capacitating 450 vegetable production groups;
Activity 1.2.2 Developing materials for training and extension
Activity 1.2.3 Vegetable seed research and production;
Activity 1.2.4 Provision of vegetable production inputs;
Output 1.3:
Activity 1.3.1 Capacity of Dairy Groups for climate smart dairy production;
Activity 1.3.2 Improved service outreach through CAHW and lead farmer;
Activity 1.3.3 Developing training and extension materials;
Activity 1.3.4 Fodder and feed production;
Activity 1.3.5 Provision of dairy production inputs;
Output 2.1:
Activity 2.1.1 FCBL capacity strengthening for value chain development;
Activity 2.1.2 Vegetable value chain design and business plan;
Activity 2.1.3 Dairy value chain design and business plan;
Activity 2.1.4 Value chain development, strengthening and expansion;
Output 2.2:
Activity 2.2.1 Support to agriculture enterprise development
Activity 2.2.2 Facilitation of access to finance;
Activity 2.2.3 Multi-stakeholder platforms and network development;
Output 2.3:
Activity 2.3.1 Planning and design of value chain and market infrastructure;
Activity 2.3.2 Development of business plans for twelve numbers of Three Window Shops
Activity 2.3.3 Investment support in vegetable value chain infrastructure
Activity 2.3.4 investment support in dairy value chain infrastructure
Output 3.1:
Activity 3.1.1 DAMC market information system strengthened;
Activity 3.1.2 Curriculum development of RNR Training and Education institutes;
Output 3.2:
Activity 3.2.1 Participatory policy development and monitoring approach;
Activity 3.2.2 Mainstreaming climate resilience and value chain development lessons in agricultural policies;
Activity 3.2.3 Conducive regulatory framework for private sector development and Public Private Partnership;
Component 4: Programme Management
Sub-component 4.1: Participatory and inclusive planning facilitated and AWPBs are implemented timely
Sub-component 4.2: Funds are disbursed and reported on time
Sub-component 4.3: Timely M&E services provided, programme learning captured and institutionalized

Logical Framework

Narrative Summary	Key Performance Indicators	Means of Verification	Assumptions
Goal:			
Sustainably increase smallholder producers' incomes and reduce poverty through commercialization of production within programme households.	▪ 5 000 direct beneficiary HH in vegetable and dairy value chains report at least 25% increase in HH asset and income, as compared to baseline (disaggregated by HHs-head gender) ▪ 15% reduction in the prevalence of child malnutrition, as compared to baseline	▪ RIMS and baseline surveys ▪ Programme M&E	No major socio-economic slow down, or natural disasters Increasing support for collaboration between different Agencies, civil society and private sector to develop value chains Continued MoAF support for innovative approaches Agricultural approaches and technologies primarily remain profitable Programme investments are realized as designed
Development Objective: Increased returns to smallholder farmers through climate resilient production of crops and livestock in nationally organized value chains and marketing systems.	▪ ≥ 30% increase in production of vegetables and dairy products ▪ ≥ 20,000 HH in vulnerable areas with increased water availability for agriculture production	▪ Baseline survey ▪ Sector studies ▪ Technical agencies' reports and studies ▪ Research and academic studies ▪ Programme M&E	
Component 1: Market-led sustainable agricultural production			
Outcome 1: Community-based Resilient Agricultural Production has sustainably increased	▪ 6 000 HH adopt sustainable agricultural practices ▪ Of which 4 500 direct beneficiary HH of the new vegetable groups, and 450 direct beneficiary HH of the new dairy groups have on average 15% increase in production	▪ Programme M&E reports ▪ Contracted studies ▪ RIMS and benchmark ▪ Scientific and conference papers	Collaboration between Government Agencies/staff and non-state service providers is successful RGoB complementary financing and supportive annual block grants (dzongkhags) is allocated and utilised
Output 1.1: Increased Production Resilience, Diversification and Innovation	▪ ≥ 23 000 (of which 50% are women) smallholder HH supported in coping with the effects of climate change with sustainable land management practices	▪ Base line studies ▪ Programme progress report ▪ Line agencies' reports	RGoB earmarked funding (including other donors) of agricultural inputs and capacity development of farmer groups is allocated and utilised as per programme design Capacity of Government Agencies/staff and non-state service providers is adequate to achieve results as per programme design.
Output 1.2: Vegetable Production Intensified and Expanded	▪ 300 new vegetable farmer groups (4 500 HH) established and functional; minimum 60% female members	▪ Base line studies ▪ Programme progress report ▪ Line agencies' reports	See above
Output 1.3: Dairy Production Intensified and Expanded	▪ 150 Smallholder Dairy Farmer Groups (450 HH) established and functional, with minimum 50% female members	▪ Base line studies ▪ Programme progress report ▪ Line agencies' reports	See above
Component 2: Value chain development and marketing			

Narrative Summary	Key Performance Indicators	Means of Verification	Assumptions
Outcome 2: Increased smallholder income from Crop and Livestock Value Chains	▪ 70% of the agricultural enterprises established have a positive outlook on their profitability and sustainability	▪ Programme M&E reports ▪ RIMS and benchmark ▪ Line agencies' reports ▪ Sector studies and reports ▪ Farmer satisfaction surveys	As above under Component 1 Willingness for collaboration between Government Agencies/staff, FCBL and non-state actors, including small entrepreneurs and businesses, to develop and manage value chains and market infrastructure
Output 2.1: Resilient Vegetable and Dairy Value Chains developed	▪ 65 geogs have developed climate resilient vegetable and dairy production, marketing, and infrastructure management plans	▪ Programme progress report ▪ Sector reports and studies	FCBL has adequate financial allocations to develop its own capacity next to programme support Geogs are willing to develop more holistic (value chain based) geog plans for dairy and vegetables to guide programme investments and strengthen local institutions for climate resilience
Output 2.2: Agricultural Commercialization and Enterprise Development strengthened	▪ 115 marketing groups established or revitalized and functional within programme value chains ▪ 200 agriculture enterprises (including cooperatives) established and strengthened as part of value chain development	▪ Programme progress report ▪ Sector reports and studies	As above Adequate number of interested and able entrepreneurs come forward to establish businesses Access to finance for small rural agricultural entrepreneurs is adequately facilitated
Output 2.3: Community-driven Strategic Market Infrastructure developed	▪ Vegetable and dairy value chain processing and marketing infrastructure designed and constructed in 10 dzongkhags	▪ Programme progress report ▪ Sector reports and studies	Complementary financing from RGoB and FCBL will be provided as earmarked
Component 3: Institutional Support and Policy Development			
Outcome 3: Strengthened Agricultural Institutions and Policies for Improved and Resilient Agricultural and Marketing Practices	▪ ≥ 70% of VC stakeholders report the use of market information in investment decision making 60% of VC stakeholders report satisfaction with the policy and regulatory framework as providing a fair distribution of incentives, costs, benefits, and risks.	▪ Programme M&E reports ▪ Line agencies', DAMC, FCBL and BOiC reports ▪ Sector studies and reports ▪ Programme survey	MoAF will pro-actively implement the 11th FYP strategy for enabling private sector engagement and participation within the process of commercialisation of agricultural development
Output 3.1: Strengthened value chain and marketing knowledge and communication	▪ Market Information System MoAF/DAMC providing relevant (real-time) information to farmers	▪ Programme M&E reports ▪ Line agencies', DAMC, FCBL and BOiC reports ▪ Sector studies and reports	Adequate technical and process support is provided to develop the models and approaches on the ground, to access learning and to document good practice (presently a weak part of IFAD projects)
Output 3.2: Climate change resilience and value chain development lessons mainstreamed in agricultural policies and sector strategies	▪ Enhanced engineering norms for building climate resilient irrigation systems ▪ Vegetable and dairy development policies enhanced based on multi-stakeholder consultation processes and programme lessons (resilience, value chain and marketing) ▪ Regulatory framework for private sector development and Public Private Partnership in agriculture sector developed	▪ Programme M&E reports ▪ Line agencies' reports ▪ Sector studies and reports ▪ Policy documents ▪ Regulatory framework document for private sector and PPP	Dialogue and collaboration between Government Agencies/staff and external stakeholders is successful and generates meaningful lessons and insights for policy development.

I. Strategic context and rationale

A. Country and rural development context

Geography and climate change

1. Bhutan is a mountainous, landlocked country in South Asia. The geology and topography of Bhutan is a result of on-going tectonic activity. The mountains are primarily made up of uplifted sedimentary and metamorphic rocks, highly fragile and sensitive to erosion. Bhutan is disaster prone due to its fragile geology and has high risk exposure to floods, landslides, windstorms and forest fires. Climate varies considerably in Bhutan due to dramatic changes in topography.

2. Climate change is projected[5] to have major impact on agricultural productivity due to changes in water availability, soil fertility and incidences of pest and diseases. Projections indicate that mean annual precipitation will increase over the next 30 to 60 years, but with more intense and concentrated rainfall in the monsoon season and a drier winter season in general, thus paradoxically leading to lower water availability overall. A decrease in year-round water availability is already being experienced in some parts of Bhutan. Furthermore, accelerated melting of glaciers is disrupting the hydrological regime of the perennial river systems in the region and affecting downstream communities' access to water to meet household and irrigation needs. In some parts of Bhutan glacier melting is causing the formation of high mountain lakes with corresponding risks of glacial lake outburst floods (GLOFs). Delayed onset of monsoons are also leading to prolonged periods of drought, increasing the risk of crop loss and forest fires. Projected increase in frequency and intensity of rainfall events will exacerbate surface runoff and erosion, and increase the incidences of landslides. Considering that the nation's socio-economic wellbeing depends hugely on agriculture, water resources and forests, climate change impacts have a high potential to undermine development efforts. This points to the need for building the resilience of smallholder farmers and the agriculture and rural development sector as a whole to better contend with the anticipated changes.

Gross National Happiness and economic development

3. Bhutan's unique development philosophy is to promote Gross National Happiness (GNH). It formally acknowledges the need to balance material wellbeing with spiritual, emotional and cultural wellbeing of individuals and the society. GNH has four pillars: (i) economic growth and development; (ii) preservation and promotion of cultural heritage; (iii) preservation and sustainable use of the environment; and (iv) good governance. Among the smallest in the world, Bhutan's economy grew at an average of 7 to 8% annually in the first decade of the new millennium with the country's Gross Domestic Product (GDP) per-capita increasing from USD 1 387 in 2006 to USD 2 590 in 2011. The Global economic downturn has, however, caused a sharp decline in economic growth,[6] from 11.7% in 2010 to 7.9% in 2011, 5.1% in 2012 and 2.0% in 2013. This high vulnerability is largely because Bhutan's economy is still aid dependent and import driven. Growth projections for 2014 are, however, improving as hydropower construction projects under the 11th Five Year Plan (11th FYP) get underway and improved economic conditions in tourist source countries boost tourism[7].

Rural poverty

4. Poverty in Bhutan is a distinctly rural phenomenon. Nearly 95% of the country's poor people live in rural areas, home to about 66% of the total population. Rural poverty in Bhutan has diverse causes, but most are linked to its mountainous terrain. Many villages are still isolated and because of a rugged terrain, lack access to public services, education and markets. The Gewog level poverty map by the National Statistics Bureau and the World Bank[8] shows that Gewogs with less market accessibility and road networks tend to have a higher poverty rate. Increasing rural to urban migration creates shortage of farm labour, further impacting rural poverty. The GDP share of the farm sector has been steadily declining, with fairly stagnant growth in agriculture. Yet, agriculture remains a key sector for rural livelihoods, employing nearly 65% of the country's population, mostly in subsistence farming with significantly lower returns. Low labour productivity in this sector contributes to persisting rural

[5] Bhutan National Adaptation Plan of Action 2012
[6] http://data.worldbank.org/country/bhutan
[7] ADB. 2014. Asian Development Outlook 2014. Manila
[8] National Statistics Bureau and World Bank "Poverty Map of Bhutan: Key Findings" (2010).

poverty. Steady, sustainable and significant growth in the farm sector, therefore, is a key to reduce rural poverty.

Institutional design

5. During Bhutan's long history of benevolent Kingship, the government system, built around consultative processes with local communities, has been the key driver of development in the country. With the recent introduction of democratic structures, however, local development dynamics are changing and erstwhile development beneficiaries are gradually becoming rights-bearing citizens. This institutionalization of downward accountability of Government in delivering services is creating opportunities for more demand driven development. At the same time, coping with continuously rising expectations poses its own unique challenges of building new systems, processes and practices.

6. The Ministry of Agriculture and Forestry (MoAF) at the central level is charged with the responsibility of developing the renewable natural resources (RNR) sector as well as the rural areas. Removing rural poverty is therefore its mandate. The Departments of Agriculture (DoA), Forestry and Park Service (DoFPS), Livestock (DoL), Agriculture Marketing and Cooperatives (DAMC) and the Policy Planning Division (PPD) are the executive arms of the MoAF. At the dzongkhag (district) level, the MoAF has three offices from the line RNR sectors, i.e., agriculture, livestock and forestry, constituting the core staff responsible for the management, planning and execution of RNR development programmes. The Gewogs have three agricultural staff representing the line RNR sectors, who are the front-line staff (extension agents) working with farmers.

Employment and enterprise development

7. Bhutan's economy has not yet evolved to a level where secondary and tertiary sectors become significant providers of jobs. Economic growth is driven by the industrial sector, particularly the hydropower sector, which has limited potential for creating productive jobs to absorb a growing and an increasingly educated labour force[9]. In rural areas where only 51% of the poor are literate, those most in need of jobs do not have the education required to benefit from economic growth through development of industry and tourism.

8. Lack of access to technology, business development services, fair markets and suitable financial products remain constraints affecting rural enterprise initiation and development. Loans outstanding from institutional sources in the farm sector constituted a minuscule 2.23% of all institutional loans in 2012[10]. For a largely subsistence economy a transition into enterprises without a supportive economic system is always difficult. For Bhutan to integrate rural populations within its nascent market economy through agriculture commercialisation and Small and Medium Enterprises (SME), a comprehensive development policy, more public investment and private sector engagement are necessary[11].

Youth and women

9. Nearly half of Bhutan's population is below 25 years of age. Nearly 19 percent of population in Bhutan in 2014 were youth (between 15-24 years) as per Dzongkhag population projections by National Statistical Bureau.[12] Children (below 15 years of age) accounted for 30 percent of the population, and the elderly (aged 60 and above), about 10 percent.[13] In the rural context of Bhutan, youth are mostly school dropouts and are engaged in casual unskilled wage labour, while in general, many youth are reluctant to take up agriculture or forest based work. Situational analysis and youth assessments carried out in 2012 have confirmed the need for addressing youth specific interventions.[14] Both boys and girls marry young (approximately 25% of youth aged 20-24 years married before the age of 18 years and 15% gave birth to a child before the age of 18 years[15]). Early marriage and motherhood takes a toll on the young girls' health apart from affecting the health of their children. Alcohol abuse also features high among rural youth, particularly young boys, and in general suicide rates are increasing among youth as well. Youth also form the bulk of migrant population from

[9] Eleventh Five Year Plan, Main Document Volume I, Gross National Happiness Commission, RGoB
[10] Bhutan statistical Year Book 2013, Table 12.10.
[11] Kuensel, Saturday, January 3, 2015, Invest and engage private sector: Bhutan Chamber of Commerce and Industries
[12] Dzongkhag Population Projections (2005-2015). National Statistical Bureau, RGoB, Thimphu, 2008.
[13] Bhutan Living Standards Survey Report 2012, Asian Development Bank, National Statistics Bureau of Bhutan, 2013
[14] National Youth Policy (NYP) 2010, age group of 13-24 years
[15] A Situational Analysis of Children, Youth and Women in Bhutan 2012, UNICEF.

rural to urban and over 42.5 percent of them migrate due to lack of productive employment opportunities in rural areas according to the RGoB study released in 2014.[16]

10. Women in Bhutan constitute nearly 48% of the population. Women's development is integral part of the country's development agenda, providing equal opportunities to both women and men. Life expectancy is the same for men and women and maternal mortality rate is on the decline. Bhutanese women enjoy relative freedom and equality and there is no overt discrimination against them. Women also increasingly access loans and participate in household decision-making. Yet in many rural households there are still gender disparities due to e.g. gaps in household investments[17] and alcohol abuse.[18] Women, especially rural women lag behind in tertiary education, the formal economy, politics and public decision-making.

Agriculture development

11. The majority of Bhutanese farmers are small and marginal producers and are largely focused on meeting subsistence needs. They grow crops such as rice, wheat, corn, buckwheat, potatoes, barley and minor millets. Better off farmers have diversified into cash crops such as cardamom and citrus. Many combine crop production with livestock and poultry. Most produce sufficient quantities of food to last 6 – 8 months of the year while food purchases are necessary for the remaining months.

12. The proportion of rural landless who presently own only homestead land with a small kitchen garden is decreasing due to the policy of issuing Government land to the landless by His Majesty the King. Landholdings are small in size, the average being 3.4 acres per household, and the majority are on steep slopes[19]. Many farmers have constructed terraces although only a minority have put in place robust stone terracing; most terraces are earthen with only a few fortified with vegetation. Significant soil erosion takes place and this is most evident in areas where there is a combination of poor terracing and irrigation. The challenge to agricultural production is further compounded by poor soil fertility, water stress and human-wildlife conflict. In addition to the bio-physical constraints, dependence on family labour, rural to urban migration, limited scope for mechanisation due to the rugged terrain, and long distances to the nearest road poses significant barriers to improving agricultural productivity.

13. Development of the RNR sector, which comprises agriculture, livestock and forestry, has been relatively slow in Bhutan. Key reasons are low levels of technology adoption, predominance of subsistence farming, large tracts of fallows and lack of market access. Slow growth of agriculture has led to heavy reliance on imports of farm products from India which has added to the economic crisis since 2011-12. RGoB has accorded highest priority to agriculture development in the 11FYP and agriculture is featured as one of the five jewels[20]. This comes out of the realisation of the importance of the farm sector to the economy, and its significance in meeting food and nutrition security, poverty reduction, and equitable and sustainable economic development goals.

Policy and institutional challenges

14. The RNR sector institutions have largely been supply oriented, providing inputs, such as seeds and equipment to promote (efficient) production of commodities. With greater devolution of responsibilities for local development to the Gewog level, the new policy emphasis on market linked production and value chain development and the emerging challenges from climate change, RNR sector needs to develop new institutional capabilities. It needs to be able to meet increasing demands to address local problems interactively. RNR sector institutions require to be able to work with various actors in the value chain, including collaboration with and regulation of the private sector, facilitate fair linkages between farmers and market players and be equipped to collect and disseminate market information. RNR sector institutions need to be able to work with local communities to develop climate resilient strategies that go beyond generalized solutions like resilient seeds, efficient use of natural resources, etc. and build local capabilities to respond to evolving situations.

[16] Rural Urban Migration Study in 2013. PPD, MoAF, RGoB, 2014 (through a grant from IFAD).
[17] Gender Gap in HH Investment: A Study on Bhutan by Phuntsho Choden, University of Applied Sciences, Berlin (2012).
[18] Alcohol Use and Abuse in Bhutan by Lham Dorji, National Statistics Bureau, Thimphu (2012).
[19] Almost 40% of farmland in Bhutan is on slopes greater than 50%.
[20] "The Five Jewels of Economy: Dzongdas' Roles" Speech from Lyonchhoen Tshering Tobgay, Prime Minister of Bhutan during the Conference of Dzongdas, Kuensel, August 12, 2014

B. Programme rationale

Value chains and marketing

15. Past and on-going IFAD supported projects have brought about significant development to the six eastern dzongkhags. The projects mainly focussed on increased agricultural and livestock production, enabling farmers, mostly smallholders, to increasingly adopt improved practices, leading to better living standards and to some extent, increased income through improved access to road networks and markets. Notwithstanding the explicit value chain design of **MAGIP**, market integration did not occur as envisaged as a focused **value chain development perspective was not adequately facilitated and implemented**, especially at the local level where project activities were budget and input-driven and implemented in a fragmented manner. Production and marketing interventions were largely delinked and marketing had mostly an infrastructure provision focus (e.g. farm roads, irrigation schemes, market sheds). Growing demands for vegetables and dairy products that would enhance food security and self-sufficiency and reduce import substitution while enhancing local production and markets first within the country and then in neighbouring India (particularly for off-season vegetables), could not be productively capitalised to the advantage of the smallholder farmers. This adversely affected sustainability and limited income generation for farmers and groups, who therefore had little incentive to form marketing groups and cooperatives and initiate agriculture businesses. In addition, the inclusive targeting approach of reaching as many Gewogs and households as possible militated against capitalising on areas with high production potential and linking them to ready markets. RGoB therefore requested that CARLEP be designed and implemented as a strategic value chain programme, with focused product interventions, taking into consideration the gaps of the previous projects (see also Appendix 3).

16. Lessons from various successful value chain programmes[21] [22] show that an integrated value chain approach[23] needs to facilitate and address multi-stakeholder interests and requires adequate but diverse capabilities. In areas under AMEPP and MAGIP where a value chain approach was developed and promoted, most notably the Vegetable Value Chain Programme in the East (VVCP-E), success has been visible in strengthening relationships between key value chain actors and linking farmers to markets, as well as in increasing production. There is thus a real opportunity for CARLEP to build on the success and lessons from these interventions, through integrating adequate value chain research and multi-stakeholder process facilitation.[24]

17. In line with the 11FYP strategy to promote commercial agriculture[25], RGoB recently directed the **Food Corporation of Bhutan Limited** (FCBL) to move beyond its social mandate of ensuring food security and stabilizing food prices, and to strengthen its physical marketing capacity as mandated in its Royal Charter of 1974. FCBL is currently engaged in auctioning and export of important agricultural commodities such as potato, vegetables and other assorted commodities.

18. Considering the high transaction costs, high risks, low production volumes and relatively low initial profit margins in agricultural business, FCBL is the logical entity for the programme to engage with for advancing the commercialization of the agriculture sector. The FCBL would facilitate this process by absorbing start-up costs and risks, facilitating outreach and promoting production intensification by smallholders, and clustering to achieve adequate volumes. After absorbing initial costs of developing the value chains, FCBL aims to attract private sector entities to gradually take over ownership and/or management of value chain elements (storage, processing, transport, etc.). Wherever opportunities exist private sector will be engaged right from the start. FCBL will also develop a Public Private Partnership strategy to engage with the private sector to allow for gradually phasing out its own role within value chains and marketing. The long-term vision of FCBL is thus to

[21] The International Livestock Research Institute (ILRI) and Sokoine University of Agriculture (SUA) are implementing a project titled, “More milk by and for the poor: Adapting dairy market hubs for pro- poor smallholder value chains in Tanzania”, abbreviated as More milk in Tanzania (MoreMilkiT).
[22] White Gold: Opportunities for Dairy Sector Development Collaboration in East Africa; Nathaniel Makoni, Raphael Mwai, Tsehay Redda, Akke van der Zijpp, Jan van der Lee, Centre for Development Innovation, Wageningen UR, March 2014.
[23] Developing sustainable food value chains, Guiding principles, David Neven, Food and Agriculture Organization of the United Nations, FAO Rome, 2014.
[24] Under the VVCP-E the DAMC and RAMCO invested ample resources in linking with extension agents, schools and other actors to make this a success, with additional support from Technical Assistance provided by SNV. A key lesson learned is the need to adequately support districts to ensure implementation is process driven, based on the objective to successfully develop the value chain, instead of an activity/input driven plan implementation.
[25] Eleventh Five Year Plan, Main Document Volume I, Pg 18

initiate and create conducive conditions for value chain development and to gradually phase out as the private sector steps in. FCBL also needs to create a competitive market environment and regulations for monopoly control at micro level for fair market development. Towards this, and to strengthen agriculture commercialization, FCBL is already leading the development of an Agricultural Commodity Exchange.[26]

19. FCBL thus aims to effectively serve as a (temporary) portal for providing forward and backward linkages to farmers, supplying farm inputs to farmers and supporting the consolidation of production for marketing of their produce. Under CARLEP, FCBL in collaboration with DAMC will therefore develop a detailed strategy to develop self-sustaining value chains by facilitating linkages and partnerships among state and non-state actors, and for strengthening capacities of farmers, marketing groups, cooperatives and entrepreneurs. While FCBL will capitalize on marketing the consolidated production to existing markets (school feeding, auction yards, urban markets), as far as possible, FCBL will limit its role to being an enabler and facilitator to develop value chains, building on existing value chain actors as farmer groups, cooperatives, CSOs and entrepreneurs. However, it also will promote expansion of the number and capacity of value chain actors to ensure outreach and scale economies in production and marketing. FCBL will also engage in planning and designing essential marketing infrastructure, with the initial investment costs absorbed by MoAF and the programme. These designs will be multi-purpose and cost-efficient to ensure commercial viability and expansion.

Institutional capacities for value chain development[27] [28]

20. It is critical from an agricultural commercialization point of view that costs and benefits are well understood across all elements and relationships in the value chain. This entails developing **business plans for value chains** and **individual service units** to ensure that these can be managed over time as viable businesses and that entrepreneurs can sustainably engage in the value chains. As Government typically provides free extension and other services, there are often hidden costs in agriculture production, which need to be clearly factored in the value chain business plans so that entrepreneurs are aware of the full costs of operation. Once the full costs are made explicit, steps can be taken to minimize them or support sought from Government to subsidize these costs.

21. As an integrated approach, value chain development would require that planning and design of market infrastructure is based on a value chain strategy beyond Gewog or dzongkhag administrative boundaries to ensure that production is adequately clustered and linked to multi-level (local to international) markets.[29] An understanding of the capital and O&M costs of market infrastructure with relation to socio-economic benefits would be needed to maximize benefits from (mostly public) investments

22. FCBL will need to lead overall value chain strategy development and market infrastructure planning and design, as well as engage in planning at Gewog and dzongkhag level to give advice on production targeting, quality and volumes and market infrastructure development. For effectively adopting this new role and for discharging its new responsibilities, the FCBL will need to be substantially strengthened. FCBL will need competences regarding cost-benefit analysis, partnership development and facilitation of community ownership, management and entrepreneurship in an environment where farmers have traditionally come to rely on Government support for "meeting all

[26] Since early 2014 a committee comprising members of RSEBL (security exchange), FCBL, DAMC, GNHC, RMA have been working to establish an agricultural commodity exchange in Bhutan. The ultimate goal is to commercialize Bhutanese agricultural sector by facilitating trade, to reduce transaction cost, to create price transparency, and to lift smallholders out of poverty. The exchange itself will be set up as an independent and self-sustaining entity, focusing on matching sellers and buyers via their designated brokers. Its success, however, largely depends on an organized post-harvest infrastructure, i.e. (i) cross-country collection centers for farmers to deposit, grade and register their commodities, and (ii) reliable transportation to carry commodities to strategically located warehouses and designated delivery points along the border to India. Given its existing and currently revised infrastructure consisting of depots and warehouses, FCBL is the key stakeholder for the project.

[27] Pro-poor Value Chain Development, 25 guiding questions for designing and implementing agroindustry projects, United Nations Industrial Development Organization (UNIDO), International Fund for Agriculture Development (IFAD), Danish Institute of International Studies (DIIS), 2011.

[28] Developing sustainable food value chains, Guiding principles, David Neven, Food and Agriculture Organization of the United Nations, FAO Rome, 2014

[29] The mission visited, for example, a large cold storage facility south of Thimphu, which was planned by Thimphu Dzongkhag and constructed with a Government of India grant, a large weekend market structure in Trashigang Dzongkhag, both of which were never used; several dairy farmer group outlets with unused cold storage; a one-stop-shop with doubtful demand and economic viability; and several farm roads in poor condition.

their needs"[30]. FCBL will be able to build upon its existing relatively good technical capacities, especially now that key DAMC staff will be absorbed within the FCBL marketing section, on its extensive distribution network in Bhutan as well as its existing national and international partner network.

Climate change resilience

23. RGoB requested in August 2014 additional funding to strengthen climate resilience in the agricultural sector from the **Adaptation for Smallholder Agriculture Programme** (ASAP) managed by IFAD[31]. US$ 5 million was allocated to CARLEP from ASAP financing, which facilitated the broadening of the programme objective to include climate change resilience. The additional funding from the ASAP has been allocated to strengthen smallholder **climate change resilience.**[32]

24. Because of the mountainous terrain and resultant high spatial variability across the country, vulnerability to **climate change impacts needs to be addressed at the local level**, factoring specific drivers of and linkages between poverty and vulnerability. Bhutan has already embarked on research and deployment activities on Sustainable Intensification (SI) and Climate Smart Agriculture (CSA) practices and technologies to strengthen resilience of smallholder livelihoods. However, as global research and experience shows, "*climate change adaptation requires going beyond a narrow intensification lens to include diversified farming systems, local adaptation planning, building responsive governance systems, enhancing leadership skills, and building asset diversity*".[33] There is thus a need to further develop, scale-up and institutionalize existing good practice towards a more comprehensive and integrated approach to strengthening smallholder climate resilience.

25. CARLEP's smallholder climate resilience strategy will therefore address climate vulnerability from the understanding of livelihood assets and their inter-relations. CARLEP has developed a **strategy to increase smallholder resilience capacity**, through a multi-level, integrated approach of interventions: i) intra-household (women and youth); ii) household-level (vulnerability targeting); iii) farm-level (nutrition, diversification, integrated climate sensitive farming and income generation); iv) community level (social capital as farmer groups, lead farmer model); and v) local institutions (extension service outreach of and access to value chains/markets, improved sustainability of O&M of infrastructure).

26. Climate change resilience will thus be addressed both at farm and community level as well as at (local) institutional level. For example, capacities at the local level are needed for adaptation planning, adoption of integrated farming systems, adoption of renewable energy technologies, as well as, linking agricultural production with markets from a value chain perspective. Similarly, the capacities and strengths of relationships between Dzongkhag, Gewogs, farmers, farmer groups, cooperatives, entrepreneurs and CSOs will to a large extent determine local climate resilience capacity and ensure the success of the value chain approach. In addition to the individual and household level capacity building, CARLEP will also **strengthen institutional and organizational capacities** at different levels in terms of meeting both value chain and climate resilience objectives.

Outreach and sustainability of rural service delivery

27. It is RGoB's priority that the outreach of local development should expand to "*more deprived population groups"*.[34] Lessons learned from IFAD projects show that reaching out to remote

[30] Because of the long history of benevolent Government, feedback loops on development impact and cost consciousness within Government systems are presently only at a nascent stage. Citizens still often see themselves as rightful beneficiaries of Government services, which limits their ownership of and pro-active engagement in local development and especially sustainability of services. At the same time smallholders have survived for centuries under difficult conditions, often in remote areas with limited access to services, which indicates a strong foundation of existing capacity and resilience.

[31] The Adaptation for Smallholder Agriculture Programme (ASAP) is a programme launched by IFAD in 2012 to channel climate and environmental finance to smallholder farmers so that they can increase their resilience. ASAP, a multi-year and multi-donor programme, received substantial financial support from the Governments of Belgium, Canada, Finland, Netherlands, Norway Sweden, Switzerland, and United Kingdom. Other donor countries are appraising a contribution. The objective of ASAP is to improve the climate resilience of large-scale rural development programmes and improve the capacity of at least 8 million smallholder farmers to expand their options in a rapidly changing environment. Through ASAP, IFAD is driving a major scaling-up of successful "multiple-benefit" approaches to increase agricultural output while simultaneously reducing vulnerability to climate-related risks and diversifying livelihoods.

[32] Climate Change Strategy, IFAD, Rome, May 2010

[33] Current Opinion in Environmental Sustainability, Volume 8, October 2014, Pages 39–43, SI: Sustainability governance and transformation; Sustainable intensification: What is its role in climate smart agriculture?; Bruce M. Campbell, Philip Thornton, Robert Zougmoré, Piet van Asten, Leslie Lipper.

[34] A RGOB publication states, *"Poverty is bad not only for those who are poor but also represents a social problem that entail a*

communities remains a challenge and extension services for remote communities are infrequent and insufficient. Facilitating local development needs a good understanding of the local context and structural drivers of poverty and requires an integrated approach to development planning; the 'how' of development through empowering participatory processes and capacity development needs to be given at least as much priority as the 'what' of development, such as provision of inputs and infrastructure.

28. For the socio-economic viability of value chains and private sector engagement the **outreach, quality and sustainability of infrastructure and service delivery** is critical. AMEPP and MAGIP implementation revealed that the present outreach of extension agents is low, largely because of relative scatter and remoteness of farm populations. For more intense engagement with farmers for building resilience and commercialization, extension and group formation processes need to be strengthened. Improved approaches are also required to facilitate the interplay between government service deliveries, community based groups, civil society organizations and private sector.

29. Furthermore, major concerns emerged within AMEPP and MAGIP regarding the maintenance and usability of farm roads. Multi-community maintenance groups do not function adequately because of poor quality of roads, weak organisation capacity and limited labour available in rural areas, especially just before the onset of monsoons when maintenance needs are high and labour demand in agriculture is simultaneously at its peak. With regard to irrigation, engineering norms need to be upgraded to meet current and anticipated climate change impacts as many of the current irrigation systems are unable to withstand increasing climate induced pressures. Poor maintenance also affects irrigation schemes where many become (in part) dysfunctional because of weak organization of O&M; this is further exacerbated by poor designs that require excessive O&M. Water User Association (WUA) need to be substantially strengthened (models and approaches for WUG are already in place) for scheme maintenance and water-use efficiency to ensure sustainable service delivery over time.

30. For successful commercialization of agriculture better quality road construction (standards and guidelines are already available) and better **O&M**, including the capacity of Road User Groups (RUG), is critical. Costs incurred by smallholders due to poor quality and seasonal non-pliability/closure of farm roads due to poor construction, lack of maintenance and climate related impacts (e.g. landslides) can seriously affect viability of (semi)commercial agriculture. The combination of low population density, low production volumes, high transport demand, and poor road quality significantly increases transport costs. The risk of road blockage at harvest time can be perceived as too high by farmers to adopt commercialization. Strengthening user groups and local institutions thus contributes directly to enhancing smallholder resilience besides potentially facilitating access to health and education benefits, and improved response to disaster-related services.

31. A holistic and integrated approach to local development and service delivery, as mandated in the Local Governments Act, is also important for value chain based development planning. Production intensification through line agencies and dzongkhags need to be planned strategically and in synergy with the FCBL and DAMC led approach and plans to develop value chains and marketing capacity. In terms of adequate planning of marketing infrastructure significant constrains have become visible. Cooperative market sheds[35] and cold storage facilities[36] are planned and constructed without a larger value chain or marketing strategy and subsequently go unused. It is thus important that CARLEP investments at the Gewog and dzongkhags level are not considered localised development activities but part of the larger (regional/national) value chain designs.

32. The **value proposition of CARLEP** is that it envisages unique linkages to Gewogs/dzongkhags, MoAF and FCBL to build upon proven practice and consolidate the progress made by RGoB and past IFAD projects towards agricultural commercialization, value chain development and community resilience, while overcoming key development challenges as noted above. CARLEP will be able to support in an integrated way (i) a value chain approach to overcome weak linkages between production and marketing, (ii) development of functional and responsible

joint responsibility by the government, private sector and the development partners in addressing this issue. Development plans should promote inclusive growth, speeding up growth in lagging regions, and reduce poverty in more deprived population groups". See Bhutan Poverty Analysis 2012 Chapter 6, Conclusions pg 28

[35] Kuensel newspaper September 13, 2014, pg 9, 'A wannabe cooperative that just won't quit, four years since sheds were built, Kangpara's dairy enterprise is still in the making'.

[36] CARLEP DDR mission findings, Thimphu Dzongkhag constructed cold storage with Small Grant Programme of India financing; facilities now taken over by FCBL.

marketing and farmers' production groups, cooperatives and agro-businesses in the selected value chains, (iii) building FCBL (and DAMC) capacity for value chain development, agricultural commercialization and business development, (iv) increased climate resilience through production intensification and diversification, CSA, improved service outreach and local institution building, and (iv) improved quality and sustainability of infrastructure and services through improved planning, design, cost and O&M arrangements.

II. Programme description

A. Programme area and target groups

Programme area and value chains

33. The proposed Commercial Agriculture and Resilient Livelihoods Programme (CARLEP) will be implemented in the six poorest[37] eastern dzongkhags of Lhuentse, Mongar, Pemagatshel, Samdrup Jongkhar, Trashigang and Trashiyangtse to build sustainable agricultural production and strengthen **vegetable and dairy value chains** in the first phase. The vegetable value chain would over time be scaled-up to central-southern and west-southern districts of Tsirang, Sarpang Zhemgang and Chhukha based on performance against key indicators, at MTR, and would ultimately become nation-wide. The dairy value chain will focus only on the six eastern dzongkhags. The value chain assessments and selection process detailed in Working Paper 3 read with Working Paper 8 has taken into account poverty targeting, production potential and marketing synergy.

34. The programme will also support rice production through enhanced water use efficiency and climate-resilient irrigation systems in the four high potential southern dzongkhags of Mongar, Pemagatshel, Samdrup Jongkhar and Trashigang in the east and the production of maize in all eastern dzongkhags. The adoption of an integrated farming system has the potential to produce additional commodities such as, fruits, wheat/cereals, buckwheat, barley, millets, pulses, oilseeds, tuber crops and fodder and will be supported for increased smallholder diversity and resilience. Backyard poultry (chickens and ducks) and piggery production will also be supported as part of an integrated farming system, based on local conditions, demand and resource availability.

Targeting

35. CARLEP will work with 21,860 HH in six dzongkhags to build sustainable agriculture production. Within the dzongkhags CARLEP will work in selected Gewogs identified based on an assessment of: (i) demonstrated production potential in selected commodities[38]; (ii) relative accessibility to road and marketing channels; and (iii) demonstrated interest and commitment of communities and farmer organisations. The selection of Gewogs will be done jointly by the CARLEP implementation team, FCBL, DAMC, line departments, dzongkhags and Gewogs.

36. Following a culturally sensitive approach to take advantage of community cohesion, a value praised in rural Bhutan, CARLEP will follow an inclusive approach to include all households living in a particular community in the programme. However, the most vulnerable poor and smallholders will be prioritised when allocating programme activities and benefits. Special efforts will be made to identify and facilitate inclusion of the poorest or most vulnerable households[39, 40] (through the Social Inclusion Fund) including in governance of community institutions such as farmers' groups, farmers' cooperatives, etc.

37. Active involvement of women as well as youth and dealing with specific opportunities and challenges concerning them will receive special focus in programme implementation as cross-cutting themes.[41] Employment of youth being an important priority, the programme will develop specific interventions aimed at involving youth in the value chains selected under the programme.

[37] Detailed analysis of Depth and Severity of Poverty in Bhutan is available in Bhutan Poverty Analysis Report 2012 published by Bhutan Statistics Bureau and The World Bank, 2013.
[38] The DoL strategy for dairy value chain development has already identified high potential geogs based on e.g. access.
[39] Households will be categorised using the process validated at the time of AMEPP's PCR in 2012, and accepted by RGoB and IFAD, that used food security, source of livelihood and asset ownership as the criteria to classify households as "Better Off", "Poor" or "Medium Poor" and "Poorest". See AMEPP PCR, IFAD, 2012.
[40] The term "Poorest" used in the AMEPP PCR will be replaced by "Most Vulnerable" in CARLEP to accommodate climate change impacts and vulnerabilities.
[41] For more details on the CARLEP gender mainstreaming strategy and actions, see Appendix 2 and Working Paper 2.

Number of beneficiaries

38. The programme is expected to reach out to 28 975 HH with about 144 875 beneficiaries,[42] including indirect beneficiaries access to climate resilient farming practices (see Table 1 below). Beneficiaries participating in multiple activities have been accounted for in only one activity to avoid double counting. It is assumed that nearly 2/3rd of households in eastern dzongkhags not benefiting from value chain activities would benefit from support for climate resilient farming through extension support as indirect beneficiaries. Beneficiaries outside the eastern dzongkhags through scaling-up of the extension outreach models for climate resilience and the value chain and enterprise development support are not included. Direct beneficiaries from irrigation scheme renovation are assumed to be covered under the vegetable groups and not counted separately. Indirect beneficiaries from improved access to markets because of CARLEP support to value chain development have not been included. Assessment of programme beneficiaries may be conducted again at the Mid-term Review (MTR) once second phase interventions outside the eastern dzongkhags are decided upon.

Table 1: Number of direct and indirect programme beneficiaries

Description	# of Groups/ Enterprises	Groups with Overlapping Membership	Non-overlapping Households [c/]	Non-overlapping Beneficiaries	Non-overlapping Households in Eastern Dzongkhags [d/]
Direct Beneficiaries (Value chain)					
New Vegetable Groups [a/]	300		4 500	22 500	3 000
New Dairy Groups	150	120	450	2 250	450
Existing Vegetable Groups	120		1 800	9 000	1 800
Existing Dairy Groups	43	30	195	975	195
Other Agricultural Enterprises [b/]	200	30	170	850	170
Indirect Beneficiaries (Others)					
Climate Resilient Farming[43]			21 860	109 300	14 700[44]
Total			28 975	144 875	20 315

[a/] Average membership of all groups is assumed to be 15 households per group.
[b/] Each enterprise is assumed to employ four people besides the owner.
[c] Average household size is assumed to be 5.
[d/] All dairy groups are assumed to be in eastern dzongkhags and 100 vegetable groups outside the eastern dzongkhags.

B. Goal, objective and impact indicators

39. The **goal** of the Programme is to "sustainably increase smallholder producers' incomes and reduce poverty through commercialization of production by programme households". The key impact indicators at the goal level will be:

- 5 336 direct beneficiary HH report at least 25% improvement in HH asset index, as compared to baseline (disaggregated by HHs-head gender)[45]
- 15% reduction in the prevalence of child malnutrition as compared to baseline[46, 2].
- ≥ 23 180 smallholder HH supported in coping with the effects of climate change

40. The **objective** of the Programme is "increased returns to smallholder farmers through climate resilient production of crops and livestock products in nationally organized value chains and marketing systems". The key impact indicators at the development objective level will be:

- Additional 1 500 tons of vegetables, 452 tons of rice/maize and 3 million litres of milk produced in programme areas
- Vegetable value chain fully developed and scaled-up nation-wide

[42] The Economic and Financial Analysis uses slightly different beneficiary numbers to accommodate risks and double counting.
[43] Households benefitting from one of these interventions, viz. diversified agricultural crops, other livestock (piggery and poultry), biogas, benefits from irrigation, etc.
[44] Estimated number.
[45] COSOP core indicator; a results-based country strategic opportunities programme (COSOP) is a framework for making strategic choices about IFAD operations in a country, identifying opportunities for IFAD financing and for facilitating management for results. The central objective of a COSOP is to ensure that IFAD country operations produce a positive impact on poverty.
[46] IFAD core indicator.

- Dairy value chain fully developed and scaled-up in the six eastern dzongkhags
- ≥ 32 000 hectares of land with rehabilitated or restored ecosystem services

41. The goal and objective are both in line with Bhutan's poverty strategy.[47]

42. To ensure **increased diversity and resilience and production intensification**, CARLEP will provide some production support, such as rice production through support to increase in water-use and irrigation efficiency and maize production, which is complementary to the production of vegetables and dairy (fodder). At farm-level, further commodities will be supported for increased smallholder diversity and resilience, e.g. fruits, wheat/cereals, buckwheat, barley, millets, pulses, oilseeds, ramie beans, ginger, mustard, spices, cucurbits, nuts and tuber crops. Similarly for livestock, back-yard poultry and piggery production may be supported next to dairy, where feasible, for increased diversity and resilience. Selection of commodities for diversification at the farm-level will be decided during programme implementation based on local conditions, demand and resources available. However, CARLEP's focused approach will initially support the development and strengthening of only the dairy and vegetable value chains to ensure that these are brought to maturity and sustainability. Once these are deemed sustainable in target areas, support could be provided at the MTR for FCBL to scale-up in other potential areas or develop other value chains.

43. As part of value chain development, the programme will promote **agriculture enterprise and cooperative development** for various production and processing activities within the selected value chains and will work with farmer groups and cooperatives from the target group to set up these RNR-based enterprises. The objective of programme support to agriculture enterprise development is to generate income and employment for rural target households, especially women and youth[48], by enabling enterprise establishment for market-oriented production and processing in the selected value chains. Rural enterprises can take advantage of present and prospective market demand in cities and towns in the country as well as through exports. All programme interventions combined aim to strengthen Bhutan's macro-economic balance by focussing on production of those crops, which have potential for local marketing, therewith increasing self-sufficiency and reducing imports.

44. Finally CARLEP will provide support to **Institutional and Policy development**. FCBL will work closely together with DAMC and the Departments of Agriculture (DoA) and Department of Livestock (DoL), concerning matters related to policy development, agricultural production, value chain strategy design and capacity development of marketing groups, civil society and entrepreneurs.

45. Areas CARLEP will work on would include developing capabilities for collection and dissemination of real time market data; reorienting and capacitating the RNR knowledge and training institutions to address the needs of market led and climate resilient development of the sector; issues of movement of livestock and commodities across international borders; developing a regulatory framework for public-private partnerships; development of suitable credit policies; participatory processes for policy development; mainstreaming proven extension outreach models; scaling up integrated farming systems for building landscape level resilience; the role of local institutions for climate resilience; entrepreneurship development and partnerships. Institutionalising knowledge and proven practice will thus also receive ample attention under CARLEP.

C. Programme Components

46. CARLEP will have **three programme components: 1) Market-led sustainable agricultural production, 2) Value chain development and marketing,** and **3) Institutional support and policy development**. The components are interlinked and will be implemented in close coordination and phased across the programme lifetime. The design reflects the administrative system in Bhutan whereby activities related to production in agriculture and livestock sectors is in the domain of DoA/DoL, dzongkhags and Gewogs, and supporting processing, marketing and enterprise development is the responsibility of FCBL, DAMC, dzongkhags and Gewogs. FCBL will be

[47] It states, "*Improving access to credit in rural areas, assisting farmers in bringing their produce to vegetable markets in the towns, training farmers as entrepreneurs to transform their rural products should enable farmers to better reap the fruits of their labour". See* Bhutan Poverty Analysis 2012 Chapter 6, Conclusions pg 28

[48] Youth and agriculture: Key challenges and concrete solutions; Food and Agriculture Organization of the United Nations (FAO) in collaboration with the Technical Centre for Agricultural and Rural Cooperation (CTA) and the International Fund for Agricultural Development (IFAD), FAO 2014.

responsible for overall value chain design and development, interlinking both components. Detailed description of the components is provided in Appendix 4.

Component 1: Market–led Sustainable Agricultural Production (USD 17.34 million)

47. The Market-led Sustainable Agricultural Production Component would lead to sustainable increase in resilient agricultural production by rural households. The three outputs contributing to this are: i) increased production resilience and diversification in agriculture, ii) intensification and expansion of vegetable production by rural households, and iii) expansion of dairy production by rural households.

Outcome 1: Resilient agricultural production by rural households has sustainably increased

48. Bhutan has made considerable progress in agricultural production and dairy development. Challenges however remain to make farming a source of robust and resilient rural livelihoods and to achieve national food security. Further development would require smallholder farmers to be linked to fair markets, for which production volumes need to be substantially increased, quality assured and farmers organised to achieve scale efficiencies in sourcing inputs and services. Likewise, given the sloping land conditions, poor soil fertility, water stress and low labour availability, adoption of integrated farming systems such as permaculture would contribute to achieving sustainability objectives. Working Paper 3 (together with WP 1, 2 and 12) provides an overview of the main constraints and challenges in expanding agricultural and livestock production in Bhutan and the opportunities and strategies for increasing production volumes and diversity, as well as greater resilience.

49. The key production related outputs and activities to achieve Outcome 1 are presented in the following.

50. **Output 1.1 Production resilience in agriculture increased and agriculture production diversified:** CARLEP will support promotion of integrated agricultural production and management to achieve this output.

51. Activity 1.1.1 Promoting integrated agriculture production and management: This would include: a) Strengthening existing farmers' groups and establishing new groups; b) Strengthening extension services including lead farmers outreach model and increasing their outreach; c) Support for agricultural inputs, including seeds and seedlings; d) Water-use efficient irrigation development; e) Agricultural systems innovations; and f) Pilot on strengthening local institutions for increased climate resilience.

a. Strengthening existing farmers' groups and establishing new groups: CARLEP will provide support, initially in six eastern dzongkhags, to enhance capacity of existing farmers' production groups on vertical agricultural intensification using a permaculture[49] methodology (see WP 12). Sequencing the planting and emergence of different tree, understory, herbaceous, ground cover, tuber crops, climbing vines and fungi will enable the production of a steady stream of food for household consumption and sale, while improving soil nitrogen, beneficial plant and microbial associations, natural pest management and improved water holding capacity among other synergistic associations. The strategic stocking of vegetation for meeting multiple objectives such as food, fodder, water conservation, soil fertility improvement, pest management and timber availability among others, can generate a much higher volume of goods than is currently produced from a typical Bhutanese farm. Support will also be provided for promoting new farmers' production groups and their capacity development. Development of training and extension materials for such capacity

[49] The term permaculture comes from the combination of "permanent agri/culture". This term was coined by Bill Mollison and David Holmgren in 1978 together with a systematic method for establishing productive permaculture farms in any ecoregion. Permaculture is defined as, "consciously designed landscapes which mimic the patterns and relationships found in nature, while yielding an abundance of food, fibre and energy for provision of local needs" (Holmgren 2013 Essence of Permaculture). Mollison (1991) presented it as the following: "permaculture is a philosophy of working with, rather than against nature; of protracted and thoughtful observation rather than protracted and thoughtless labor; and of looking at plants and animals in all their functions, rather than treating any area as a single product system". Fundamental to this approach is the generation of optimal yields per unit of human or other forms of energy expended. As such, among other principles, a permaculture farm is organised (zoned) in a thoughtful manner to facilitate energy conservation and flow among its different zones (for more detailed information on permaculture please click here).

building activities based on past and ongoing field tests (e.g. SLM project, RNR RDCs) will also be supported.

b. Strengthening extension services and increasing their outreach: CARLEP will support strengthening the existing extension services at the Gewog level through training. In addition the lead farmer model[50] presently piloted under the MAGIP and in Samdrup Jongkhar dzongkhag will be further developed, expanded and prepared for nation-wide scaling-up. The programme will support further development and scaling-up of a lead farmer outreach model (e.g., those already tested by MAGIP-RDC Wengkhar, Samdrup Jongkhar, etc.) to improve the service outreach to farmers nationally (details in WP 15 on Lead Farmers).

c. Support for agricultural inputs, including seeds: CARLEP will support provision of seed kits to farmers' production groups to promote diversification of agriculture to enhance climate resilience and farm productivity.

d. Water use efficient irrigation development: The programme will support development of climate resilient, water-use efficient and financially viable irrigation in the eastern dzongkhags, including renovation of existing major irrigation[51] systems. Programme support will cover technical feasibility studies, preparing climate resilient designs and investment to upgrade 1 202 acres of existing dysfunctional gravity-based irrigation systems in the four southern dzongkhags of the east. Support will also be provided for three pilot lift irrigation systems, including feasibility studies, plans for financial sustainability that include fee structure for O&M, climate resilient designs considering cost and benefits for farmers and the actual construction. The programme will also support the development of enhanced climate-resilient engineering norms and training of district engineers, extension agents and the RNR Engineering division on technical and financial feasibility studies and design and construction of climate resilient irrigation schemes in all six eastern dzongkhags. Training of WUAs in the four southern dzongkhags of the east, including WUAs managing irrigation systems renovated under CARLEP, as per DoA training modules and climate resilience focus will also be supported by the programme to ensure adequate O&M capacity.

e. Agricultural innovations: To strengthen agricultural research and climate resilience CARLEP will support two pilots, respectively, on the use of information and communication technology (ICT) and permaculture as a climate-smart alternative farming system.

The tablet-based e-agriculture focusing *inter alia* on soil monitoring technology developed by Grameen Intel[52] will be introduced in selected Gewogs where the lead farmer model is being implemented, complementing extension services to farmers through ICT. Grameen Intel Social Business Ltd. will provide technical assistance *pro bono* for the research and development phase, including resource persons to develop the research proposal and provide in-country training to participants (4 training events with 2 resource persons over 3 years) for which CARLEP will cover travel and logistic costs. CARLEP will support training of dzongkhag staff, extension agents, lead farmers, RNR RDC research staff and selected staff of the National Soil Centre in the use of this technology in one of the pilot Gewogs, and to procure 100 low-cost hand-held tablets, the software license and a soil test kit[53]. At the MTR it will be decided whether and to which extent scaling-up will be supported.

f. The pilot on permaculture will be led by RDC Wengkhar with technical support from a regional or international permaculture institute. The permaculture institute will develop training material suited for Bhutan and provide on-farm training for RDC Wengkhar and agriculture extension staff. Within a Dzonghkag, about 10 – 12 permaculture demonstration farms will be established along an altitudinal gradient to test the different combinations of crop and floral species suitable for each altitude for creating a permaculture system that generates multiple benefits. Lead farmers with an acre or more of unutilised dryland (rice cultivation is categorised as wetland) will be selected for conversion into productive permaculture plots. While some produce will be generated within the first few years, a stable flow of a diversity of products will be available only after 5 – 6 years. To incentivise the piloting

[50] See MAGIP supervision mission report, Annex 4 'The Proposed Master Farmer Approach: decentralized agriculture extension at the Geog level. MAGIP/IFAD November 2014.
[51] Major irrigation infrastructures are those that has command areas of more than 70 acres
[52] Grameen Intel is already working in Cambodia and Nepal with IFAD projects. However, the actual start of this initiative (called e-Agriculture) in CARLEP will be in consonant with the results of e-pest surveillance being tested by DoA, MoAF, RGoB.
[53] DoA however would like to evaluate the results of its on-going e-pest surveillance (a similar ICT based extension services for pest management) before rolling out the e-agriculture.

of permaculture, lead farmers will be provided with inputs such as planting material (tree saplings, leguminous vegetation, seed, vines, beneficial plant species etc.), poultry (ducks and chickens), basic agriculture implements, materials for building mobile chicken/duck pens, fencing, initial capital of up to US$200 per farm for undertaking soil and water conservation (S&WC) infrastructure work, and a biogas unit. These farmers will also receive cattle on a partial grant basis via the programme component on dairy. Drawing on the results of the permaculture pilot, a scaling up strategy replete with incentive mechanisms and policy guidance for reaching an additional 1000 households will be drafted in year 4 of the programme. It is anticipated that the pilot will have a demonstration affect and allow for a farmer-to-farmer exchange of the permaculture methodology.

g. Pilot on strengthening local institutions for increased climate resilience of smallholders: The programme will pilot an integrated approach to sustainable service delivery to draw lessons for strengthening the national development approach. The pilot will be taken up in a cluster of communities where CARLEP supported value chain development activities are being implemented. It will develop a financial sustainability model for service delivery and O&M of production and service infrastructure by local institutions; steer the programme investments in irrigation scheme upgrading, market infrastructure, etc. with the perspective of sustainable O&M by local institutions; upgrade two short farm roads to climate resilient standards and train the RUG in sustainable O&M; develop capacity of existing farmer groups, WUGs and RUGs to ensure they will be committed and able to maintain the new and upgraded infrastructure supported under CARLEP; and develop adequate O&M models based on existing guidelines (e.g. for irrigation and farm roads) and test the feasibility of community contributions versus paid labour provision for the same. The design and implementation modality of the pilot will be further detailed by the PMO with support from TA (see Appendix 5 for further details).

52. **Output 1.2 Vegetable production increased:** CARLEP will support expansion and intensification of vegetable production by smallholder households. Adequate production volumes and quality standards need to be met for ensuring sustainable value chain and market development. The main thrust of this output is initially to increase vegetable production within high production areas (Gewog-based); the planning for expansion of the vegetable value chain will be undertaken under Outcome 2. The programme will support the following activities in the selected high potential Gewogs:

53. Activity 1.2.1 Expansion and intensification of vegetable production by rural households: This will entail strengthening existing vegetable producers' groups and promotion and capacitating new groups, provision of input support for vegetable production and support for research in seeds and production of seeds.

a. Strengthening existing vegetable producers' groups and promoting and capacitating new groups: CARLEP will support strengthening of the 120 vegetable producers' groups promoted under AMEPP and MAGIP and promote and capacitate 300 new vegetable producers' groups. This will include support for developing training and extension material for groups as well as staff at various levels in the extension network. Training and extension material developed will draw on available best practices locally as well as in similar agro-ecological regions in the neighbouring countries. Besides addressing the technical and commercial aspects of producing vegetables for the market, including climate resilience and environmentally sustainable practices, capacity building will also address issues of group development, group management and democratic governance of groups and leadership skills. Training will be designed and provided by DoA and DAMC in close collaboration with FCBL to ensure smooth transition of production groups into marketing groups and cooperatives.

b. Provision of vegetable production inputs: CARLEP will support provision of drought/heat tolerant vegetable seeds, seeds of companion plants for pest management, 1 900 sets of sprinkler or drip irrigation systems to promote water efficient irrigation and small tools for production and post-harvest operations to vegetable producers' groups. While seeds will be provided free, equipment will be provided on cost-sharing basis with 40% matching grant and by linking farmers to financial institutions to mobilise the balance as loans.

c. Vegetable seed research and production: CARLEP will support field trials and research for identifying vegetable seeds suitable to local conditions and for identifying companion plant species for pest management. This will enable the identification of "species guilds"[54] for promotion of

[54] A guild is a group of species, where each species provides a diverse set of functions that work in combination or harmony. Mutual support guilds are groups of plants, animals and insects etc. that work well together to improve productivity and to build

integrated farming systems. Support will also be provided for developing suitable Package of Practices (PoPs). Seed production will be stimulated as much as possible through training of farmer groups and support to entrepreneur farmers who are members of production groups. In addition, support will be provided to the National Seed Centre at Paro and its regional subsidiary at Trashigang through provision of glasshouses and seed processing units for production of quality seeds.

Output 1.3 Dairy production increased: CARLEP will support expansion and intensification of dairy production in the six eastern dzongkhags to ensure adequate volumes and quality standards of milk are produced by smallholder dairy farmers to ensure the development of a sustainable dairy value chain.

54. Activity 1.3.1 Intensification and expansion of dairy production by smallholder dairy farmers: This activity will entail, the strengthening of existing smallholder dairy farmer groups and creation of new groups, improved service outreach for livestock, support for fodder and feed production, and provision of dairy production inputs.

a. Strengthening existing smallholder dairy farmer groups and establishing new groups: The Programme will support capacity development of 43 existing dairy farmer groups, and the creation and capacity development of 150 new groups. Capacity development will include training on livestock husbandry, including feeding, animal health, housing and hygiene, good dairy farm management practices, hygienic milk production and processing, farm record keeping and accounting, and group dynamics and management. To facilitate capacity development the programme will also support development of training and extension materials for different stakeholders, including DoL officials, extension workers, Community Animal Health Worker (CAHWS), RNR centers, lead farmers and farmers, civil society and private sector entities and other agencies engaged in the dairy sector. Relevant existing materials available locally as well as in neighbouring countries will be collected to develop these training materials.

b. Improved service outreach for livestock: The programme will support development and scaling-up of the CAHWs and lead farmer models to address the critical impediment of inadequate outreach of dairy extension, preventive and curative animal health and veterinary services including fodder development. This would initially be done in the identified dairy intensive areas in 38 Gewogs but may be scaled-up at MTR to other areas (details of CAHW and Lead Farmer Model at Appendix 5).

c. Support for fodder and feed production: The programme will support: i) fodder production in fallow and marginal land through promotion of leguminous species, training on fodder development, use of crop residues and supply of seeds and cuttings for fodder development to groups; ii) training of feed producers on feed formulation and quality control to ensure good quality feed for improved cattle; and iii) development of a joint strategy for dairy development that includes stall/pasture feeding to limit damage to forests by fostering dialogue with DoL, DoF and other key stakeholders.

d. Provision of dairy production inputs: CARLEP will support smallholder dairy farmers' groups by facilitating subsidized purchase[55] of a total of 2 000 crossbred cows, and through the provision of construction material for building improved cattle sheds and small equipment such as machines for chopping fodder. Dairy farmers will be provided 40% subsidy for purchase of crossbred cows, the balance being farmer's contribution as in the case of MAGIP, and linking farmers to financial institutions to mobilise funds to meet their share of the cost. The cost-sharing arrangement will be limited to purchase of one animal per household but in selected cases this may go up to 2 animals per household to hasten commercialization through increasing milk production per household and ensuring availability of marketable surplus of milk throughout the year. The cost of quarantine as well as insurance coverage for the animal for one year will also be borne by the programme. The programme will also provide CGI roofing sheets and cement for construction of cow sheds while farmers contribute local building materials and labour. The programme will support construction of 2 000 improved cow sheds. As some farmers will receive 2 cows, the remaining cow sheds will be for farmers with biogas plants and those who received cows under MAGIP but not a cowshed.

e. The programme will support installation of 800 biogas units. Biogas technology not only facilitates the production of clean energy for cooking thus avoiding fuelwood usage and respiratory

resilience. While leguminous plants add nitrogen to the soil they can also provide high quality fodder for livestock, likewise some plants attract beneficial insects while others repel pests, and when this plant mix is grouped together they form a beneficial guild.

[55] Per current MoAF norms.

and eye diseases caused by exposure to smoke, but also, enables proper household sanitation and production of a high value bio-slurry fertiliser The National Biogas Programme (NBP) hosted within the Department of Livestock has been promoting fixed dome systems ranging in capacity from 4 m^3 – 10 m^3. The following are the costs for the different units: i) 4 m^3 = US$400 – US$515; ii) 6 m^3 = US$560 – US$580; iii) 8 m^3 = US$630 – US$645; and iv) 10 m^3 = US$720 – US$805. Under the current pilot supported by the Asian Development Bank (ADB), a 45% subsidy is provided while the remainder has to be borrowed by the farmer from the bank. Both the grant and loan are currently managed by the Bhutan Development Bank Ltd. (BDBL) and the credit is provided as a collateral free loan. CARLEP will work with the NBP and follow the same implementation modalities for deploying biogas units. The programme will also introduce portable biogas[56] systems given the challenges of transporting brick and mortar to high mountain areas, and finding skilled masons to construct fixed dome biogas systems (see WP 12 for details).

Component 2: Value Chain Development and Marketing (USD 11.6 million)

55. Component 2 focuses on instituting organized value chains and marketing systems by establishing networks of farmer groups to facilitate marketing of vegetable and dairy products to enhance smallholder incomes. FCBL will develop market-led value chains, provide physical agricultural marketing services and with the support of Dzongkhag RNR sectors, identify and put in place required value chain infrastructure. FCBL will also enable other value chain actors to come on board. DAMC will develop marketing groups and cooperatives. Dzongkhag RNR sectors will support production activities in value chains in the dzongkhags and provide necessary assistance to DAMC and FCBL to identify potential locales of production to set up necessary market infrastructure in villages.

Outcome 2: Increased smallholder income from crop and livestock value chains

56. Programme activities will be implemented to produce three outputs, namely; i) resilient vegetable and dairy value chains; ii) commercialized agriculture and farm enterprises; and iii) community-driven market infrastructure. These would contribute to increased incomes for smallholder farmers from participation in commercial farm production.

57. **Output 2.1 Resilient vegetable and dairy value chains developed:** CARLEP will in the first phase support development of vegetable and dairy value chains. FCBL will take the lead to develop value chains and marketing system in coordination with the CARLEP PMO. The programme will support FCBL capacity development and design and implementation of vegetable and dairy value chains.

58. Activity 2.1.1 Strengthening FCBL capacity for value chain development: Originally set up to serve the social mandate of ensuring food security by managing distribution of food commodities, FCBL has now been mandated to also spearhead commercial marketing of farm produce, which include value chain development envisaged in CARLEP. FCBL internal organisation capabilities need to be enhanced[57] to incorporate this new mandate by strengthening staff competences/skills in technical, financial and social fields, and organisation restructuring to effectively carry out both its social (food security) mandate and commercial marketing mandate. This activity would entail design of a strategy and business plan for FCBL and implementation of the strategy.

a. Strategy and business plan development: CARLEP will support provision of suitable Technical Assistance to enable FCBL design an overall organization strategy and business plan for itself, specifically its marketing division. This will include developing skills and systems to account for and allocate costs of service delivery, including for warehouse/ collection center management, FCBL's

[56] IFAD has tested and is taking to scale an innovative portable biogas unit called FlexiBiogas. The FlexiBiogas unit is simpler to install and operate and costs approximately US$480. The unit is a 6m x 3m digester envelope made of high-quality biogas tank material. It is laid on flat ground and housed in a greenhouse tunnel to maintain optimum heat for methane production. Once the system is set up and initiated with about 200 kgs of cattle manure, biodegradable material such as food waste can be fed into this system. About 20 liters of water is required daily for feeding the liquidized manure (about 20 kgs) into the system and methane production is sufficient for meeting cooking energy needs per day of a household of four adults (click here for video).

[57] An analysis of FCBL organisational capacity is available in, "A Review of the Food Corporation of Bhutan (FCB): Overall Performance & Marketing Functions, vis-a-vis Food Security Objectives", Compiled by MoAF Task Force – GB Chettri DoA, NK Pradhan, CoRRB, Kencho Wangdi CoRRB, Pema Khandu, MoEA, Tshewang Norbu, DAMC, 2012; and Operational Improvements Study –Support to the Food Corporation of Bhutan (FCB), Bastiaan Bijl iD Consultancy (Asia), Consultant for World Food Programme (WFP), 2008.

exit strategy and a strategy for building capabilities and an enabling environment for farmer groups, cooperatives and agriculture enterprises to gradually take over the responsibilities to further develop and sustain the value chains. The organization strategy will also comprise a detailed capacity development plan, which addresses institutional, organizational and staffing capacity requirements and goes beyond the traditional 'training' focus. Capacities required for making value chains climate resilient will be assigned a high priority, and training and climate proofing of value chains will be undertaken.

b. Implementation of strategy and plans: The programme will support capacity development as per the capacity development plan at institutional, organizational and staffing levels for marketing related organizational functions. The strategies and plan will be monitored on their relevance and effectiveness and updated as and when required. The capacity development plan will be updated at least on a yearly basis as part of the AWPB development.

59. Activity 2.1.2 Value chain and business plan design and implementation: CARLEP will support the design of value chains and corresponding business plans for both for vegetables and dairy and its implementation. The tasks involved are design of vegetable value chain and business plan, design of dairy value chain and business plan and implementation of value chain plans.

a. Design of vegetable value chain and business plan: Building on MAGIP's successful approach of linking vegetable production to local institutions (schools) and international niche markets, developed under its Vegetable Value Chain Programme in East (VVCP-E), a detailed design of the vegetable value chain and business plan will be prepared by involving all stakeholders, including farmers, input suppliers, traders and marketers. The design will incorporate issues pertaining to backward and forward linkages at all levels in the chain as well as volumes, costs, financing needs and sources and margins. The design will also incorporate issues of **climate resilience** by analysing climate risks and sensitivity to climate related extreme events, mitigation and back-up plans and climate resilient design of infrastructure. Before being finalised, the designs will be discussed at a workshop of all the stakeholders to obtain their feedback. Core elements of the value chain will be identified for direct support from the programme for implementation.

b. Design of dairy value chain and business plan: As in case of the vegetable value chain, a detailed design and business plan will be prepared for the dairy value chain. It will take into account the existing FCBL and DoL infrastructure, networks and experience. The design will address issues of linkages, volumes, costs, financing requirements and sources, margins in the chain and issues of **climate resilience**. The designs will be finalised only after it is discussed at a workshop of all stakeholders and their inputs are incorporated.

c. Value chain implementation, strengthening and expansion: FCBL in close collaboration with DAMC and the departments at dzongkhag and Gewog level will implement the value chain designs and business plans, adapting those to local contexts and dynamics. FCBL will receive support from the PMO and use suitable Technical Assistance, especially on quality assurance, research, design adaptation, stakeholder engagement, business plan development, capacity development of value chain actors, process facilitation and creating change momentum. FCBL with DAMC will facilitate multi-stakeholder collaboration through market visits, buyer seller meets, participatory stakeholder processes, networking, research as well as provision of infrastructure and equipment (Output 2.3). With DAMC, FCBL will also conduct market research/studies to assess the dynamics of existing and the potential new markets within the selected value chains, especially with regard to domestic/export markets and promotion of inter-dzongkhag/regional trade. Engaging the private sector will be a key activity towards reliable and sustainable marketing of agricultural products in the long term. Awareness programs on public-private partnership (PPP) and instituting suitable incentive schemes would be among the activities to bring about private sector participation.

60. **Output 2.2: Commercial farming expanded and new farm enterprises developed:** Support will also be provided to groups and enterprises that work along the vegetable and dairy value chains, such as in input supply, production, processing, and marketing. The programme will support agriculture enterprise development, facilitation of access to finance and development of multi-stakeholder platforms.

61. Activity 2.2.1 Support to agriculture enterprise development: The programme will support building organizational and business development capacities of farmers' (marketing) groups, cooperatives and individual entrepreneurs, particularly of the youth, by DAMC and FCBL. FCBL and

DAMC will, with support from DoA and DoL, identify potential marketing groups from established production groups and entrepreneurs, especially youth and women, with a vegetable and dairy value chain perspective and provide training on group organisation, business planning, finance, including group saving, management, technical aspects, marketing aspects like quantity, quality, size, seasonality, cleanliness, packaging, shelf life, transport and marketing options. General training will be provided through FCBL while service providers will be recruited for specific topics and targeting purposes, e.g. the Youth Media Foundation for youth entrepreneurs, the Bhutan Association of Women Entrepreneurs for women's groups and women entrepreneurs, the SAARC Business Association of Home Based Workers for outreach and training models.

62. Activity 2.2.2 Facilitation of access to finance: The programme will facilitate farmer entrepreneurs' access to institutional finance, social inclusion in producer groups and provide support for market-led production.

a. Facilitate access to institutional finance: The programme will support and enhance accessibility under the agreements (MoUs) between BOiC/BDBL and FCBL as well as MoAF/DAMC to pro-actively link entrepreneurs to these available funding sources to finance enterprise investments. Business interest has been evidenced by both, BOiC and BDBL, to support programme beneficiaries. Nodal Officers in DoA, DoL and DoF will facilitate access to BOiC revolving funds. The programme would further support MoAF/DAMC in the technical appraisal of proposals in line with the complementary programme interventions. Support will also be provided to help cooperatives and individual enterprises develop business and financing plans and proposals to seek BOiC funding, and assisting entrepreneurs with business planning and fulfillment of financial obligations following from the loan obtained.

b. Social inclusion in producer groups: As many poor people are unable to join existing farmers' producer groups due to their inability to match the contributions made by existing group members to the group fund, the programme will support their inclusion by making the required contribution. This will facilitate inclusion of poorer farmers in the value chains being developed.

c. Support for market-linked production: The programme will provide a revolving fund of Nu 50 000 each to farmers' producer groups to support market-linked production by group members based on business plans developed with FCBL assistance and entering into marketing agreements with FCBL. Members will borrow from the group to procure necessary inputs and services for production and repay out of revenues from the sale of produce to FCBL.

63. Activity 2.2.3 Development of multi-stakeholder platforms and networks: The PMO will, with suitable technical assistance where necessary, facilitate the development of value chain actor networks/ multi-stakeholder platforms. These would be forums for production and market information exchange, sharing opportunities for investments along the value chains, addressing key bottlenecks and constraints in value chain development and negotiating and monitoring informal and formal agreements. These platforms will also be used to address specific policy and programme targeting issues, e.g. pro-poor development, engagement of women and youth, environmental sustainability and climate resilience (see also para 72: Activity 3.2.1).

64. **Output 2.3: Community-driven market infrastructure developed:** CARLEP will support FCBL to create value chain infrastructure at the local community level, such as village storage houses, cold stores, small trucks, market sheds, etc. to be owned and managed by communities, farmers' groups/ cooperatives or small entrepreneurs. While the focus during the first phase would be on vegetable and dairy value chains, where possible, a multi-use perspective will be followed in the design to accommodate future value chains and commodities. The programme will support design, construction and supply of necessary infrastructure and equipment for the vegetable and dairy value chains.

65. Activity 2.3.1 Design, construction and supply of value chain infrastructure and equipment: This will include: planning and design of value chain and market infrastructure, development of business plans and setting up Farm Shops (FS) having three major functions, viz. farm inputs outlets, grocery outlets and farm products buy-back outlets (see Appendix 5 and WP 13), investment support in vegetable value chain infrastructure and investment support in dairy value chain infrastructure.

a. Planning and design of value chain and market infrastructure: FCBL will detail business plans and designs of the infrastructure necessary based for the vegetable and dairy value chains.

Infrastructure will be designed based on: i) demand projections; ii) a multi-use perspective; iii) economic feasibility for direct privatization or PPP management models; and iv) climate resilience specifications.

b. Development of business plans for and setting up Three Window Shops (TWS) or Farmers' Shops (FS): The programme will also fund preparation of site-specific business plans for 12 TWS' and construction of these TWS' based on operationally, economically and financially viable business plans. The need for the TWS to ensure better access of farmers to required inputs including seeds, fertilizers and pesticides as well as access to marketing services has been broadly identified in the value chain studies but site-specific viable business plans are needed before investments are made. Operated and managed by FCBL initially, privatised management will be recruited, based on a PPP model, to eventually run and manage these TWS'/FS'.

c. Investment support in vegetable value chain infrastructure: CARLEP will support investment in equipment and infrastructure needed for post-production and marketing activities for the vegetable value chain, such as, packaging of produce, transport to the market place, storage/warehousing and marketing. Based on the vegetable value chain design, the programme will support FCBL to supply marketing equipment[58] such as fridges for schools participating in vegetable contract agriculture and infrastructure[59] for vegetables. Initially, FCBL will also supply packaging materials (crates, bags), etc. to the farmers to promote the use of such materials; these would later be purchased at cost from FCBL by farmers.

d. Investment support in dairy value chain infrastructure: The programme will support investments in equipment and infrastructure for collection, storage, chilling, processing as well as marketing of milk and milk products through retail outlets. Based on the dairy value chain design, the programme will support FCBL to supply to dairy groups necessary equipment, such as improved milk cans. FCBL will also be supported to construct milk processing and marketing infrastructure. While the actual number and specifications of infrastructure units would be decided on the basis of the value chain design, indicatively 90 milk collection sheds, 24 milk collection centres with chillers and 4 dairy processing units fitted with essential equipment have been budgeted.

Component 3: Institutional Support and Policy Development (USD 0.526 million)

Outcome 3: Strengthened Agricultural Institutions and Policies for Improved and Resilient Agricultural and Marketing Practices

66. Climate resilient farming practices require collaboration and proactive communication between various stakeholders, including farmers, researchers and policy makers. Success of value chains, similarly, depends on collaboration and proactive information exchange between the players in the chain. Such practices require an institutional culture that fosters collaboration, legitimizes participatory approaches to engaging with farmers and values partnerships with the private sector. This component is designed to foster such a policy and institutional environment. Collaborative service delivery and increased service outreach, the key elements in the programme, provide an opportunity to institutionalise communication and collaboration between various public agencies and between them and community based institutions and the private sector. Activities under this component will lead to two outputs to realize the objective of strengthening agricultural policies and institutions for robust and resilient agricultural production and marketing. This component will be implemented by the PMO under the leadership of the NPD in close coordination with the IFAD Focal Officer at PPD, MoAF (see para 87) and National Programme Steering Committee (see para 93).

67. **Output 3.1 Value chain and marketing knowledge and communication strengthened:** CARLEP will capture and document knowledge and good practice from programme implementation, especially related to climate resilience, value chain and market development. CARLEP's knowledge products will be broadly shared with programme stakeholders and beyond to ensure leveraging for broader value chain and market development.

68. Activity 3.1.1 DAMC market information system strengthened: The programme will support DAMC to strengthen its existing market information system to ensure that real time market information

[58] Equipment under vegetable and dairy value chains will be owned and managed by farmer groups, schools and FCBL.
[59] Infrastructure under vegetable and dairy value chains will be owned and managed by FCBL, marketing groups, or dzongkhag/geog, as per value chain design; management of infrastructure can be outsourced under PPP.

is made available to farmers. This will include support to expand the variety of information collected and the means of making information accessible and interactive, including the promotion of mobile technology to inform and empower farmer groups.

69. Activity 3.1.2 Curriculum development of RNR training and education institutes: CARLEP will engage with the RNR training and education institutes, e.g. the Rural Development Training Centre (RDTC) in Zhemgang and the College of Natural Resources (CNR) in Lobeysa to develop training materials and curricula that incorporate experiences from innovative and contemporary practices in developing sustainable integrated farming, value chain development, agricultural marketing, enterprise development and extension methodologies, such as CAHWs and lead farmer models. CARLEP will where possible recruit these institutes as training providers and their faculty as resource persons.

70. **Output 3.2: Climate resilience and value chain development lessons mainstreamed in agricultural policies and sector strategies**

71. Activity 3.2.1 Participatory policy development and monitoring: CARLEP will support the MoAF with the development of a multi-stakeholder consultation process for policy development, as well as a participatory monitoring process. Innovative models and approaches supported by CARLEP for participatory and collaborative service delivery will also be applied in the development and monitoring of sector policies, rules and regulations. A feedback and monitoring process to measure the intended and non-intended effects and impacts of the policy will be used to fine-tune policies during implementation.

72. Activity 3.2.2 Mainstreaming climate resilience and value chain development lessons in agricultural policies: CARLEP will support MoAF with a screening of existing agriculture policies on their climate resilience as well as on how to strengthen/adapt them or for introducing new evidence-based policies drawing on lessons learned from the programme in areas such as, sustainable integrated farming practices; CAHWs and lead farmer models; enhanced irrigation engineering norms that contend with climate change; climate resilient value chain development and marketing; the new institutional role of FCBL; and engagement with training and education institutes.

73. Activity 3.2.3 Developing a conducive regulatory framework for private sector development and Public Private Partnership: Engagement with private sector in value chain development is important for agriculture enterprise development, employment and stimulating private investments. However, a policy environment to encourage private sector participation needs to be accompanied by a regulatory framework to stimulate competition and inhibit negative environmental and social externalities of businesses. MoAF will be supported to strengthen the PPP regulatory framework in Bhutan.

Component 4: Programme Management

74. The **programme management** responsibility for providing core staff is with MoAF, RGoB. Important functions of programme management will also include gender mainstreaming, monitoring & evaluation **and knowledge management.** The key M&E functions will include conducting baseline survey, vulnerability assessment, endline survey, annual outcome surveys, RIMS, MTR, PCR and special studies besides coordinating for IFAD's supervision and implementation support missions (this section may be read with Appendix 4, 5 & 6).

D. Lessons learned and adherence to IFAD policies

75. The programme design incorporates the **lessons learned** from previous and on-going projects in Bhutan, particularly the IFAD supported projects. As CARLEP is designed to complement and accelerate market focused production of agricultural commodities, the following key lessons from AMEPP and MAGIP are of particular relevance (see details in Appendix 3):

(i) Poverty targeting: Poverty targeting has been effective in AMEPP. The proportion of poorest households came down from 38.5% in 2006-07 to 11% in 2012 due to project interventions. Building on AMEPP's experiences, CARLEP will build on and strengthen the existing poverty and vulnerability targeting. MAGIP showed that vegetable cultivation and dairy production offer good poverty targeting potential and CARLEP will use these lessons in Gewog selection for value chain development.

(ii) Gender mainstreaming: MAGIP is currently implementing its gender mainstreaming strategy with encouraging results. Some of the main features could be well replicated in CARLEP, while CARLEP will draw further lessons for its vulnerability and gender sensitive value chain development approach (see Appendix 2).

(iii) Marketing system weaknesses: Experience from AMEPP and MAGIP shows that farmers' incomes can be enhanced significantly by combining strategies to raise productivity and production at the household level with proactive marketing support to ensure remunerative prices. This offers key opportunities for CARLEP to build on as the absence of an organized, nation-wide marketing system has so far inhibited farmers from taking up commercial production and taking advantage of inter-regional markets.

(iv) Value chain approach and marketing: MAGIP promoted a value chain approach with a focus on marketing. However, it was not specifically designed around selected value chains but comprised of different elements of the value chain designed and implemented in a fragmented way. Where a value chain approach was developed and applied within MAGIP, as in collaboration with SNV for the localised vegetable value chain, the approach was very successful with great potential for scaling up.

(v) Farmer organisation: There is a need to move from informal loose farmer groups to formal collectives to facilitate joint decision making, shared investments to scale up group production, processing and marketing and shared responsibility for the functioning of the organisation.

(vi) Extension services for remote communities: MAGIP design states, "*Despite the best will of most extension workers, reaching out to remote communities remains a challenge*." One of the ways MAGIP sought to increase the efficiency of extension staff and widen the coverage of extension services was by organizing farmers and Farmers' Field Schools (FFS), though the FFS approach could not be successfully be developed. An assessment by SNV showed that development and implementation of such models, notably the CAHW model, by district administrations suffers because of being driven by input disbursement and budget expenditure targets.

(vii) Lead farmers and Farmer Field Days approach: The MAGIP supervision mission report of November 2014 highlights the usefulness and appropriateness of the lead farmer model and recommends its further development under CARLEP. Samdrup Jongkhar dzongkhag has successfully developed an extension approach with increased outreach and improved implementation using "farmer promoters" (expert farmers) in Gewogs and Farmer Field Days with continuous follow-up trainings to demonstrate and share sustainable farming knowledge and practices. This model has proven to be feasible and successful and offers great potential.

(viii) Climate Smart Agriculture: MoAF has developed guidelines/manuals for proven Sustainable Land Management (SLM) practices which can be up-scaled nation-wide. SLM practices and research results on climate resilient crops and adapted cropping patterns are also available from research institutes and other donor-funded projects (such as Samdrup Jongkhar Initiative, SNV, Helvetas and the Tarayana Foundation), which can be dovetailed and up-scaled through CARLEP.

(ix) Water User Associations and Road User Groups: The MAGIP supervision mission of November 2014 reported that the 69 Water Users Associations promoted are generally not functioning optimally despite much training. The main issue with farm road sustainability, as noted by the mission, is related to the effectiveness of the 55 Road User Groups. Most RUGs seem unclear about their responsibilities as communities are clearly unable to fund the clearance of major landslips in the years following construction. Modalities and capacities for community O&M of infrastructure is therefore a major constraint in sustainability of service delivery and capital investments.

(x) Inadequate project management structure: Considering the limitations with the project set-up during AMEPP, the MAGIP project management office was based in Thimphu. This limited the opportunity for sector managers and project officials to frequently interact and oversee the project implementation in the field.

(xi) Fragmented approach to planning and implementation: Drawing on the lessons from AMEPP, MAGIP took a focused geographic targeting approach in terms of identifying Gewogs within project dzongkhags. However, the project interventions were spread across Gewogs based on equal share, which resulted in low investments per Gewog, diluting the overall impact of the project.

(xii) Weak learning and institutionalization of proven practice: One of the weaknesses with MAGIP was inadequate monitoring and reporting on impact/outcome level of project interventions, as well as on documenting and mainstreaming good approaches and practices.

76. CARLEP is in line with **RGoB's** 11th Five Year Plan (11FYP), covering the period 2013-2018. Poverty alleviation (targeted poverty intervention) and social development (reaching the unreached) are the overarching themes of 11FYP. CARLEP will contribute specifically to expand agriculture service outreach to the more remote and vulnerable populations and to increased resilience of smallholders to climate change and shocks, addressing key objectives of the 11FYP.[60] The 11FYP incorporates strategies to promote economic opportunities in critical sectors such as agriculture and rural industries/ enterprises within a decentralized framework. The MoAF has developed a strategy of market-led agriculture development to facilitate the transition from subsistence to commercial agriculture. MoAF will ensure an enabling environment and promote private sector participation and contract farming as part of its strategy and has directed FCBL to take the lead in this.[61] The programme is designed to support successful implementation of this important MoAF strategy.

77. The programme conforms to **IFAD's** targeting policy[62] of reaching the rural poor and the strategic framework of empowering the rural poor, men and women alike, to improve their incomes and food security. The programme would provide support to poor subsistence farmers in remote geographies to enhance agricultural production and opportunities to market their produce through an organized marketing system, thereby improving their livelihood. The proposed support of instituting an organized national marketing system is well aligned to IFAD's private sector development and partnership strategy as this will entail engagement of smallholder farmers and private sector enterprises throughout the value chains for the crop and livestock commodities identified for development. CARLEP will not only capitalize by building on past investments in infrastructure, capacity development and other allied production and marketing structures but also allow for scaling-up to other areas.

78. The programme is also in line with **ASAP** objectives and guidelines. Key elements of climate change are clearly addressed in the country analysis and the programme has integrated climate change in the programme goal/outcomes and areas of intervention as a starting point for a comprehensive and holistic view on climate change consequences for smallholder target groups and on how climate change can affect and inform all proposed programme interventions. The proposed interventions in terms of increasing resilience through technology and (local) institutional strengthening provide a medium to longer-term outlook while addressing development challenges smallholders currently face e.g. climate variability (unpredictability), water scarcity, soil erosion and depletion, as well as lack of access to livelihoods diversification opportunities, including income from marketing produce.

III. Programme implementation

A. Implementation approach

79. The approach to programme implementation includes: (i) market-led, climate-resilient agricultural diversification with intensification and expansion of vegetable and dairy value chains and marketing; (ii) strengthening and establishing farmers' production and marketing groups/cooperatives including local institutions for resilient agriculture, water-smart irrigation and marketing; (iii) facilitating agriculture and marketing institutional support and policy development; (v) providing need-based TAs for programme planning, implementation, monitoring and policy development, including capacity building of extension and key service providers and participating agencies. The implementation will follow an inclusive approach, ensuring that all households residing in selected villages will form the target groups but special emphasis will be given to the inclusion of women, youth and poorer households.

[60] The 11FYP states, "*While it is projected that Bhutan will be graduating from the list of Least Developed Countries (LDCs), based on the income criteria, it remains below the graduation threshold on the Human Assets Index (HAI) and Economic Vulnerability Index (EVI)... EVI challenges include a small population size, being geographically remote and landlocked, instability of exports of goods and services, high vulnerability to natural disasters and instability of agricultural production.*" See RGoB, Eleventh Five Year Plan - Main Document Volume I, Page 5.
[61] Eleventh Five Year Plan - Main Document Volume I, Page 18.
[62] See Appendix 12 (read with Appendix 2 and WP 8).

80. The programme will adopt a flexible, non-prescriptive, process-oriented approach to enable the primary stakeholders to determine the scope of programme activities aimed at agricultural and livestock diversification for climate adaptive resilient livelihoods, though vegetable and dairy intensification would follow a more selective approach for value chain and marketing development. The programme will predominantly concentrate in the eastern region of the country, though vegetable and marketing value chain would be countrywide covering the southern region post-MTR. The programme approach will also involve testing of innovation such as e-agriculture using ICT and promotion of permaculture, besides regular supervision and evaluation of performance.

B. Organizational framework

81. **Programme implementation responsibility**: The RGoB **Ministry of Finance (**MoF) as the borrowing ministry will be the nodal agency to review and monitor the programme. It will designate a focal officer (FO) for IFAD in the Department of Public Accounts (DPA), responsible for coordinating with PMO/MoAF and IFAD for smooth fund flow, disbursements, preparing consolidated financial progress reports, clearing Withdrawal Applications and facilitating operation of the Designated Accounts. The FO will participate in programme review meetings, meet with supervision missions and participate in mission wrap up and other meetings to discuss and resolve fund related issues. The RGoB **Ministry of Agriculture and Forests (MoAF)** will be the **Lead Programme Agency** (LPA), with overall responsibility for the programme and specific responsibility for achieving programme results under Outcomes 1 and 3. It will provide policy guidance and direction, make required technical staff available from their pool of civil servants for implementation, provide technical backstopping through its line departments and agencies in the field and ensure stability of the staff deputed in CARLEP, particularly the National Programme Director, key sector managers and finance staff.

82. **FCBL** is the implementing partner for Outcome 2, responsible for achieving programme results, specifically in Outcome 2, as well as for supporting overall programme results. The FCBL Value Chain and Marketing Manager will be delegated the responsibility by the Chief Executive Officer (CEO) of FCBL to implement the programme. The Value Chain and Marketing Manager, based at the Programme Management Office, will coordinate with FCBL CEO on CARLEP implementation and Outcome 2 management issues, while as part of the PMO team, will also closely coordinate with and report administratively to the CARLEP NPD. FCBL will be overall responsible for setting up facilities and modalities for physical marketing of agricultural produce. In coordination with the DoA and appropriate MoAF agencies, FCBL will also be responsible for providing agricultural/farm inputs through its Farm Shops (FS) [Appendix 5; WP 13] and enabling support to ensure production on commercial scale. FCBL will open and operate **Programme Accounts (or Programme Letter of Credit Accounts)** for eligible expenditure from PMO and will prepare and submit related financial expenditure and physical progress report to PMO based on AWPB. They will also document good practices and actively participate in knowledge management activities and share/disseminate learning across the Programme. FCBL will execute a subsidiary agreement with CARLEP.

83. **Organizational framework and staffing**: The overall responsibility for CARLEP implementation will be with the **Programme Management Office (PMO)**. Drawing lessons from AMEPP and MAGIP, the PMO for CARLEP and implementation staff[63] will be located in the programme area in the east, in a separate programme office in Mongar. The PMO will function as a separate unit under the direct administrative control of Secretary, MoAF for the programme duration. A **liaison office**, under the direction of the PMO, will be established in the MoAF Secretariat within PPD at Thimphu (see Appendix 5).

84. The PMO will be led by a National Programme Director (NPD), a senior officer from MoAF with service grade preferably close to or one step lower to Dzongdas. The staffing of the PMO is presented in Table 2 (see Appendix 5 for details). The full time Managers/Officers, located at the PMO, would be from different departments or agencies of the MoAF. The Managers/Officers will take the lead role in implementation and reporting progress to the Planning, Monitoring & Evaluation (PME) Officer. The PME Officer should be someone familiar or experienced with PLaMS as CARLEP's M&E system will largely integrate with PLaMS as mandated since 11FYP (2013-2018). There will be a Gender and Knowledge Management (KM) Officer. All Component Managers will also be responsible both for gender and KM functions of the PMO. A full time Finance Officer responsible for Finance, Accounts &

[63] As identified in Table 2

Procurement should be appointed in the PMO, to be assisted by an Accountant. It should be ensured that finance personnel are not transferred till the programme implementation is completed. Change of finance personnel during implementation affects the implementation progress and performance as new finance officer has to be trained on IFAD financial & procurement systems.

Table 2: CARLEP Programme Management Office staffing

Sl no	Positions	No of positions	Remarks
	PMO at Mongar		
1	National Programme Director	1	RGoB
2	Finance Officer	1	RGoB;
3	Accountant	1	Contract;
4	M&E and Gender Officer	1	RGoB
5	Asst. KM, Gender and M&E Officer	1	Contract
6	Support officer	1	Contract
7	Component Manager (Agriculture Production)	1	DoA, RGoB;
8	Component Manager (Livestock Production)	1	DoL, RGoB;
9	Manager (Value Chain (VC)& Marketing)	1	FCBL;
10	Office Assistant	1	RGoB
11	Drivers	2	RGoB
	Liaison Office, Thimphu		
12	IFAD Focal Officer at PPD, MoAF	1	Designated from PPD, MoAF
13	IFAD Focal Accountant at AFD, MoAF	1	Designated from AFD, MoAF
	Total staff	14	

85. The staff at the **CARLEP Liaison Office**, Thimphu will report directly to the NPD at the PMO and will consist of the IFAD Focal Officer in PPD and a designated Focal Accountant for CARLEP at AFD of MoAF. The IFAD Focal Officer in PPD of MoAF secretariat will be overall responsible for Component 3 (institutional strengthening and policy development) in addition to coordinating functions such as supervision missions and other policy related issues while a focal finance officer at AFD will facilitate smooth fund flow ensuring proper furnishing of withdrawal applications and follow up with MoF on other fund related issues. The unit will also liaise with various agencies of RGoB and other external agencies based in Thimphu as may be required for CARLEP as per Component 3. The CARLEP PMO will closely work with National Environment Commission (NEC) on its climate change mandate, GNHC, the BDBL and BOiC regarding access to finance and the Ministry of Economic Affairs regarding private sector and entrepreneur development, as well as trade.

86. **Capacity Development, Service providers and Technical Assistance:** CARLEP will require technical assistance based on needs identified in the design (for climate adaptation and for FCBL) as well as emerging needs during implementation. The programme has thus an in-built provision for Technical Assistance and service providers that will be detailed as part of programme implementation. An overview of identified areas for TA and service providers is presented in Appendix 6.

87. **PMO's responsibility for implementation** include the programme start-up and other IFAD requirements such as Annual RIMS Report, baseline and impact surveys, Annual Outcome Surveys (AOS), Annual Work Plans and Budgets (AWPB), Annual Progress Reports, Statements of Expenditure (SOE), Withdrawal Applications (WA), Audit, etc. The PMO will be overall responsible for coordination of programme planning, implementation, progress monitoring, knowledge generation, funds allocation and disbursements to implementing agencies and reporting results to RGoB and IFAD, besides also sharing knowledge and learning with key programme partners.

88. **Gewog and Dzongkhag Administrations.** The Gewog administrations are the grassroots level implementing entities. The selection of the Gewogs will follow the design and planning of the respective value chains (Outcome 2), and is thus dependent on the value chain designs for vegetable and dairy in the six eastern dzongkhags (Lhuentse, Trashiyangtse, Trashigang, Mongar, Pemagatshel and Samdrup Jongkhar), as well as the vegetable value chain design in the three central-south dzongkhags (Tsirang, Sarpang and Zhemgang) and one west-southern dzongkhag (Chhukha). However, Component 2 will in principle be countrywide and will in the second phase (pending the MTR) also be implemented in other areas in the country where FCBL has comparative advantage and agricultural products from the programme areas would have direct benefit for linking rural agricultural production with urban marketing facilities.

89. Field activities will be planned, coordinated, implemented and supervised with full involvement of the Gewog Tshogde, Gup, Gewog Administrative Officer (GAO), Gewog Extension Agents (EA) and Tshogpas, with close support and dzongkhag level coordination guidance from District Officers, particularly District Agriculture Officers (DAO), District Livestock Officers (DLO) and District Engineers (DE). Gewogs will therefore take the lead in close coordination with dzongkhag sector staff with, *inter alia*, (a) identification of most suitable activities and sites (village or farmers groups) for programme investment; (b) inputs/preparation for district level AWPB; (c) management of inputs supply including supervision of implementation and progress of activities, technical backstopping and training of Gewog staff; (d) progress monitoring including data collection and data validation to feed into the PMO M&E systems; (e) work closely with other district officers such as District Planning Officer, Finance Officer and other entities like RAMCO and FCBL, etc.; and (f) contribute to the knowledge management functions of the programme through documentation of good practices and capturing lessons learned.

90. The **District Planning Officers** (DPO) will assist sector staff in preparing dzongkhag level AWPBs and progress reports and will work closely with the PMO PME unit in the operation and entry of data relating to CARLEP activities in the district level PLaMS. The **District Finance Officers** will manage the **Dzongkhag Programme Letter of Credit Accounts** and prepare the required financial reports in close collaboration with the Gewog Administrative Officer and submit to the PMO.

91. **National Programme Steering Committee (NPSC).** CARLEP will have a national-level Programme Steering Committee which will meet at least half-yearly (and/or quarterly if required) and will provide policy directives to facilitate implementation at the field level and give guidance to the programme management. The NPSC will also endorse the AWPB and serve as platform for discussion and resolving issues. Secretary, MoAF will chair the NPSC. Other NPSC members will include CEO or nominee of FCBL, DG Agriculture, DG Livestock, Director DAMC, Director DLG, Director DPA of MoF, and representatives from collaborating development partners and Civil Society Organizations. The NPD CARLEP will be the Member-Secretary of the NPSC.

92. **Regional Programme Implementation Committee (RPIC).** MoAF will also establish a Regional Programme Implementation Committee for CARLEP. The RPIC will steer synchronization of AWPB and implementation at Gewog, dzongkhag and regional level to enable combining of some dzongkhag level activities and sharing experiences for possible replication in other areas. The RPIC will be composed of the Dzongdas of the programme dzongkhags, two nominated Gups representing Gewog level implementation, representatives from FCBL and DAMC/RAMCO, Regional Directors of various MoAF agencies and representative from collaborating development agencies and Civil Society Organizations.

93. **Dispute settlement and grievances arrangement.** In case structural programme management arrangements need to be clarified or modified, or in case of disputes arising from programme implementation, any affected party (implementing parties as well as beneficiary organizations) can request NPSC for resolution. If a mutually acceptable resolution cannot be found by the NPSC, the matter may be referred to the Minister of MoAF who may decide on a resolution or on a further resolution arrangement, including the existing grievance procedure at the Prime Minister's Office.

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

94. Planning and M&E processes are detailed at Appendix 6. Mutually agreed CARLEP activities in each Gewog will be agreed in AWPBs and taken up in the respective Gewog and dzongkhag plans, will be endorsed by Gewog Tshogde (GT) and Dzongkhag Tshogdu to form the annual Dzongkhag plan. At the dzongkhag level the Dzongkhag AWPB will be further consolidated at PMO as the PMO AWPB. Since CARLEP programme activities will be formally part of Gewog and dzongkhag plan, programme activities will be reflected in the Government's PLaMS and are thus to be considered as 'normal' annual plan activities. FCBL, DAMC/RAMCO and individual service providers will provide their own work plan and budget to be fed into the PMO AWPB. PMO PME Officer will take the lead role in coordination with the PMO sector managers, who would in turn coordinate with Dzongkhag Officers. The AWPB will be endorsed by the PSC for implementation and used for monitoring CARLEP performance and progress.

95. The PMO will also develop a Gender Mainstreaming Strategy and prepare an action plan for integrating gender into programme activities. The PMO will also develop a Knowledge Management (KM) strategy and action plan and a 'learning system' (Appendix 6). The KM strategy and learning system will include a learning and scaling-up strategy. Knowledge products will be developed through regular progress review meetings and the generation of knowledge products, such as newsletters (in English and local languages or use existing newsletter of MoAF as in MAGIP or IFAD Newsletter including UN Newsletter), briefs, training materials, technical manuals, booklets, posters, videos, etc. Special effort would be made to prepare audio-visual and pictorial training and learning materials on key programme activities for unlettered programme participants, besides undertaking community to community (C2C) learning practices and culture and policy dialogue events. A website will be established (or existing MoAF website used) as a knowledge sharing tool, with information on good practices and innovations also posted on the IFAD Asia website.

96. The PMO will establish an M&E unit **and develop the M&E system**, which will support progress monitoring by the field implementation units and participating organisations such as FCBL, service providers and others. The M&E system will harmonize with RGoB's PLaMS as mandated for all projects from 11FYP onwards. The PMO M&E unit will ensure that all the outputs, outcomes and impact indicators of CARLEP are dovetailed in the PLaMS for regular monitoring and evaluation. Additionally, the PMO M&E unit will design formats to capture and collect critical data not captured by PLaMS and for data from the field level, drawing on lessons from MAGIP as per IFAD as well as programme management requirements. The PMO will also collect progress status and reports of farmer groups and cooperatives to assess progress in production and marketing and capacity status.

97. The PMO will play an important role in monitoring Logical Framework assumptions and risks and will ensure that relevant stakeholders address any issues that could jeopardize CARLEP's success. The PMO M&E unit will carry out annual outcome surveys (AOS) to measure changes as a result of programme interventions to provide a rapid feedback on progress towards programme objectives. The PMO will also initiate community meetings and social audits with communities, dzongkhag staff, FCBL and other stakeholders to assess progress and to identify support demand. Baseline and end-of-programme impact surveys would be contracted to an external agency to assess the contribution of CARLEP in achieving its overall goal. This will include collecting IFAD's Results and Impact Monitoring System (RIMS) '*anchor indicators*' relating to household assets, food security and child malnutrition. The vulnerability and baseline survey will be undertaken in June-July 2015[64]. All data will be sex-disaggregated.

D. Financial management, procurement and governance

98. Funding of the Programme. The programme will be funded from six sources, IFAD Financing, an ASAP grant, RGoB and FCBL counterpart financing and community contributions. The **programme cost is USD 31.588 million** over a period of seven years, from 2015 till 2022. The contribution of **IFAD to the CARLEP is USD 9.3 million**, comprising of an IFAD PBAS09 (2015-2018) loan allocation of **USD 8.250 million**, an IFAD grant allocation of **USD 1.050** million and an additional grant from the Adaptation for Small-holder Agriculture Programme (ASAP) of **USD 5 million**. A financing gap in the amount of approximately **USD 6.0 million** to be expected to be covered by the IFAD11 PBAS (2019-2022) cycle or through co-financing subject to availability of funds, and priorities of the RGoB's 12th Five Year Plan. In addition, programme contributions are provided by beneficiaries to the extent of **USD 0.659 million** (in cash for cross-bred cattle (70% cost of cattle as per existing RGoB policy) and equipment and in kind for shed construction), by the RGoB **USD 5.77 million** and by Food Corporation of Bhutan Ltd (FCBL) **USD 4.802 million.** The resources from FCBL and RGoB as counterpart funding at the Programme level would mainly be the salary costs of the staff on deputation, selected core programme activities and taxes. While IFAD loan would be used for programme (component financing) including salary of staff recruited from open market and other programme management costs, including M&E, gender and KM, IFAD grant would mainly be used for capacity building activities. The ASAP grant is fully utilised for strengthening smallholder resilience. The Programme will track each of the components of the counterpart funding separately for reporting purposes. CARLEP may follow the established financing norms and procedures of MAGIP, unless specified otherwise.

[64] MoAF may identify a focal person for this purpose who is also likely to continue in CARLEP when it becomes effective by end-2015.

99. **Lending terms.** The IFAD loan financing to the programme will be on blend terms and subject to interest on the principal amount outstanding at a fixed rate of 1.25% per annum plus a service charge of 0.75% per annum and shall have a maturity period of 25 years, including a grace period of five years from the date of approval by EB. The responsibility of repayment of principal, interest, service charge and foreign exchange risk rests with the RGoB.

100. **Financial management.** The FM assessment concludes that the arrangements at MoAF level are adequate. In view of low country fiduciary risk and IFAD positive experience on programme financial management with the Implementing Entity for MAGIP, CARLEP will use the country PFM Systems to the extent these are consistent with the IFAD guidelines and procedures. The overall budget for the Programme will be specified in the Financing Agreement, whereas the annual budgeting will be done in line with RGoB's existing budget framework and budget calendar as part of MOFA's regular budget submission. Programme implementation will follow RGoB's PLaMS as mandated since 11FYP (2013-2018), as well as RGoB's Finance Manual and the financial reporting formats of RGoB and IFAD's norms as mutually agreed per existing practices in MAGIP.

101. **Subsidiary agreement**. As RGoB's funds and IFAD financing will be transferred to the implementing agencies viz. FCBL, the dzongkhags and DAMC/RAMCO through PMO, the CARLEP PMO will enter into a Subsidiary Agreement with each organization receiving programme funds in accordance with IFAD guideline and procedures. Among other things, the provisions of the Subsidiary Agreement should include (i) declaration by the recipients of funds of their commitment to the goal and objective of the Programme and agreement, in furtherance of such goal and objective, to carry out the Programme in accordance with the Financing Agreement and with the Programme Agreement; (ii) procedures for preparation of annual plan and fund flow arrangements (iii) physical and financial reporting requirements (iv) auditing and submission of Programme Financial Statements (v) adherence to IFAD Procurement Guidelines and approved Procurement Plan; (vi) using bank interest earned for eligible expenditures and (vii) applicability of IFAD Policy on Fraud and Anti-corruption.

102. **FM staffing and responsibilities.** A Finance Officer and an Accountant will be appointed in the PMO, FCBL, the dzongkhags and DAMC/RAMCO, respectively. The Finance Officers/Accountants will be responsible for the management of CARLEP funds and reporting to the PMO. The PMO will be responsible for overall management of programme finances and accountable to the NPSC, and will maintain a full set of accounts in accordance with the international public sector accounting standards (IPSAS). FCBL, dzongkhags and DAMC/RAMCO will be responsible for financial management at their respective level, and will maintain a full set of accounts at their respective level in accordance with IPSAS. The Liaison Office in Thimpu will have a designated Focal Accountant for CARLEP at AFD of MoAF who will serve to facilitate the movement of financially related paper-work and serve as a back-up to the Accountants at the PMO.

103. **Budgeting.** The PMO will consolidate the annual work plan and budget (AWPB), including annual action plans from FCBL, the dzongkhags and DAMC/RAMCO and obtain PSC approval for the same. PMO will obtain IFAD 'no objections' on the AWPB and Procurement Plan approved by PSC. PMO will incorporate the approved budget net of beneficiary contribution and other funds from the RGoB as a line item in its budget for any administrative sanction as per RGoB norms or as practiced in MAGIP.

104. **Disbursement arrangements and flow of funds.** In accordance with Section 4.04(d) of the General Conditions, the Borrower/Recipient is required to open three bank accounts (the **Designated Accounts**) denominated in United States Dollars (USD), to be opened and maintained in the Central Bank (Royal Monetary Authority of Bhutan) designated to receive IFAD Loan, IFAD Grant and ASAP Grant resources, respectively, in advance, as soon as possible after entry into force of the Financing Agreement. IFAD financing to the Programme will be routed through these Designated Accounts. The Department of Public Accounts (DPA) in the Ministry of Finance will administer the Designated Accounts. IFAD will establish an Authorised Allocation for initial advance.

105. In accordance with Section 3.1 of the LDH, the Designated Accounts will be administered following Imprest Account arrangements. Advances from this Financing must be segregated from other funds for the Programme. Programme Accounts in BTN shall be opened and maintained by the PMO, FCBL, relevant District Programme Management Offices, respectively, in commercial banks

acceptable to IFAD to receive the proceeds of financing from the Designated Accounts. FCBL, the dzongkhags and DAMC/RAMCO will maintain separate books of accounts for each source of funding.

106. **Start-up Costs**. Withdrawals in respect of expenditures incurred from the IFAD Loan/Grant account for start-up of the programme, such as preparation of the PIM, installation of accounting software for FCBL and training after the entry into force of the Financing Agreement and before the satisfaction of the conditions precedent to withdrawal shall not exceed an aggregate amount of twenty five thousand Special Drawing Rights (SDR 25 000). Any unused balance of the start-up advance will be considered as part of the initial advance under the authorized allocation/s.

107. **Submission of withdrawal applications (WA)**. PMO will prepare and submit to IFAD the WA once every quarter or after incurring expenditure up to 30% of the amount of the Designated Account, whichever is earlier, through the DPA. As in MAGIP, all financing and loan service payments shall be exempt from all **taxes**, and all loan service payments shall be made free and clear of taxes.

108. **Accounting systems, policies, procedures and financial reporting.** Accounting and financial reporting for the IFAD funding will follow existing National Accounting Standards on cash basis accounting in line with IPSAS, including the Chart of Accounts, internal approval processes and payment vouchers. The Chart of Accounts for FCBL will be synchronised with the chart of accounts for the programme in the PEMs to facilitate future data migration. The Liaison Office at MoAF will be responsible for consolidating the accounts of the FCBL and the district offices with its own accounts. In accordance with Section 7.02(b) of the General Conditions, the financial accounts of CARLEP will be maintained through computerised accounting software (MYRB[65] and PEMS[66] as in MAGIP) at all levels, customised to generate financial reports for the RGoB and IFAD specific reporting requirements.

109. FCBL, the dzongkhags and DAMC/RAMCO will submit the Monthly Financial and Physical Progress Report to the PMO electronically. PMO will prepare annual consolidated financial and physical reports, including data provided by FCBL, the dzongkhags and DAMC/RAMCO.

110. **Internal controls and internal audit**. The programme's internal controls will be set up to ensure operational efficiency, reliability of reporting and compliance with requirements. Roles and responsibilities will be aligned to programme objectives. This will include the control environment, risk assessment, communication and monitoring to ensure good governance. The programme implementation manual and financial manual will detail the control framework. Procedures and record maintenance at the PMO and dzongkhags will follow the norms practiced in MAGIP. Introduction of accounting software, preparation of a Finance Manual with guidance notes and above all, capacity building of the finance staff are important. The system of joint signatory for operating the bank accounts or appropriate authorization processes may be introduced. Internal control system of dzongkhag accounts would be done by PMO. As the PMO will be a part of the MoAF, the Administration and Finance Division (AFD) of MoAF will undertake Compliance and Performance Audit of the PMO if deemed required.

111. **External audit**. The Royal Audit Authority (RAA) of RGoB has the mandate to audit all foreign funded loan programmes, following standard and specific donor requirements by the International Organization of Supreme Audit Institutions (INTOSAI). The external auditing arrangement for CARLEP thus will be established by the RAA, as is done under MAGIP. PMO will coordinate with RAA for timely completion of the audit and PMO will ensure timely submission of the audit report to IFAD, namely, by six months (or by 31 December each year) from the date of closure of the financial year.

112. **Governance and transparency framework**. IFAD's applies a zero-tolerance approach in cases where investigation determines that fraudulent, corrupt, collusive, or coercive actions have occurred in programmes financed through its loans and grants. The Corruption Perception Index of Bhutan published by Transparency International has improved from 5.7 in 2011 to 6.3 (ranking 31/175) as the 31st least corrupt country in the world. Programme design includes several measures to promote transparency: (i) autonomous central PMO, FCBL, relevant District Programme Management Offices, operating on the basis of good governance; (ii) mechanisms for regular internal audit at PMO and Programme implementing offices' levels; (iii) annual independent audit; (iv)

[65] Multi-Year Rolling Budget (MYRB)
[66] Public Expenditure Management System (PEMS)

verification of fiduciary compliance during supervision; (v) independent impact assessments; (vi) more efficient public financial management systems and ensuring transparency by strengthening state oversight institutions. (vii) Finally, communities will be involved in decision-making, planning, implementation and monitoring, as documented in this report.

113. An **assessment of the national procurement systems** was done during the appraisal mission[67]. In line with the provisions of the IFAD General Conditions, procurement of goods, works and services financed by IFAD loan and grant resources under Component 1 and 3 shall be carried out in accordance with the provisions of the Royal Government of Bhutan notified Procurement Rules & Regulations (revised June 2014) and under Component 2 shall be carried out in accordance with the provisions of FCBL Procurement Rules and Regulations, to the extent such are consistent with the IFAD Procurement Guidelines. The assessment of the RGOB PRR and FCBL PRR revealed significant differences in the threshold limits between the two. It may not be advisable to adopt a common threshold the two implementation partners. Hence it is recommended that each will follow their own PRR for components they are responsible for. The major procurement actions by FCBL relate to goods procurement (rice, oil, consumer goods) and works (godowns, market yard, etc).

114. **Procurement of goods, works and services** under CARLEP financed from resources provided or administered by IFAD will be undertaken in accordance with IFAD's *Procurement Guidelines and Handbook* (September 2010) and as amended from time to time as an exception to the provisions of the General Conditions.

a) All procurement for goods, works and services financed from resources funded or administered by IFAD require bidding documents and the contracts to include a provision requiring suppliers, contractors and consultants ensure compliance with IFAD zero tolerance to anticorruption policy and to permit IFAD to inspect their accounts, records and other documents relating to the bid submission and contract performance, and to have them audited by IFAD-appointed auditors.
b) PMO will put in place a strong framework for preventing corrupt and fraudulent practices in the procurement under the programme. All bid documents and request for proposals will include the provisions of IFAD's anti-corruption policy.

115. Procurement will be as per the Consolidated Procurement Plan submitted by PMO and approved by IFAD. PMO will submit a 18-month Procurement Plan immediately after the programme enters into force and in the subsequent programme years submit an annual 12 month Procurement Plan. A draft indicative 18-month procurement plan is included in the Annex for guidance, which may further be revised by PIU, as appropriate and necessary. IFAD review of and no objection to the consolidated procurement plan is compulsory. IFAD prior review thresholds is proposed to be established at contracts valued above USD 50,000 equivalent for goods and equipment, USD 200,000 equivalent for works and USD 30,000 equivalent for consultancy services. The prior review thresholds are maintained at the same level as that of MAGIP.

[67] See Appendix 8

E. Supervision

116. **Programme review/supervision mechanism:** IFAD join review and implementation support missions will monitor Programme implementation status. Each mission, comprising of representatives of IFAD, RGoB and other partners, will be led by IFAD Staff or by IFAD Consultants. As far as possible, the identity of personnel engaged in supervision and implementation support will not be changed frequently unless there are compelling reasons to do so. The frequency (minimum annual) and composition of supervision missions will be determined in light of actual requirements and in accordance with IFAD's operational modalities and practices. Each mission will have a ToR that would be developed in coordination and consultation with CARLEP. The dates of the missions will be finalized in consultation with the PMO; the initial supervision and implementation support mission will take place soon after programme commencement. The mission will report to Secretary MoAF, cum Chairman, NPSC and IFAD through aide memoir and mission wrap-up meetings. IFAD will also field Implementation Support and Follow up Missions, whenever necessary. A Mid Term Review will be conducted towards the mid period of Programme and will provide opportunities for design realignment and adjustments and based on availability of financing the scaling up of the programme. There will also be Programme Completion Review (PCR) by IFAD at the end of the programme closure to validate the PCR to be prepared and submitted by CARLEP PMO.

117. The PMO will develop its own programme review mechanism which can be monthly/ quarterly/ half-yearly or annual as the case may be. PMO will coordinate with Dzongkhags and all participating agencies for periodic programme review. The programme review will also include progress in gender mainstreaming and the knowledge management strategy. Progress review by NPSC and Regional Programme Coordination Committee is also part of the review mechanism.

F. Risk identification and mitigation

118. Several risk factors have been reviewed in accordance to their coherence to the Programme. The detailed risk overview is provided in Appendix 5. Some risks are closely associated to programme implementation, others more on a continued basis. Key risks identified are as follows.

a) The **capacity of the critical implementing partner FCBL** for value chain development, enterprise development and public private partnerships requires substantial strengthening. This performance risk has been mitigated by the allocation of additional resources for (value chain, marketing and organizational) strategy development, capacity development support and targeted Technical Assistance. Furthermore the proposed programme management and implementation design also reflects a clear mandate and autonomy for FCBL to implement Component 2.
b) The **challenge of strengthening climate change resilience at farm and community level** as well as for key actors within value chains where values, risks and interests are very diverse while success depends on joint action from an understanding of interdependent relationships. Dealing with climate change risks within the context of climate smart value chain development and management under CARLEP has been mitigated by providing additional resources for strengthening climate-smart agriculture and farm management practices, for strengthening farmer groups, the development of service outreach models (e.g. lead-farmers and CAHWs), strengthening local institutions and by providing targeted Technical Assistance.
c) The **key market and climate risks** are: i) combination of low output prices, low yields and low adoption rates; ii) increased construction costs; iii) low management capacities and weak negotiation capacities of groups and coops; and iv) limited extension service outreach, low uptake of climate smart practices, low agriculture research uptake, inadequate seed production, natural calamities, epidemics and diseases.

IV. Programme costs, financing, benefits and sustainability

A. Programme Costs

Table 3: Programme Costs summary (in USD'000 and BTN million)

Kingdom of Bhutan
Comprehensive Market Focused Agriculture and Rural Livelihood Enhancement Project
Components Project Cost Summary

	(Local Million)			(US$ '000)			% Foreign	% Total Base
	Local	Foreign	Total	Local	Foreign	Total	Exchange	Costs
1. Market-led agricultural production	575.1	109.7	684.9	10 457.2	1 994.8	12 452.1	16	52
2. Value chain development and marketing	492.0	37.0	529.0	8 945.8	672.6	9 618.4	7	40
3. Institutional Support and Policy Development	19.0	2.9	21.9	345.4	53.0	398.5	13	2
4. Project management, coordination and M&E	81.0	11.8	92.8	1 472.8	214.9	1 687.7	13	7
Total BASELINE COSTS	1 167.2	161.4	1 328.6	21 221.3	2 935.3	24 156.7	12	100
Physical Contingencies	84.5	17.7	102.2	1 536.8	321.1	1 857.9	17	8
Price Contingencies	255.9	48.8	304.7	4 653.5	886.7	5 540.2	16	23
Total PROJECT COSTS	1 507.6	227.9	1 735.5	27 411.6	4 143.2	31 554.7	13	131

119. The total Programme cost is estimated to USD 31.58 million over a period of seven years, including contingencies. The total base costs are USD 24.2 million and physical and price contingencies account for USD 1.8 million and USD 5.5 million, respectively (8% and 23% of total base costs). Investment costs are estimated at USD 19.23 million (80% of total cost) while recurrent costs are estimated at USD 5.0 million (20% of total cost).

B. Programme financing

120. The Programme will be financed by: (i) an IFAD loan of USD 8.25 million (26.2% of total programme costs); (ii) an IFAD grant of USD 1.05 million (3.4% of total costs); (iii) an ASAP grant of USD 5 million (15.9% of total costs); (iv) the contribution of beneficiaries estimated to around USD 0.6 million (2.1% of total costs); (v) the contribution of the Government of Bhutan corresponding to around USD 5.7 million (18.3% of total costs); (vi) the co-financing of the FCBL representing USD 4.8 million mainly through recurrent costs (15.2% of total costs) and (vii) a financing gap anticipated to be filled by the IFAD11(2019-2021) PBAS (based on fund availability, and priorities of the RGoB's 12th FYP), of around USD 6.0 million (19.0% of total costs). The Government will finance most of the recurrent costs, taxes and duties as well as re-training as part of the mandate of the Ministry of Agriculture and Forestry.

Table 4: Programme Costs and Financing plan (USD'000)

Kingdom of Bhutan
Comprehensive Market Focused Agriculture and Rural Livelihood Enhancement Project
Components by Financiers
(US$ '000)

	The Government		IFAD loan1		IFAD loan2		IFAD grant		ASAP grant		Beneficiaries		FCBL		Total			Local (Excl.	Duties &
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	For. Exch.	Taxes)	Taxes
1. Market-led agricultural production	4 196.0	24.2	4 808.7	27.7	4 268.6	24.6	399.8	2.3	3 024.6	17.4	658.8	3.8	-	-	17 356.7	55.0	2 898.7	13 004.1	1 453.8
2. Value chain development and marketing	598.5	5.2	3 150.1	27.2	1 662.3	14.3	173.9	1.5	1 729.1	14.9	-	-	4 281.0	36.9	11 594.9	36.7	900.2	10 168.6	526.1
3. Institutional Support and Policy Development	13.6	2.6	144.0	27.4	65.7	12.5	34.0	6.5	268.9	51.1	-	-	-	-	526.1	1.7	68.9	443.6	13.6
4. Project management, coordination and M&E	930.3	44.8	170.6	8.2	-	-	454.7	21.9	-	-	-	-	521.5	25.1	2 077.1	6.6	275.3	1 700.2	101.6
Total PROJECT COSTS	5 738.5	18.2	8 273.4	26.2	5 996.6	19.0	1 062.4	3.4	5 022.6	15.9	658.8	2.1	4 802.4	15.2	31 554.7	100.0	4 143.2	25 316.5	2 095.1

C. Summary benefits and economic analysis

121. Direct benefits. The main benefit of the Programme at micro level would be an increase in farmers' income due to production intensification, farmers' group empowerment and improved market access. The per capita annual income from primary production in rural areas was estimated to BTN 27 926 or around USD 1.39 per day in 2012[68]. In 2012, 12.6% of the population was living on less than USD 2 a day[69]. Intensification of production in a sustainable way, pulled by better marketing

[68] Bhutan RNR Statistics 2012, RNR Statistical Coordination Section, PPD, March 2013
[69] World Bank database

opportunities, will enable farmers to generate more income by increasing the productivity of land (higher cropping intensity and yields), labour (higher return on family labour) and water (higher water use efficiency). All the farm models analysed in the financial analysis show yearly returns per acre between BTN 145 534 (3 acres of vegetables and maize) and BTN 369 182 (5 acres of paddy and vegetables).

122. At the macro level the Programme would contribute to national food self-sufficiency and thus significantly reduce the weight of food imports on the current account. In 2012 domestic supply after deduction of quantities exported represented 77% of the national food requirements. Bhutan imported more than 32 520 ton of major food commodities in 2011, representing around USD 55.6 million, for a deficit of the trade balance of USD 33 million. The domestic supply covers around 68% of cereal consumption, 80% of vegetable consumption, 98% of fruit consumption and 88% of milk consumption70. Four (Mongar, Pemagatshel, S/Jongkhar, Trashigang) of the six Eastern dzongkhags had cereal deficit in 2011 amounting to 7 232 MT, representing 8% of the total national deficit.

123. **Indirect benefits.** The value chain approach of the Programme will create rural employment with new job opportunities, especially for the youth. These would not necessarily be in the production sector but in the service sector along the value chains, from processing and packaging to transportation, machinery hiring, etc. Promotion of climate smart and sustainable production techniques in soil fertility management (intercropping, rotation, relay cropping, strip cropping, etc.), water management and promotion of resilient seeds will have positive environmental benefits. Intensification and diversification of agriculture and livestock production might also have benefits in terms of household nutrition through a more diversified diet from own production as well as purchases through the additional incomes.

124. **Financial analysis.** A financial analysis of the following models was carried out: (i) vegetable farms in lowlands and in highlands with a WP situation characterized by sustainable production intensification; (ii) vegetable-maize farms in highlands with similar programme outcomes in addition to erosion control techniques and water conservation techniques; (iii) dairy farms in highlands interlinked with crop production, including a model that envisages the installation of Biogas digesters; (iv) paddy farms cultivating winter vegetables with production intensification and water efficiency outcomes; (v) paddy farms accessing improved marketing facilities/opportunities; (vi) typical rural micro enterprises; and (vii) chilling facilities and dairy processing units. Auto-consumption was included in all farm models and a credit analysis was conducted to ensure that the financing modalities were adapted for investment costs (loans, matching grants). All crop and farm models analyzed are profitable, yielding positive net present values. The farm models show net benefits higher than the rural poverty line of BTN 40 150 and returns on labor are also higher than the rural annual wage of USD 325. Only the butter and datshi processing models were not found profitable at small scale due to low margin per unit so the model was dropped in the proposed activities.

Farm budgets	**Yields**(kg/acre)			**Incremental labour**
	WOP	*days x year*	*Increm.*	*days x year*
Veg [1]	3 111	120	138%	120
Veg [2]	1 195	77	25%	77
Maize intensification	1 350	426	30%	426
Paddy intensification	780	298	30%	298
Livestock	1 114	94	175%	94
Livestock (bio)	1 114	94	175%	94

[1]WP at full development

[2] Returns to labor calculated on payments to members

[70] Bhutan RNR Statistics 2012, RNR Statistical Coordination Section, PPD, March 2013

125. **NPV and IRR**. Based on the financial models, an economic analysis of the Programme has been conducted using economic prices. The economic benefits of each model have been aggregated based on: (i) the number of direct beneficiaries for each model aligned with the phasing of investments in the COSTAB (no indirect beneficiaries and verification of no double counting); and (ii) adoption rates (crop and livestock models) and survival rates (rural enterprise models) based on the past experiences. As for the economic costs, O&M costs of the marketing and irrigation infrastructure is included as well as the recurrent costs associated with the FCB marketing activities. The costs covered by the Programme have been extracted from the models to avoid double counting. Details are presented in the Annex 10. The Programme is profitable with an estimated net present value of BTN 1.379 million or USD 24.9 million and an internal rate of return of 23% at a social discount rate of 8%.

126. **Sensitivity analysis**. A sensitivity analysis was conducted to assess the variation of the EIRR and the NPV according to various scenarios in line with the risk analysis of the programme. The scenarios include lower programme benefits and higher programme costs, 1 or 2-year lag in benefits, higher prices for chemical inputs, lower output prices and lower yields. The Programme would remain profitable in all the scenarios except in the one with 2-year lag in benefits. In line with programme approach, a change in chemical prices does not yield substantial losses (low inputs sustainable practices for crop production) whereas a change in output price would generate a significantly lower NPV and IRR (market-based approach). See further details in Appendix 11.

127. **Programme cost by beneficiary**. Based on the number of targeted households representing around 28,975 HH and 144,875 persons, the Programme cost per beneficiary household is USD 1087.1 or USD 217.4 per person.

D. Sustainability

128. The Programme incorporates numerous features designed to promote long-term sustainability:

a) A limited number of value chains have been chosen to ensure availability of adequate resources to establish these well. Production support for crops and livestock is designed to support value chain development and area-based production support will follow the needs of value chain planning.

b) Village level planning and implementation through farmer groups, investment in group development and setting up O&M groups for assets is expected to stimulate ownership by target communities.

c) The value chain approach would lead to interlinking of production, marketing and enterprise development to ensure benefits to farmers as well as the private sector, creating inter-locking stakes to ensure sustainability. The development of community-based organisations as key players in implementation and management of suitable value chain activities would lead to local ownership.

d) While promoting production activities around value chains to enhance incomes, the Programme would introduce adaptive coping strategies vis-à-vis climate change and take environmental protection issues on board and not introduce pre-defined production technologies and models. Production models will be compatible with local production activities, yet profitable with full accounting of O&M and capital costs and linked to local demand and export potential.

e) Extension and technical support services are designed to promote responsiveness to the real needs and increased accountability to farmer clients. Outsourcing and partnership models will ensure demand-driven innovation and effective capture and cross-fertilization of proven good practices.

f) Improved market access, linkages, transport efficiency and product quality, storage facilities to control post-harvest losses, contractual relationships and capture of premium prices would enhance incomes and resilience and create durable stakes.

g) Overall, strengthening grassroots institutions and their support services is the most effective way to ensure sustainability beyond the implementation period. The programme will also strengthen the organisation capacity of FCBL and other stakeholders to not only achieve programme results but to also continue to fulfill their mandate to serve local communities beyond the programme period.

129. **Environmental impact**. The programme mainly supports improvement of community capacity and resilience and vulnerability reduction through sustainable RNR management, household-based, climate adapted products and technologies with premium price potential, community infrastructure and improved access to markets. Essentially designed around reducing the vulnerability of target populations, the programme will not cause adverse environmental impacts;[71] it would rather improve the quality and carrying capacity of the environment through sustainable and climate resilient farming practices. The activities focus on sustainable management of natural assets and promoting community-based RNR management to increase agricultural production and reduce vulnerability and poverty.

130. Ideas and techniques of climate change adaptation, environment protection and resource conservation will be introduced to the beneficiaries in the course of programme implementation, besides community-based participatory planning, infrastructure building and household-based production models. Interventions related to technical service support are to improve farmers' capacity and in turn increase productivity in the programme area by introducing updated climate resilient methods and technologies to upgrade the basis for environment-friendly and climate resilient production. Support to the technical line agencies will improve the effectiveness of technical services, including training on good practices and climate smart approaches. Local stakeholders are aware of climate change and environmental issues and continued attention will be paid to monitoring the related evolution.

131. In addition to the climate change adaptation and sustainable land management benefits the programme has a substantial mitigation potential as shown through the use of FAO's ExACT tool. Although the programme remains a net emission source of greenhouse gases (GHGs), the carbon balance amounts to minus 900,860 ton CO2 equivalent (CO2e) over 20 years. This translates into 5.4 ton CO2e emission reduction per hectare annually, which is a significant reduction achieved through land-use change interventions.

132. Any potential impacts will, however, be assessed and quantified during programme implementation. The PMO will be responsible to ensure that the requirements of the environmental legislation of Bhutan are adhered to in order to avoid negative impacts and when and if necessary, introduce appropriate mitigation measures. Based on the above outlines of the expected scale of positive impacts in contrast to the relatively minor risks, the Programme falls under an Environmental Category B with a Climate Risk Classification of Low.

[71] See Appendix 13

Appendix 1: Country rural development & climate change context

Geography

1. The Kingdom of Bhutan[72] is located on the southern slopes of the eastern Himalayas, landlocked between the Tibet Autonomous Region to the north and the Indian states of Sikkim, West Bengal, Assam and Arunachal Pradesh to the west and south. It lies between latitudes 26°N and 29°N, and longitudes 88°E and 93°E. The rugged landscape consists mostly of steep and high mountains crisscrossed by a network of swift rivers, which form deep valleys before draining into the Indian plains. Elevation rises from 200 m (660 ft) in the southern foothills to more than 7 000 m (23 000 ft) above mean sea level. This great geographical diversity combined with equally diverse climate conditions contributes to Bhutan's outstanding range of biodiversity and ecosystems.

2. The northern region of the country consists of an arc of Eastern Himalayan alpine shrub and meadows reaching up to glaciated mountain peaks with an extremely cold climate at the highest elevations. Most peaks in the north are over 7 000 m above mean sea level; the highest point in Bhutan is Gangkhar Puensum at 7 570 m, which has the distinction of being the highest unclimbed mountain in the world.[73] The lowest point, at 98 m, is in the valley of Drangme Chhu, where the river crosses the border with India. Watered by snow-fed rivers, alpine valleys in this region provide pasture for livestock, tended by a sparse population of migratory shepherds.

3. The Black Mountains in the central region of Bhutan form a watershed between two major river systems, the Mo Chhu and the Drangme Chhu. Peaks in the Black Mountains range between 1 500 m and 4 925 m above mean sea level, and fast-flowing rivers have carved out deep gorges in the lower mountain areas. The forests of the central Bhutan mountains consist of Eastern Himalayan subalpine conifer forests in higher elevations and Eastern Himalayan broadleaf forests in lower elevations. Woodlands of the central region provide most of Bhutan's forest produce. The Torsa, Raidak, Sankosh, and Manas are the main rivers of Bhutan, flowing through this region. Most of the population lives in the central highlands.

4. In the south, the Shiwalik Hills are covered with dense Himalayan subtropical broadleaf forests, alluvial lowland river valleys and mountains up to around 1 500 m above mean sea level. The foothills descend into the subtropical Duars Plain. Most of the Duars is located in India, although a 10 to 15 km wide strip extends into Bhutan. The Bhutan Duars is divided into two parts, the northern and the southern Duars. The northern Duars, which abuts the Himalayan foothills, has rugged, sloping terrain and dry, porous soil with dense vegetation and abundant wildlife. The southern Duars has moderately fertile soil, heavy savannah grass, dense, mixed jungle, and freshwater springs. Mountain rivers, fed by either the melting snow or the monsoon rains, empty into the Brahmaputra River in India. Data released by the Ministry of Agriculture showed that the country had a forest cover of 72.5 percent[74].

5. The climate in Bhutan varies with elevation, from subtropical in the south to temperate in the highlands and polar-type climate, with year-round snow in the north. Bhutan experiences five distinct seasons: summer, monsoon, autumn, winter and spring. Western Bhutan has the heavier monsoon rains; southern Bhutan has hot humid summers and cool winters; central and eastern Bhutan is temperate and drier than the west with warm summers and cool winters. The total area of Bhutan is 34 394 square kilometres and the population is estimated to be about 766 000. The population is predominantly Buddhist. Hinduism is the second-largest religion.

Gross National Happiness

6. The country's development philosophy is Gross National Happiness (GNH), along with Gross National Product. In order to understand the GNH development philosophy it is important to understand the underlying worldview and principles. His Majesty the Fourth King introduced the concept of GNH, which guides development actions towards the development outcome of "Happiness". GNH has been shaped by the beliefs and values of Mahayana Buddhism and stresses[75] "*not material rewards, but individual development, sanctity of life, compassion for others, respect for nature, social harmony, and the importance of compromise*". The fusion of Tantric Buddhism and

[72] www.wikipedia.org
[73] http://www.adventure-journal.com/2013/07/the-aj-list-the-highest-unclimbed-mountains-in-the-world/
[74] www.un-redd.org
[75] RGoB (2000), Bhutan 2020: A Vision for Peace, Prosperity and Happiness, Royal Government of Bhutan, 2000. page 19, 21

animistic Bonism with mainstream Mahayana Buddhism beliefs in rural Bhutan also leads to "*interpret nature as a living system in which we are part rather than as a resource base to be exploited for material gain... have given rise to a complex of institutions, rules, customs and folklore governing the use of natural resources".*[76] GNH therefore aims to balance materials and spiritual aspects of life. For GNH the relationship of citizens with the environment is important as is strengthening communities' social fabric.

7. GNH comprises four pillars, constituting a paradigm for holistic and sustainable development: 1) sustainable and equitable socio-economic development (not growth); 2) environmental conservation; 3) promotion of culture, and 4) good governance. GNH is therefore also an overarching development framework, which lays down the development principles, values and priorities. The four pillars seem to mirror the definitions of Sustainable Development, a concept now widely accepted in the "West". However, the distinction between GNH and Sustainable Development is far greater than understood when analysing the four pillars of GNH from a "western" perspective. From a Buddhist perspective, "*poverty and underdevelopment should not be defined only in terms of the absence of wealth but also in terms of the persistence of ignorance and prejudice*"[77]. An essential part of GNH is therefore stimulating the development of human consciousness, in line with Buddhist principles.

8. Around the main principle of GNH, Bhutan has designed its Vision Statement, Bhutan 2020: A Vision for Peace, Prosperity and Happiness. The Vision Statement is a strategy document to guide implementation of national Five Year Plans (FYP) towards managed development. The advent of the Five Year Plan (FYP) in 1961 marked the beginning of modern development. Since then, FYPs have served as the key strategic instrument for the implementation of national development policies and programmes. For the 10th FYP, Bhutan had adopted five overall goals: i) improving quality of life and income, especially of the poor; ii) ensuring good governance; iii) promoting private sector growth and employment generation; iv) preserving and promoting cultural heritage and environment conservation; and v) achieving rapid economic growth and transformation. High priority has thus been given to infrastructure and to improving the quality of social services. The country entered its 11th FYP in July 2013. It is articulated in a Results Based Planning (RBP) framework with a clear objective of "*self-reliance and inclusive green socio-economic development*".[78]

Poverty and poverty reduction

9. During Bhutan's long history of benevolent Kingship, the main driving force for development in the country has for a long time been the government system, built around consultative processes with local communities. This genuine service orientation towards the wellbeing of the people has served the country well and Bhutan has made admirable progress in terms of Millennium Development Goals and 'happiness'. With the relatively recent introduction of democratic structures, local development dynamics are changing and the erstwhile development 'beneficiaries' are gradually becoming rights-bearing citizens. This institutionalization of downward accountability of Government service delivery is creating opportunities for more demand driven development; at the same time, it poses new challenges in terms of continuously rising expectations from the government, driven by rising aspirations. The Government therefore in its 11th Five Year Plan (11th FYP) provided a clear focus on poverty reduction and adopted a broadened strategy in its service delivery approach, acknowledging the role of civil society to *"complement the efforts of the government in provision of certain services that the government is unable to deliver or services that can be delivered more effectively by such organizations. ... In the Eleventh Plan, the government will work together with the CSOs to realize the plan objectives"*[79].

10. The annual grants for local governments are generally allocated on a formula that includes poverty rate with population size. Bhutan is now increasingly mainstreaming poverty and environment issues in the planning, budgeting and monitoring processes in each government agency. However, nearly 66 percent of Bhutan's population live in rural areas where poverty is significantly higher (96.8 percent) than in urban areas (3.2 percent). While the poverty situation in Bhutan has improved gradually throughout the last decade, the Eastern Region has a larger number of Dzongkhags with high poverty rates with Lhuentse (31.9 percent poverty rate) being the poorest Dzongkhag. Other districts with high poverty rates are Samtse (22.2 percent) in the Western region and, Dagana (25.1

[76] RGoB (2000), *op cit.*; page 19 and 21
[77] RGoB (2000), *op cit.*; page 22.
[78] Eleventh Five Year Plan, Vol. 1, Main Document, Gross National Happiness Commission, RGoB
[79] Eleventh Five Year Plan - Main Document Volume I, Gross National Happiness Commission, RGoB, Pg 75.

percent) and Zhemgang (26.3 percent) in the Central region (see for more detailed information on Poverty, Appendix 2).

11. Rural poverty in Bhutan has diverse causes, but most are linked to its rugged mountainous terrain. Roads in Bhutan form the lifeline of the economy. As of June 2011, the country's road network totalled 8 381 km[80]. It includes 2 273 km of national highways, 1 127 km of dzongkhag roads, and 3 290 km of farm roads. However, many villages are still isolated because of the rugged terrain, where people lack access to public services, education and markets. The poverty map at Gewog level by the National Statistics Bureau and the World Bank[81] showed that gewogs with less market accessibility and road networks tend to have a higher poverty rate. Limited opportunities for skill enhancement and technological knowledge coupled with limited opportunities for off-farm employment and other income generating avenues, lack of access to finance or high interest rates also contribute to rural poverty. Increasing rural to urban migration creates shortage of agricultural labour, further impacting rural poverty.[82]

Governance and administration

12. The constitution of Bhutan was launched in 2008 and with it a parliamentary democracy introduced with the country's first general elections. The Bhutanese government comprises of the Legislature, Judiciary and the Executive. The ruling political party, the opposition and the National Council now forms the legislative body. The first democratically-elected government of the Druk Phunsum Tshogpa (DPT) party was headed by Lyonchen Jigme Y Thinley from 2008 to 2013. Since 13 July 2013, the government is headed by Prime Minister Tshering Tobgay from the People's Democratic Party (PDP). This new political environment will facilitate the emergence of greater plurality in the national and local administration, particularly in the delivery of services and in planning and implementing development programmes. Local level interests and concerns will be better reflected in the national decision making process, thereby incorporating the wishes of communities and local authorities.

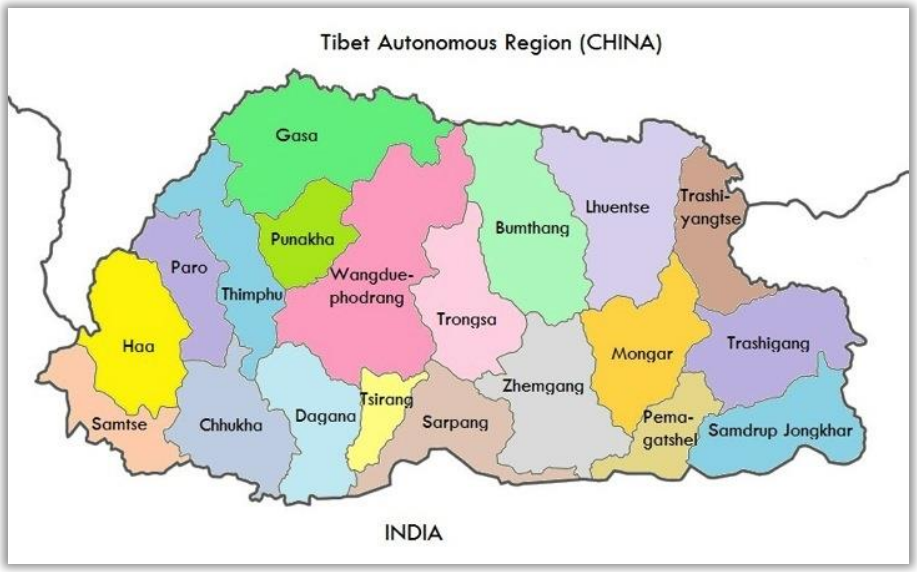
13. In conjunction with the inception of democratic governance, RGOB continues to build a strong environment for effective decentralised local governance. Administratively, Bhutan is divided into 20 districts, called Dzongkhags or dzongkhags and administered by a Dzongda appointed by the government and assisted by a deputy called Dzongrab and sectoral officials in charge of planning, development and civil administration at the local level. The Dzongkhags are sub-divided into 205 Gewogs or blocks that are made up of 1 044 groups of villages called Chiwogs. A Gewog is the lowest level of administration and is headed by a Gup. There are local governments in each of the Dzongkhags, called Dzongkhag Tshogdu (DT) or 'district council', the Gewog Tshogde (GT) or the 'block council' and the Thromde Tshogde (TT) or 'municipal council'. These local government bodies have powers with respect to local planning and implementation but no legislative functions. Council members are directly elected.

14. At the central level there are 10 ministries: Ministry of Agriculture and Forestry (MoAF), Ministry of Education (MoE), Ministry of Finance (MoF), Ministry of Foreign Affairs (MoFA), Ministry of Health (MoH), Ministry of Home and Cultural Affairs (MoHCA), Ministry of Information and Communications (MIC), Ministry of Labour and Human Resources (MLHR), Ministry of Economic Affairs (MEA), and Ministry of Works and Human Settlement (MWHS). The MoAF at the central level is charged with the responsibility for developing the Rural Natural Resources (RNR) sector and the rural areas. The Department of Agriculture (DoA), Department of Forestry and Park Service (DFPS), Department of Livestock (DoL), Department of Agriculture Marketing and Cooperatives (DAMC) and the Policy Planning Division (PPD) are the executive arms of the MoAF. The Bhutan Agricultural and Food Regulatory Authority (BAFRA), an institution affiliated to MoAF, is an important institution in promoting the quality and safety of goods and products related to agriculture. The two divisions of BAFRA, Quality Control and Quarantine Divisions, are most important in safeguarding food safety and in international trade. The DoA at central level also groups under its organisation a number of specialised national centres: the National Agricultural Machinery Centre and the National Post Harvest Centre (NAMC and NPHC, in Paro); the National Plant Protection Centre, the National Soil Service Centre, and the National Mushroom Centre (NPPC, NSSC, and NMC in Semthoka); and the National Seed Centre (NSC), in Thimpu. The NAMC has four regional agricultural machinery centres:

[80] Road Network Information 2011, Department of Roads.
[81] National Statistics Bureau and World Bank "Poverty Map of Bhutan: Key Findings" (2010).
[82] Rural Urban Migration Project Completion Study by PPD, MoAF (2014) from an IFAD Grant.

headquarters in Paro covering the west; in Kangma (for the east); in Bhur (for the centre) and in Bajothang (for the west-central areas). The Department of Agricultural Marketing and Cooperatives has one regional office, which deals with the six eastern Dzongkhags and is based in Kangma.

Figure 1: Administrative Map of Bhutan



15. The main institution for education in the RNR sectors and for staff development is the College of Natural Resources (CNR) in Lobesa (Wangdi), and is placed under the Royal University of Bhutan. The CNR also provides tailor-made training programmes for staff development. Another training institution is the Rural Development Training Centre (RDTC, in Zhemgang), and is most equipped to provide training in skills development for technical staff and farmers, and is also equipped to provide specific training in accordance with the need of customers.

16. At the district level, the MoAF has three offices from the line RNR sectors, i.e., agriculture, livestock and forestry. The employees constitute the core agricultural staff responsible for the management, planning and execution of RNR development programmes. Like the districts, the gewogs have three agricultural staff representing the line RNR sectors, and are the front-line staff working with farmers, basically functioning as extension officers. The geog staff are administratively answerable to the head of the gewog administration, the Gup, but are technically responsible to their respective line officers in the districts. Due to logistical problems, i.e. lack of road access and mobility, the extension staff are able to cover only a small portion of the farming communities, hence limiting the introduction of best agricultural practices, particularly those located farther than one day walk.

Economic development and employment

17. The farm sector including agriculture, livestock rearing and horticulture is the mainstay of the rural economy. Though the farm sector, comprising of agriculture, horticulture and livestock products, contributes only about 20 percent to the country's GDP and represents only 2.93 percent of land use, it directly employs nearly 65 percent of the country's population, mostly in subsistence farming with significantly lower returns, and remains a key sector in Bhutan for rural livelihoods and poverty reduction. However, the GDP share of the agriculture sector has been declining and growth of agriculture remains fairly stagnated while low labour productivity in this sector contributes to persisting rural poverty. Bhutan's economy is therefore highly vulnerable since economic development has not yet evolved into an increase in secondary and tertiary sector jobs.

18. Fuelled primarily by hydropower, urban development and road projects, the construction sector has fast developed into a major economic sector. In terms of employment, the RNR sector still remains the most important economic sector although its GDP share has been falling over the years. Tourism is another sector contributing significantly to the country's economy particularly in terms of foreign exchange and creation of jobs. This sector has tremendous potential to create rural employment if carefully planned and implemented and thereby has potential to impact in rural poverty reduction.

Enterprise development

19. The rural economy in Bhutan continues to be largely subsistence-based with low penetration of modern technology, little or no mechanisation, limited tradable surplus and virtually no capital formation. While rural communities are indeed linked to markets, this linkage often tends to be localised. The terms of trade vis-à-vis the wider commercial world continue to be adverse due to information asymmetry and physical isolation because of a mountainous terrain and limited road connectivity. The rural society and economy has been undergoing changes in the recent past with increasing road connectivity, electrification and mobile telephony. This is reflected in increasing commercialisation of the RNR sector.

20. Lack of access to technology, business development support services, fair markets and suitable financial products at affordable transaction cost, however, remain constraints affecting enterprise initiation and development. There are government programmes, such as for the livestock sector, but those provide only a fraction of the funds needed. Loans outstanding from institutional sources in the farm sector constituted a minuscule 2.23 percent of all institutional loans in 2012.[83]

21. In the process of facilitating governance, the enactment of two regulations that are relevant to agricultural development can be singled out: a) the revision of "The Cooperative Act of Bhutan 2001" with a view to providing a legal framework for the association of persons to meet their economic needs and aspirations through jointly owned and effectively governed enterprises; and b) the reinstatement of rules that allowed the leasing of forest land for commercial forest and agricultural purposes.

22. The Cooperative Act of 2001 did initially not provide the legal framework to farmer groups to eventually graduate into full-fledged cooperatives, but the has now been amended and farmer groups have been included into the Cooperative Act as a separate legal entity, with the MoAF entrusted with the task of implementing the Act by issuing the necessary rules after consultation with the stakeholders. MoAF has also been vested with the task of registration of cooperatives. It is hoped that the amended Cooperative Act will enable small farmers to move towards the commercialisation of their operations though much still remains to be done to create an enabling environment to facilitate this process.

23. The need to enhance access to financing for SMEs and rural enterprises is highlighted in the 11th FYP as SMEs and cottage industries are now recognised as playing an important role in employment creation, rural income generation and poverty alleviation. According to the National Statistics Bureau, 98 percent of the 17 642 industries registered as of 2008 fall into the cottage and small category, which underscores the importance of this segment in self-employment and income generation. The 11th FYP further states the promotion of Small and Cottage Industries as an essential alternate source of livelihood, especially for rural communities. The focus will be on creating an enabling environment such as access to finance, support for starting a business, raw material availability and markets.[84] To support the growth of micro, small and farm enterprises the RGoB intends to invest in urban development, market sheds, processing plants, cold storages, and build produce collection centres in appropriate places in Gewog and Dzongkhags.[85]

24. Bhutan also aims to specifically engage youth in (rural) enterprise development as youth now constitute a sizeable proportion of the population and a growing focus in policy making. The National Youth Policy 2010 states, "*This age group encompasses that period of life when the greatest change takes place and young people are confronted with innumerable challenges as they move from dependence to independence. It is also a period characterized by youthful vigour, enthusiasm, ambitions and building relationships. While acknowledging the general experiences of Bhutanese youth, this Policy also recognizes that they are by no means a homogenous group. Like any age group within the society, this wide age group of 13-24 years also consists of subgroups with diverse experiences, needs and risks depending on age, gender, geographical location, region, culture, marital status, education, socio-economic background and work status*".

[83] Bhutan statistical Year Book 2013, Table 12.10.
[84] Eleventh Five Year Plan, Vol. 1, Main Document, Gross National Happiness Commission, RGoB
[85] Ibid,.

Agriculture development

25. Traditionally focused on subsistence, the agriculture sector has been undergoing reorientation towards more commercialisation over the years with policy support, public investments and improved rural-urban connectivity. Agriculture is still the living culture and landscape heritage in Bhutan. About two-thirds of households in Bhutan are landholders. Over half of all households own 5 acres or less and a tenth own more than 5 acres. Landholding is more prevalent among rural households. Nearly 84 percent of rural households own land compared to 32 percent in urban areas. Of the land owners in rural areas, nearly 70 percent have average of 5 acres or less and 13.6 percent have more than 5 acres. Nearly 40 percent of rural households have average of 2.5 acres or less. About 16.5 percent of rural households do not own any land (perhaps only homestead land where the dwelling house is constructed with a small kitchen garden). Realising the importance of the agriculture sector and its significance for poverty reduction and equitable and sustainable economic development of the country, the Royal Government of Bhutan has accorded the highest priority to agriculture development in the 11th FYP and beyond. Agriculture is now featured as one of the five jewels and is accorded first priority.[86]

Crop production

26. Wide varieties of agricultural crops, vegetables and horticulture account for the agricultural land use in Bhutan. Rice paddy and maize are the principal field crops with small quantities of wheat, buckwheat, barley, millets, various pulses, various oilseeds, spices, cucurbits, vegetables and tuber crops. The scale of production at individual household level remains low despite efforts from technical departments to increase production. Also, with low quality inputs and poor management of production, produce is often of variable quality. Given the difficult terrain and dispersed settlements, it is a challenge for farmers to collectivise to achieve scale and to set benchmarks and provide mutual support to ensure quality and timeliness of production. These factors militate against creating scale economies necessary to establish reliable and sustainable marketing chain.

27. Owing to limited access to technology, inputs and services because of the scattered nature of settlements and poor or inefficient market integration, cropping intensity is still low (only one main season crop in a year). These multiple factors affecting mountain farming systems have also led to poor replacement of seeds. For instance, seed replacement rate[87] for maize is just over 20 percent and for rice is around 40 percent. Similarly, the use of farm machinery is very low and is limited to a few Dzongkhags in the west. Nationally, the level of farm mechanization is estimated to be less than 50 percent[88] and is limited to land preparation only. All these factors lead to low yields in agriculture.

28. While food grains are largely produced for one's own consumption, it is the horticultural and vegetable crops that hold the greater market potential. Yet, in spite of a shortage of and demand for vegetables from neighbouring India and Bangladesh during the summer months due to extreme temperatures, excessive humidity and frequent flooding there, Bhutan was not been able to take advantage of those markets due to low productivity, lack of economies of scale, high cost of transportation and insufficient market information by farmers.

Livestock

29. Livestock rearing is an integral part of the agrarian economy and contributes to year-round cash incomes, balancing the peaks and troughs in agriculture and reducing disguised underemployment. Livestock in Bhutan means pigs, cattle (cows and bulls), yak, buffalo, horses, sheep, goats and poultry. According to Bhutan Livestock Statistics (BLSS) 2012, livestock ownership is mostly in the rural areas. Animals are generally let loose in the open on communal land and in forests with little food supplementation provided as there is little cultivation of grass or other fodder. Two-thirds of rural households own cattle, most having two or more heads of cattle. Over 44 percent of rural households have poultry, at least two heads or more. About 15 percent households have pigs, horses and goats. Overall, BLSS 2012 survey showed that 78 percent of rural households have cattle and 59 percent own poultry.

[86] "The Five Jewels of Economy: Dzongdas' Roles" Speech from Lyonchhoen Tshering Tobgay, Prime Minister of Bhutan during the Conference of Dzongdas, Kuensel, August 12, 2014
[87] Based on DoA's assessment
[88] As per the farm mechanization strategy of the Agriculture Machinery Centre, AMC

30. Livestock are raised in Bhutan for various reasons including milk, food, manure production, draught power, as a source of income and as economic buffers. Livestock statistics (2008 to 2013) reveal the increasing rate of milk consumption at 6.8 percent per annum, pork at 12.1 percent, chicken at 48.1 percent and fish at 18.7 percent per annum. While these growth rates may not continue indefinitely, at the current rate of growth in consumption, chicken production needs to be doubled up every 18 months. Even milk, which has the lowest trend consumption growth, requires doubling every decade if the demand were to rise at the same rate in the future. The increasing demand for livestock products, especially for meat and fish are met largely through imports. For instance in 2013, 96 percent of demand for fish, 82 percent for pork and 56 percent for chicken were met through imports (DoL 2013). The current consumption and import scenario provide great opportunity for reducing rural poverty by stimulating production of livestock products by poor rural households.

Climate change

31. Mean annual temperature for the 2010-2039 is projected[89] to increase by ~0.8^{o}C to ~1.0^{o}C compared to the current (1980-2009) climate. For the 2040-2069 period, mean annual temperature is projected to increase by ~2.0^{o}C to ~2.4^{o}C. There is a projected increase in annual average rainfall in Bhutan. Downscaled simulations undertaken in Bhutan's Second National Communication (SNC) indicate that the mean annual rainfall will increase by 26-30 percent by 2069 compared to the baseline year of 1980. This increase occurs primarily during the summer monsoon season while the dry winter season rainfall is projected to decline slightly. The additional rain is thus projected to mostly fall during the existing wet season of June to August when it is often not required to improve crop yields (though more evenly distributed rainfall within these months would likely reduce the incidences of yield declines due to dry spells during pollination of some crop species). Similarly for aquifer recharge, the higher intensity of rainfall events generally leads to extra surface run-off rather than infiltration once the soil is saturated, limiting the benefits of the extra amount of projected precipitation. It is thus likely that the increases in rainfall projected between June and August by the climate models will only serve to exacerbate problems associated with erosion, landslides and floods.

32. The projected increases in rainfall variability can lead to decreases in precipitation for extended periods, causing problems of water availability and access. Water access is further aggravated through accelerated melting of glaciers, which act as gigantic natural water retention and dispensing mechanism to communities downstream, is disrupting the hydrological regime of the perennial river systems in the region. Projected climate change impacts thus undermine current water distribution infrastructure and communities' abilities and rights to access water for household and agricultural requirements. Springs and small streams are the main water sources for the rural part of the country. According to the Annual Health Bulletin 2013 of the Ministry of Health, 90 percent of the households in Bhutan have access to safe drinking water and 95 percent have access to improved sanitation. The source of drinking water is important because potentially fatal diarrheal diseases, such as typhoid, cholera, and dysentery, are common in Bhutan, especially the prevalence of waterborne diseases among young children. Sanitation at schools is still a serious health risk that threatens the development of children. Many schools have toilets, with water for flushing or hand washing but in general hygienic behavior is still poor. This is the same at rural households. Overall Bhutan is on track to achieve its targets in terms of MDG 7 on coverage of drinking water and sanitation, although sustainability and improved hygiene behavior is still a challenge, which might increase with increased climate variability and climate change.

33. All in all, climate change will increase the uncertainty of year-round water availability and rural farmers are likely to have to better manage increasing volume of monsoonal rain coupled with high fluctuation of rainfalls so that they can sustain longer dry periods. Past climate change related natural disaster trends show that the country is already experiencing more frequent extreme climatic events over recent years.

34. Subsistence agriculture activities in Bhutan will be affected by the projected variability in rainfall patterns and intensity. Elevation and hydro-geological differences have a large influence on whether access to water is guaranteed year round or whether water sources dry up rapidly or gradually post-monsoons, determining the risk of wet season crop failure and possibility of dry season cultivation. Most of agriculture is rain-fed and for subsistence, supplemented by cash crop production and

[89] National Thematic Paper on Biodiversity for the Climate Summit for a Living Himalaya – Bhutan 2011.

irrigated rice crops. To sustain agriculture new sources of water must be identified locally, including water harvesting, and innovation required in storing water through the dry season. The feasibility of dams and reservoirs is not yet adequately assessed. However, the geological conditions in Bhutan with permeable, unstable soils and rock will make it technically and geologically challenging in most instances.

35. The number of households in Bhutan rearing livestock is relatively low and traditional husbandry is generally of low quality and with little inputs. Animals are generally let loose in the open on communal land and in forests with little food supplementation provided, as there is little cultivation of grass or other fodder. Water and livestock connections are weakly documented, but since most farmers have only a few animals grazing on communal lands this usually makes them mobile enough to travel to various water sources, therefore limiting the dependence on any one source. However, drying up of springs in the dry season is anticipated to become a greater problem with climate change.

36. The country's vast tracts of forests, which make up more than 70 percent of the land cover, have historically provided an important source of food, fuel, fodder, medicines and building materials, especially for the poor. Moreover, they help cushion the impacts of climate change-induced hazards such as landslides and flash floods and thus their importance is expected to increase as the impacts of climate change become more and more visible. However, these forests themselves are increasingly at risk from wild fires as a result of drier conditions and prolonged absence of precipitation during winters. Collation and quick analysis of forest fire data maintained by the Department of Forests and Park Services (DoFPS) reveal that wild fires have severely damaged more than 70 700 hectares (ha) of forests, or approximately 1.5 percent of total landmass since 2000, at the rate of close to 5 900 ha each year. Considering multiple functions of forest—as a supplier of livelihoods and income substitutes, disaster prevention and risk mitigation, carbon sequestration and hydrological control in water catchments—it is critical that the country's forest resources are protected, especially from the increased risk of forest fire in drier conditions.

37. The risk of climate induced natural disasters is also increasing because of climate change. Past climate change related natural disaster trends show that the country is already experiencing more frequent extreme climatic events over recent years. The glacial lake outburst flood (GLOF) of Lugge Tsho in 1994 brought to the fore the imminent threats of climate change. The winter of 1998-99 was characterized by a prolonged spell of dry (snowless) weather. This exacerbated incidents of forest fires that winter, with forest fires occurring even in places where they were earlier not known. Summers of 2000, 2004, 2009 and 2010 were witness to extreme monsoon rains. The heavy rains triggered an unprecedented number of flash floods and landslides, causing loss of dozens of human lives and livestock, and damage to many farms, homes, development infrastructure and industrial establishments. The 2004 flash floods in the six eastern dzongkhags killed nine people, washed away 29 houses, damaged 107 houses, and destroyed 268 ha of farmlands. In May 2009, Cyclone Aila originating from the Bay of Bengal caused one of the worst climatic disasters, causing 12 deaths, destroying crops on farmlands in many dzongkhags, and damaging roads, bridges, schools, health care facilities, government buildings, hydro-power installations and other infrastructure. The total economic damage of Cyclone 'Aila' in Bhutan was estimated at around US$ 15 million. In 2010, intense rains triggered landslides and flash floods and damaged more than 800 ha of farmlands affecting 4,165 households, and several farm roads and irrigation channels affecting 529 households. Wind and hail storms have also been growing in severity and frequency in the recent years, often causing severe localized damages to crops and buildings. The Department of Disaster Management's damage assessment report of successive windstorms in the spring of 2011 inform that 2 424 rural homes, 81 religious structures, 57 schools, 21 health centers, and 13 other government institutions were damaged across 16 of the country's 20 dzongkhags.

38. For Bhutan these impacts pose severe setbacks to development progress and achievements attained over the past several years. Based on the climate change projections the projected additional rainfall will mostly fall in a shorter monsoon period and the intensity of extreme weather events will further increase. This will potentially cause more localized landslides and floods, as well as exacerbate the long term effect of erosion. Physical vulnerability varies across Bhutan, mainly due to topographic differences and differences in elevation, but is in all cases considered to be high.

39. Where projected impacts of climate change are concerned, local officials and community leaders have identified a wide range of risks of which water availability has the highest priority together with

broader agriculture and food security related concerns. Participatory Rural Appraisal-based assessments of the environmental and climate change impacts on key local livelihoods resources and assets carried out in some of the poorest gewogs in the country revealed that farmlands were the most vulnerable of all local livelihood resources/ assets, followed by water resources and supply systems, and forests. This connotes and confirms considerable climate change risks as the nation's socio-economic wellbeing is hugely dependent on agriculture, water resources and forests.

Appendix 2: Poverty, targeting & gender

A. Poverty Trends and Situation in Bhutan and Programme Area

1. **Introduction**. Poverty reduction has been fairly rapid, broad-based and inclusive in Bhutan. According to Bhutan Poverty Assessment (BPA) 2014[90] between 2007 and 2012, the percentage of consumption poor fell by half to 12 percent and extreme poverty[91] nearly ended, with only 2 percent of the population so classified in 2012. Broader multidimensional poverty indices that include education, health and standards of living outcomes, also indicated a significant decline from 25 percent in 2007 to 12.7 percent in 2012. However, the rapid reduction in poverty bypassed nearly half of those found to be poor in 2007. An alarming statistic came out that some non-poor fell into poverty. The BPA 2014 reported that for every two families that escaped poverty, one previously non-poor family fell into poverty. Notwithstanding encouraging examples of mobility of the poor in Bhutan, there is ample room for reducing vulnerability of the poor and near-poor. The risk of falling back into poverty is greatest for those with informal jobs, low education and rural households, especially in Pema Gatshel and Trashigang, both of which are the proposed programme areas of CARLEP.

2. The BPA 2014 also highlighted that: (i) food availability improved but the poor still lag behind; (b) female-headed households fared poorly compared to male-headed households; (c) while children are increasingly getting equal opportunities regardless of birth circumstances but inequities in completion of secondary education persist; (d) the main drivers of prosperity in rural Bhutan appear to be increasing commercialization of agriculture, expanding rural road network and gains from hydroelectric projects; (e) the pace of poverty reduction appears sustainable in the medium term; (f) risks and vulnerabilities need to be managed carefully for sustained poverty reduction; (g) formal social protection programmes may be necessary to help individuals cope with adverse economic and financial shocks; and (h) sustainable poverty reduction in the long-run would depend on addressing persistent shocks, engendering private sector led development and defining clear target groups for poverty reduction.

3. **Poverty trends by region and dzongkhags**. Poverty is higher in the eastern dzongkhags, with Lhuentse at 31.9% poverty being the poorest in Bhutan (Table 1). Over 17% of the poor live in Samtse, followed by Samdrup Jongkhar (9.1%), Chhukha (8.8%) and Pemagatshel (8.6%). Lhuentse (11.1%) and Zhemgang (9.9%) have high subsistence poverty but Samtse (13.4%) and Zhemgang (11.6%) have highest population of subsistence poor. Household poverty rates are highest in Lhuentse (24.9%), Pemagatshel (21.2%), Zhemgang (19.0%) and Dagana (18.7%).

Table 1. Poverty incidence by region and dzongkhags[92]

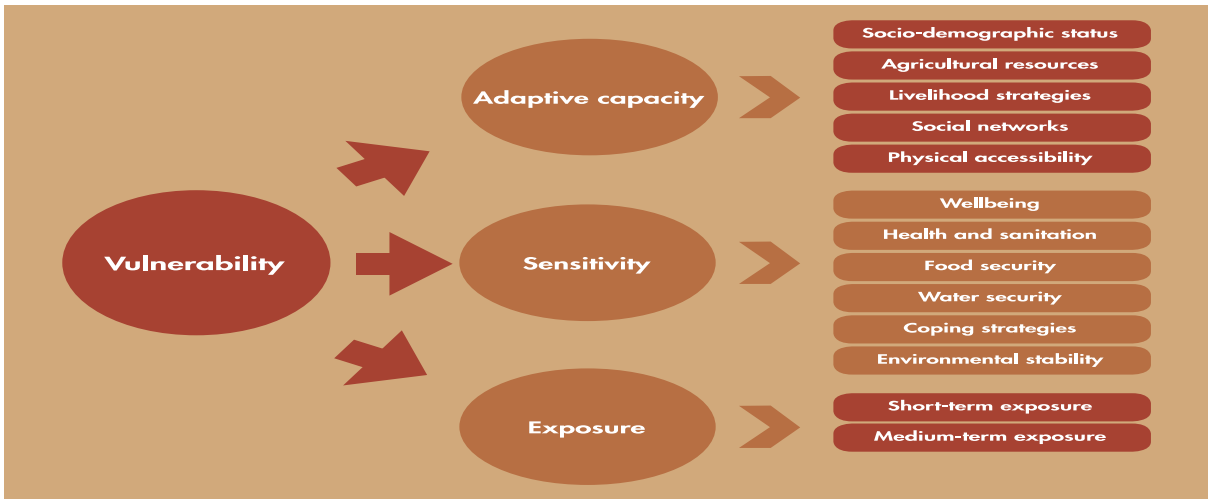
Region	Districts/Dzongkhag	Headcount Ratio		Distribution of Poor Population	
		Subsistence Poverty	Poverty	Subsistence Poverty	Poverty
Western	Chhukha	2.3	11.2	7.6	8.8
	Gasa	<0.2	<0.5	<0.2	<0.5
	Haa	2.6	6.4	1.4	0.8
	Paro	<0.2	<0.5	<0.2	<0.5
	Punakha	3.6	10.0	4.8	3.1
	Samtse	4.0	22.2	13.4	17.4
	Thimphu	<0.2	0.5	0.4	0.7
Central	Bumthang	<0.2	3.4	<0.2	0.6
	Dagana	6.3	25.1	7.5	6.9
	Sarpang	0.3	4.2	0.5	2.1
	Trongsa	3.8	14.9	3.1	2.8
	Tsirang	2.8	14.8	3.3	4.0
	Wangdue Phodrang	2.2	10.9	4.7	5.3
	Zhemgang	9.9	26.3	11.6	7.2
Eastern	Lhuntse	11.1	31.9	9.7	6.5
	Mongar	1.9	10.5	4.5	5.8
	Pemagatshel	4.7	26.9	6.5	8.6
	Samdrup Jongkhar	4.8	21.0	8.9	9.1
	Trashi Yangtse	3.8	13.5	3.8	3.1
	Trashigang	3.1	11.5	8.3	7.2
Bhutan		2.8	12.0	100.0	100.0

[90] Bhutan Poverty Assessment 2014. National Statistics Bureau, RGoB and World Bank, 2014.
[91] Based on a consumption poverty line of USD 1.25 per capita per day in purchasing power parity terms.
[92] Source: National Statistics Bureau "Poverty Analysis Report 2007" and "Poverty Analysis Report 2012"

4. **General poverty situation in six eastern dzongkhags.** Major CARLEP investments are proposed to be in the Eastern Region comprising of the six dzongkhags, viz. Lhuentse, Mongar, Pemagatshel, Samdrup Jongkhar, Trashi Yangtse and Trashigang, which have high poverty rates (Table 1) compared to most other dzongkhags. While poverty rates in Mongar (10.5 percent), Trashi Yangtse (13.5 percent) and Trashigang (11.5 percent) hover around the national average (12.0 percent), those in the other three dzongkhags are much higher, and more than twice the national average in Lhuentse (31.9 percent) and Pemagatshel (26.9 percent). In terms of depth and severity of poverty, the PAR 2012 showed that overall Lhuentse, Samdrup Jongkhar and Pemagatshel fared very poorly in all respects of poverty (poverty rate and poverty gap)[93].

5. Besides poverty, CARLEP's climate resilience strategy for smallholders will also address climate vulnerability of livelihoods from the perspective of livelihoods assets and their interrelated nature. Building upon the livelihoods framework, key components of vulnerability[94] are i) Adaptive capacity, ii) Sensitivity, and iii) Exposure (Figure 1). CARLEP has developed a **comprehensive strategy to increase resilience capacity of smallholders**, through multi-level, integrated interventions, e.g. i) intra-household (gender and youth), ii) household-level (vulnerability targeting), iii) farm-level (nutrition, diversification, climate smart practices and income generation), iv) community level (social capital through farmer groups, lead farmer model), and v) local institutions (increased outreach of extension services, access to value chains/markets, improved sustainability of rural infrastructure).

Figure1: Multidimensional Livelihood Vulnerability Framework - Hindu Kush Himalayas (ICIMOD)



6. Climate change resilience will thus be addressed both at farm and community level as well as at (local) institutional level. For example, capacities at the local level are needed for adaptation planning as well as linking agricultural production with markets from a value chain perspective so that agricultural production planning at gewog level follows the broader value chain planning of FCBL. Similarly, the capacities of and strengths of relationships between dzongkhag, gewogs, farmers, farmer groups, cooperatives, entrepreneurs and CSO will to a large extent determine local climate resilience capacity and the success of the value chain approach. CARLEP will therefore strengthen institutional and organizational capacities, especially at the local level, to make the value chain approach a success, as well as to strengthen institutional capacity for climate resilience.

7. **Factors contributing to poverty in Bhutan and the programme areas.** Rural poverty in Bhutan has diverse causes, but most are linked to the physical nature of the land and country side, besides the country being geopolitically landlocked. As villages are isolated and the terrain extremely rugged, people lack access to social and health services, education and markets. Limited opportunities for skill enhancement and off-farm employment and lack of access to technological knowledge, institutional finance and other income generating avenues contribute to rural poverty. Shortage of farm labour due to increasing rural to urban migration also has an impact on rural poverty[95]. The JICA's[96] analysis had

[93] Detailed analysis of Depth and Severity of Poverty in Bhutan is available in Bhutan Poverty Analysis Report 2012 (PAR 2012) published by Bhutan Statistics Bureau and The World Bank, 2013.
[94] Gerlitz, J; Banerjee, S; Hoermann, B; Hunzai, K; Macchi, M, and Tuladhar, S (2014) Poverty and vulnerability assessment – A survey instrument for the Hindu Kush Himalayas. Kathmandu: ICIMOD
[95] Rural Urban Migration Project Completion Study by PPD, MoAF (2014) from an IFAD Grant.

identified a number of domestic factors contributing to poverty in Bhutan, including (a) public investment and national development priorities are not always focused on poverty reduction or for the poorest areas; (b) declining expenditure on agriculture sector; (c) limited allocation for social expenditure; (d) limited availability of land for agricultural expansion and natural resource management; (e) limited industrial growth and employment opportunities.

B. Gender Issues in Bhutan, the Programme Areas and Target Groups

Lessons learned from IFAD projects on gender mainstreaming

8. MAGIP is currently implementing its gender mainstreaming strategy with encouraging results. This could be well replicated in CARLEP. Some of the main features are:

- Equal wages for men and women in all MAGIP funded construction related activities.
- Inclusion of both husband and wife in newly formed farmers' groups including vegetable groups promoted by MAGIP with both having equal rights to leadership and other responsibilities.
- Interested poor households and female-headed households are encouraged and facilitated to participate in agriculture production intensification and market linkage (thrust area of CARLEP) from subsistence farming activities.
- Supply of power tillers and introduction of improved methods of yak cheese and butter production, both to ease labour shortage and reduce women's workload.
- Over 40 percent participants in the farmer's trainings are women participants indicating significant empowerment both in knowledge and skills.
- All women vegetable and dairy groups have been formed in order to improve the economic empowerment of women together with assured income.
- Use of sex disaggregated data in all reporting formats.

General gender situation and position of women in Bhutan

9. Bhutanese women enjoy relative freedom and equality with men, have equal rights and experience no overt discrimination. They have social freedom and participate in household decision making. Life expectancy is the same for men and women and maternal mortality is declining. The sex ratio is balanced. There is an increasing trend of women taking loans. Successive development plans have attempted to integrate women development issues to ensure equal opportunities for men and women. However, women continue to lag behind (see Table 2), such as in politics and public decision-making, tertiary education and the economy. Rural women are worse off than their urban counterparts.

Table 2. General gender situation in Bhutan

Indicator (in percentage)	Male	Female
Labour force participation rate (2012)	65.7	63.2
Illiteracy rate (2012)	44.0	56.0
Tertiary Education (Bachelors, Masters and above, 2012)	65.0	35.0
Male/female as unpaid family workers (2012)	31.0	69.0
Representation in the Parliament (2013) [97]	92.0	8.0
Farm workers (number)	85 600	100 500

Source: MAGIP's Supervision Mission Report 2013 on Gender

Gender issues in target groups and programme areas

10. Gender issues in target groups and programme areas have been described in detail in the Working Paper on gender. Some of the key gender issues are in programme areas and in target groups are:

(a) ***Gender inequality/disparity*** is due to gaps in household investments[98] and alcohol abuse[99].

(b) ***Increasing work load*** due to increasing migration of men to towns and other places in search of wage income, leading to women having to spend longer hours in the farms and livestock rearing and domestic work which affects their health in many cases and also affects the care of children at

[96] Japan International Cooperation Agency "Kingdom of Bhutan: Study for Poverty Profiles in the Asian Region" (2010).
[97] Six women in Parliament from a total of 72 seats (47 NA, 25 NC including the 5 Appointees by the King)
[98] Gender Gap in Household Investment: A Study on Bhutan by Phuntsho Choden, University of Applied Sciences, Berlin (2012).
[99] Alcohol Use and Abuse in Bhutan by Lham Dorji, National Statistics Bureau, Thimphu (2012).

home as mothers stay away longer periods from child care and are able to devote less time with children.

(c) ***Livelihoods of women in rural areas*** mainly agriculture[100] and livestock but male out migration is leading to increasing feminisation of agriculture, thereby disproportionately impacting women.

(d) ***Women in rural areas*** are disadvantaged in terms of ***higher education*** in particular. Overall female enrollment decreases by 10 percent at the end of high school mainly because of distance of the school from home, the need for girls to help at home, marriage and cost of sending children to school beyond class 10.[101]

(e) ***In household decision making patterns***, rural women remain disadvantaged particularly with increasing mechanisation of agriculture as many rural women do not know the use of new farming technology and thereby tend to be marginalised or bypassed.

(f) ***Limited access to rural finance/credit by women*** remain issues particularly in the East. Most rural credit in the East was for purchase of livestock (nearly 17-28 percent), agriculture (6-15 percent) and orchard development (3-18 percent).[102]

(g) ***Rural urban migration among rural women in Bhutan, particularly from Eastern dzongkhags*** is an increasing phenomenon in Bhutan. Recent study by MoAF through an IFAD grant[103] revealed approximately two-thirds of rural migrants are young women. The study further revealed that while 59 percent of the rural households who had a migrant member reported positive impacts for the household through remittances, nearly 49.2 percent households reported negative impacts by way of labour shortage for agriculture resulting nearly 15 percent decrease in agriculture production. In families where only men migrated, women and children had to cope with a heavier workload and also bear the onus of decision making. In some cases, single women felt unsafe and in a few cases entered into undesirable relationships with other men in the absence of husband, leading to marital discord.[104]

(h) ***Early marriage and single women-headed households*** continue to be issues of concern. UNICEF Statistics for Bhutan[105] revealed that 6.2 percent of girls were married by 15 years of age and 25.8 percent by 18 years of age during the period 2002-2012. GNHC data shows that 12.3 percent of girls[106] in the age group of 15-19 in rural areas give birth to at least one child. Early marriage, teenage pregnancy, low use of contraception and sexually transmitted diseases are reported to be increasing among the adolescent. Female-headed households constitute nearly 34 percent in rural areas in Bhutan, mainly due to divorce, separation or death of spouse. In the Eastern Region, the highest proportion of female-headed households[107] are in Lhuentse (53.5 percent), which is also the poorest Dzongkhag, indicating close relationship between poverty and female-headed households.

(i) ***Malnourishment of women and children*** in rural Bhutan has been a problem as revealed from the initial surveys by WFP in the 1980s. The Gender Statistics Bhutan 2010 showed the prevalence of anemia in about 70 percent of rural women. However, improved access to water and sanitation along with improved income among rural households had positive impacts on the health conditions of rural women and children as revealed during the PCR of AMEPP.

(j) ***Property ownership, rights and inheritance*** are generally enjoyed by women as both Ngalops and Sharchops follow matriarchal family system. A recent study[108] by Madhu Rajput observed that 60 percent of rural women hold land registration titles. However, due to male migration, many of the single women headed households continue to be in poverty in spite of land ownership.

(k) ***Violence against women in rural Bhutan*** is not absent. Recent study by NCWC with UNWomen showed that nearly 3 out of 10 women aged 15-49 had experienced some kind of violence in their lifetime, mostly from partners and members of the household.[109]. A study in 2011[110] found that

[100] Fact Sheet Bhutan: Women in Agriculture, Environment and Rural Production. FAO
[101] The Gender Divide in Bhutan: Opinions on the status of women split along gender lines among college students by Tashi Tshomo *et a*l, Sherubtse College, Kanglung (2012).
[102] Discussion with RAMCO.
[103] Rural Urban Migration Study (RUMS) Final Report, MoAF, June 2014.
[104] Gender Pilot Study in Bhutan. GNHC (2011)
[105] Bhutan Statistics, UNICEF. www.unicef.org/infobycountry/**bhutan**_statistics.html
[106] Gender Statistics Bhutan 2010. GNHC (2010).
[107] Bhutan Living Standard Survey 2012 Report, National Statistics Bureau (2012).
[108] Bhutanese Women: A Socio-Economic Study by Madhu Rajput, Dialogue: 12(3), 2011.
[109] A Study on the Situation of Violence Against Women in Bhutan. NCWC and UNWomen (2013?)
[110] *Ibid*

there are four different kinds of violence against women: (i) violence at work places; (ii) violence in schools and institutions; (iii) violence in homes and families, including physical beating of domestic servants, wife beating, violent behaviour of parents; and (iv) violence in communities based on social customs such as night hunting called *bomena* to court girls/women into bed (which is now significantly in the decline even in the rural areas) resulting into unwanted pregnancy.

(l) ***Rural women's access to information, training and skill building in enterprise development*** generally remain limited though the Gender Pilot Study in Bhutan by GNHC in 2011 observed that access to different kinds of information in rural areas was fairly encouraging and improving. But when it comes to training, only 40 percent women from rural areas have participated in training programmes on agriculture and livestock conducted by the government as per the study.

(m) ***Participation of women in village institutions and governance*** though improving, remains low particularly at the level of gups and above. Much needs to be done in women's leadership training.

Gender and poverty in Bhutan[111]

11. The Bhutan Poverty Assessment 2014 showed that the incidence of poverty among female-headed households was no different from that of male-headed households in 2012, though in 2007 the female-headed households fared better and the decline in poverty incidence among male-headed households were faster than the female-headed households. In Bhutan, there is a general assumption that since women enjoy matrilineal inheritance of land, their economic status may not be as serious. However, comparison by marital status of the heads of households shows heightened poverty incidence for female-headed households (compared to similarly placed male-headed households) for the never-married, married and divorced; only among widowed, the poverty incidence is smaller (Table 3). The assessment report further opined that a disproportionate burden of family chores, including child care by women, may limit their choices to only low-quality jobs even if there is no difference in rewards for labour. The assessment also mentioned the puzzling situation of high incidence of poverty among never-married females at 10.5 percent as compared to only 3.7 percent among never-married males.

Table 3. Poverty incidence in 2012, by marital status and gender

Marital status	2012 (Percentage of poor)	
	Male	Female
Never married	3.7	10.5
Married	11.8	13.8
Divorced	4.4	6.2
Widower/widow	18.9	12.5

(Source: Bhutan Poverty Assessment 2014)

12. The BPA 2014 does not have dzongkhag-wise poverty data. However, it carries an assessment of underlying factors for men and women that affect community prosperity. The top three factors in two gewogs each in Pema Gatshel and Lhuentse as per BPA 2014 are listed at Table 4. Common factors are lack of irrigation, labour shortage, crop pests and diseases, wildlife damage, etc., including among women-headed households, is combinations of (i) **economic factors** (such as loss of income to pests and diseases, market inaccessibility, small land holding, labour shortage, etc.); (ii) **social factors** (such as rural urban migration, alcohol abuse, increasing trends of marital discord leading to divorces, old parents being left to themselves, agriculture not being attractive to youth, etc.); and (iii) **environmental/ NRM factors** (irrigation/water shortage and increased crop loss due to pests and diseases, wildlife damages, and natural disasters like storms, earthquake and drought).

[111] This section is largely based on report of Bhutan Poverty Assessment 2014. NSB, RGoB and WB.

Table 4. Top three factors affecting community prosperity in Pema Gatshel and Lhuentse as perceived by communities[112].

Dzongkhag	Gewog	Perceptions about factors affecting community prosperity	
		Male	Female
Pema Gatshel	Shumar	- Pest/diseases affecting crops - Lack of irrigation - Wildlife damage	- Impact of mining - Limited access to credit - Crop damage by pests/ diseases
	Khar (combined male and female)	- Lack of irrigation - Labour shortage - Crop damage by pests/diseases	
Lhuentse	Gangzur (male & female combined)	- Small land holding - Market inaccessibility - Lack of irrigation	
	Metsho (combined male and female)	- Market inaccessibility - Lack of irrigation - Small land holding	

Gender mainstreaming in CARLEP

13. Gender mainstreaming in CARLEP will be guided by IFAD's *Gender Equality and Women's* Empowerment *Policy 2012*. Gender issues and concerns will be addressed in a cross cutting manner across all components and sub-components and in programme management (see **Annex 1 for Gender Checklist in WP**). The programme will adopt a Knowledge management-centric approach to bring about more comprehensive learning to guide implementation, enabling poor rural women and men to improve their food security and nutrition, raise their incomes and strengthen their resilience. Additionally, CARLEP will enable women and men to have equal voice and influence in rural organizations and achieve a more equitable balance in workloads and in sharing of economic and social benefits.

Gender mainstreaming in programme management

14. CARLEP will follow a Gender and Development (GAD) approach, focusing on empowering women and addressing the inequalities in society. GAD seeks to have both women and men participate, make decisions and share benefits. It aims at meeting practical needs as well as promoting strategic interests of women and men and is in line with the IFAD Gender Equality and Women's Empowerment Policy. The CARLEP PMO will have a Gender Focal Person, reporting to the Programme Director, who will provide inputs on implementing the gender action plans. The Gender Focal Person will be part of the programme management team, so as to provide inputs for decision-making on programme activities and to ensure that gender and social development issues are mainstreamed at various levels of programme activities. The Gender Focal Person will also be part of the M&E system so as to capture, monitor and follow-up on all on-going field activities and co-ordinate/facilitate all trainings on gender issues.

15. CARLEP may consider having a **gender advisory committee** consisting of representatives from RGoB, women's organisations and prominent citizens working on gender equality and women's issues. Besides reviewing gender progress, it may meet annually to provide strategic direction and suggestions to the PMO in implementing CARLEP's gender strategy and provide guidance on implementation issues emerging from the field besides harmonizing with RGoB's policy on gender equality. Gender mainstreaming in programme management will, *inter alia*, ensure the following:

- Specific targets are set for women and men participants in different activities and components.
- Women's participation in programme-related decision-making bodies such as farmers groups, cooperatives, etc. as well as in leadership positions is ensured.
- Training needs of the PMO, dzongkhag and Gewog staff on gender sensitisation will be assessed and need based training will be provided.
- Actions identified in the gender strategy are reflected in the cost tables and financial reporting.
- The monitoring and evaluation framework has a gender lens.
- Officials recruited or deputed to CARLEP will be tested for their gender perspective and sensitivity at the time of recruitment.
- Include responsibilities for gender mainstreaming in the Terms of Reference of all PMO staff.
- To the extent possible, gender balance is maintained in staffing of the PMO.

[112] Source: Bhutan Poverty Assessment 2014

- The PMO organisational set up and work environment will be gender sensitive with adequate enabling environment for women staff to work with dignity, safety and respect.

16. CARLEP will develop the Gender Strategy and Action Plan for the programme (see WP for *guidelines for preparing the Gender Strategy and Action Plan)*. The experiences of MAGIP can be drawn upon in preparing the plan. The Gender Strategy and Action Plan will be based on the principles and strategies of IFAD's Gender Equality and Women Empowerment Policy 2012 to guide planning, implementation, monitoring and evaluation of the programme. Gender mainstreaming will be across all programme interventions and the organisational set up. The strategy will have gender check-list in all components/subcomponents or activities of the programme. The detailed gender analysis to be undertaken periodically will help to generate information on activity profile and access and control aspects to develop and refine the gender strategy for the programme.

17. The PMO will facilitate gender training on an on-going and systematic basis for all programme participants to build gender sensitivity and capability to address gender issues, keeping in mind that each group and level of staff will need differentiated content and depth. The start-up orientation workshops for all professional, technical and administrative staff of the PMO as well as the staff from other participating agencies will focus on the gender approach, specifically the strategy, objectives and targets in terms of men and women in programme activities. Gender training for the PMO and other programme staff will aim at building the skills of the team to collect gender disaggregated data, understand and appreciate the gender roles and relations in different livelihood and value chain sectors and at household level which differentiates control over resource, the prevailing interdependence and cooperation, inequalities and conflicts underlying the gender division of labour, women's roles in relation to reproduction, production and community work, women's practical needs based on their workloads and responsibilities and women's strategic needs arising out of their unequal standing within the family, the community and society at large. Their understanding of gender mainstreaming and gender equity will also be built. Refresher training will be done from time to time related to emerging training needs in gender mainstreaming in programme cycle. For an idea of the Terms of Reference of Gender Focal Point/Person in CARLEP, see the WP.

Mainstreaming gender in programme components

18. **Component 1: Market-led Sustainable Agricultural Production**. The approach is intensification of climate-smart, diversified agricultural and livestock production through existing farmers' groups and new groups and cooperatives to be formed. The programme will ensure that at least 50 percent of the group members are women and that adequate gender sensitisation training would be provided to the groups. Some of thematic training areas would include, *inter alia*, (i) patriarchy; (ii) violence against women; (iii) gender and livelihoods; (iv) participation in local institutions; (v) governance; (vi) rights and entitlements and (vii) drudgery reduction. Women's strength and potential to become change agents will be emphasised. Additional capacity building in skill development may be organised for the women on various aspects of agricultural production and livestock management including adaptation to climate change or climate-resilient farming practices. All data related to Component 1 will be sex-disaggregated.

19. **Component 2: Support for value chain and markets development**. The programme will support various types of market infrastructures, provide trainings to farmers' groups engaged in value chain production on marketing and for new market-led farmers' groups/cooperatives/marketing groups, ensuring all the poor and disadvantaged households in a given area are included. The programme will ensure that at least 50 percent of participants and memberships in all these groups would be women. Women will necessarily be included in all capacity building activities on issues relating to marketing. Women would specifically be given leadership training in marketing. All data collected under this component would be sex-disaggregated. FCBL will ensure gender balance in line with the policy of the RGoB in staff recruitment and will promote gender-sensitive service and work environment.

20. **Component 3: Support for institutional strengthening and policy development**. Towards creating a more conducive institutional and policy environment, CARLEP will capture and document knowledge and good practice from programme implementation, especially related to climate resilience, value chain and market development. CARLEP's knowledge products will be broadly shared with programme stakeholders and beyond to leverage policy support for broader value chain

and market development. Issues affecting women's participation and well-being will be included in all activities under this component and highlighted in reporting.

Gender sensitive M&E

21. The programme will develop a gender sensitive M&E framework. Some examples are outlined in Appendix 6. The baseline for the programme will cover information that will help the programme to monitor progress with a focus on gender and vulnerability aspects. Some of the aspects that can be captured may include: (i) main livelihood and income sources of men and women; (ii) expenditures by men and women; and (iii) ownership and control over household assets by men and women. The sample for surveys and studies will include women proportional to programme coverage so that the information gathered is truly representative. RIMS+ Baseline Survey will also be design to capture sex-disaggregated information. Cost for all gender related activities will come from the overall programme management cost.

22. ***Gender and vulnerability disaggregated reporting***: CARLEP will design Reporting Formats to collect separate data for women and men. Staff engaged in collecting, reporting and analysing data will be sensitized/ trained accordingly. The gender and vulnerability disaggregated data could include:

- No of differently abled individuals (men and women) and women headed households;
- Percentage of women and men as members of village level development committees;
- Women and men as president or in leadership position in groups or committees;
- Women as a percentage of members of various farmers' groups and cooperatives;
- Women and men as a percentage of beneficiaries of programme-related training activities.
- Women and men as a percentage of programme staff, by level.

23. **Gender *Sensitive Monitoring of Programme Outcomes**:* CARLEP will develop gender and poverty sensitive outcome indicators for monitoring across its activities/components. The results of these indicators could be verified through Annual Outcome Surveys and/or focused group discussion by M&E or programme staff visiting the fields. See WP for details.

24. ***Special studies and field verifications***: CARLEP will also endeavour to undertake at regular intervals some special qualitative studies with quantitative data as applicable to assess the programme influence/outcomes/impacts on some key areas or indicators. Some of these could be:

- Changes in livelihood and income patterns of men and women from smallholders.
- Changes in division of labour between women and men.
- Changes in harmony at home and violence against women.
- Changes in the leadership levels for women and men.
- Differences in access to, and control over, resources between women and men.
- Changes in decision making patterns between women and men at the household and community.
- Changes in women and men on knowledge of and access to their rights and entitlements.
- Changes in men's and women's attitudes, perceptions, practices, knowledge and feeling of empowerment and attainment of general wellbeing and happiness.

C. Targeting and Target Groups in CARLEP

Lessons learned on targeting from IFAD projects in Bhutan

25. Both AMEPP and MAGIP had distinct geographic targeting, concentrating in the six dzongkhags in the Eastern Region, home to largest number of poor people in the country. By concentrating in a particular region, AMEPP and MAGIP were able to have greater impact and make more effective use of resources towards poverty reduction. Poverty targeting has been very effective in AMEPP. The proportion of poorest households came down from 38.5 percent in 2006-07 to 11 percent in 2012. As many of the poorest households graduated from being poorest to poor, the proportion of poor households rose from 48.0 percent during 2006-07 to 61.0 percent in 2012. As the project interventions contributed significantly in enabling many of the poor households to graduate to better-off category, the percentage of better-off households also increased from 13.5 percent during 2006-07 to 28.0 percent at project closure in 2012. The Project Completion Report of AMEPP showed that rural infrastructure by way of farm roads and irrigation, together with livelihoods interventions in vegetable production, backyard poultry, dairy, fishery, etc. and small off-farm enterprises promoted through its Micro Initiative Fund (MIF) had been most effective in reducing rural poverty. Building on

AMEPP's experience, MAGIP has demonstrated that vegetable cultivation and dairy production together with rehabilitation of irrigation facilities are effective ways of poverty targeting.

Characteristics of target groups with basic development needs in programme area

26. CARLEP's key intervention would be for smallholders to enhance market-led production (both agriculture and livestock). Ownership of agricultural land would be an important aspect of households participating in the project though households without land can also have stall-fed livestock (dairy cattle) by growing fodder on homestead and community land. Some of the common characteristics of different target groups are described below. Overall approach to targeting may be read with IFAD's targeting check list provided as Annex at the end of this section.

27. ***Households by land ownership***. About two-thirds of the households in Bhutan own land, including nearly 84 percent in rural areas and 32 percent in urban areas. Of the rural land owners, nearly 70 percent on average own 5 acres or less and 13.6 percent more than 5 acres. Nearly 40 percent rural households on average own 2.5 acres or less. About 16.5 percent of rural households do not own any land (perhaps only homestead land where the dwelling house is constructed with a small kitchen garden). No data is available on land ownership by dzongkhags. CARLEP will target households having land for intensive agricultural production for markets, a majority of them being smallholders.

28. ***Households by livestock ownership***. Livestock in Bhutan includes pigs, cattle, yak, buffalo, horses, sheep, goats and poultry. According to BLSS 2012, livestock ownership is mostly in the rural areas. Two-thirds of rural households own cattle, most having two or more heads. The Eastern Region had second highest population of improved cattle in 2011. Over 44 percent of rural households own poultry, at least two heads or more. About 15 percent households own pigs, horses and goats. Overall, BLSS 2012 survey showed that 78 percent of rural households own cattle and 59 percent own poultry. With appropriate planning and investment, CARLEP can intensify production of cattle for dairy milk.

29. ***Rural women***: Women in Bhutan constitute nearly 48 percent of the population. Bhutan traditionally has very positive attitudes towards women. However, since women play a key role both at home and workplace, it is important to enhance their participation in socio-economic development so that their pivotal role in the well-being of their families and household economy give them equal advantages in all respects. Although gender discrimination may not be visible, due to changing economic aspirations and development challenges, women are disadvantaged in several frontiers.

29. ***Women headed households*** form nearly 29.3 percent of the households in Bhutan[113]. The percentage of women headed households in Eastern Region is also high—more than national average in three dzongkhags, viz. Lhuentse (53 percent), Mongar (41.5 percent) and Trashi Yangtse (38.3 percent), while it is below national average in Pemagatshel (18.8 percent), Samdrup Jongkhar (18.1 percent) and Trashigang (21.4 percent). Some of these female headed households are likely to be *Kidu* recipients for which no data is available. These women are thus highly vulnerable with huge poverty challenges, particularly those living in rural areas. Therefore, CARLEP will endeavour to target all the women-headed households to ensure that they attain economic security.

30. ***Rural youth***: The National Youth Policy (NYP) 2010 of Bhutan is directed towards young people in the age group of 13-24 years.[114] In the rural context of Bhutan, many youth in this age group are school dropouts and are engaged in casual unskilled wage labour. Even school graduate rural youth may not find appropriate employment. Many youth are reluctant to take up agriculture or forest based livelihoods. Like any age group in the society, this wide age group of 13-24 years also consists of subgroups with diverse experiences, needs and risks depending on age, gender, geographical location, region, culture, marital status, education, socio-economic background and work status. Both boys and girls in rural Bhutan marry young (approximately 25 percent of youth aged 20-24 years in Bhutan have been married before the age of 18 years and 15 percent have given birth to a child

[113] Bhutan Living Standard Survey 2012
[114] The Penal Code of Bhutan, 2004 has set the age of criminal responsibility at 10 years and the Judiciary is considering raising it to 13 years to decriminalize those in the age group of 11-12. The Labour Act of Bhutan, 2007 allows young people from the age of 13 to undertake work in certain categories and in specified work places. The definitions of the United Nations and the Convention on the Rights of the Child (CRC) that sets 12 years and below as the primary school age group have been taken on board. Therefore, the lower age limit has been set inclusive of 13 years while the upper limit of 24 years is in keeping with the standard definitions set by the UN and World Health Organization (WHO) (National Youth Policy 2010 of Bhutan).

before the age of 18 years).[115] Early marriage and motherhood take a toll on the young girls' health besides affecting the health of the children. Alcohol use is also featured among rural youth particularly among young boys. CARLEP will engage with rural youth/school dropouts with vocational training for enterprise development.

Poverty targeting, target households and beneficiaries in CARLEP

31. Targeting poses unique challenges in Bhutan. Community cohesion in rural Bhutan is a praised value. Inclusive targeting, whereby no specific group is *a priori* excluded in project implementation, appears as the best culturally-sensitive approach. For example, AMEPP found it difficult to apply a very strict targeting approach in practice in the field while conducting a "household categorization" exercise to be able to reach out to the poorest households. A positive feature, however, is the fact that, given the rather small size of most villages, gewog extension staff usually know very well all households in a given community. If certain activities need to be targeted at certain groups only, these households will be easy to identify. Targeting in MAGIP too faced similar situation. Most often, every household (willing households) have been included in project activities in MAGIP. Therefore, targeting in rural Bhutan is typically all inclusive. The approximate total rural HHs in Eastern Bhutan is 28 984 (in 2011-12). Dzongkhag-wise distribution is given below (Table 5):

Table 5. Rural and urban households in Eastern Dzongkhags

Dzongkhags	Rural	Urban	Total	Year
Trashi Yangtse	3 408	325	3 733	2012
Lhuentse	2 765	275	3 040	2012
Mongar	6 098	1 480	7 578	2012
Pemagatshel	4 509	579	5 088	2012
Trashigang	8 933	579	10 175	2012
Samdrup Jongkhar	3 271	2 262	5 533	2011
Total	**28 984**	**6 163**	**35 147**	

Source: NSB, Bhutan (Data for 2011 and 2012)

32. The programme will adopt an inclusive approach targeting all households living in the particular village or habitation. To the extent feasible, these households would be included as members in the farmers' groups such as vegetable groups, dairy groups, etc. to be formed but on free prior informed consent basis. Field experiences showed that over 95 percent of rural households in most villages in Eastern Bhutan could be classified as smallholders. CARLEP will be the third successive programme after AMEPP and MAGIP's in Eastern Bhutan. AMEPP has followed household categorization (based on three major criteria of food security, source of livelihoods and asset ownership, including land, livestock and house), validated at the time of AMEPP's Project Completion Review in 2012[116] on households targeting. Based on these criteria, AMEPP had three household categories: Category A or "Better Off" included households with the largest asset base and secure food supply; Category B or "Poor" households form a large proportion of the households with limited asset base and seasonal food shortages; and Category C or the "Poorest" represented landless, women-headed households with very limited assets and dependent on sharecropping and labour for livelihood. The baseline household categories for AMEPP at 2006-07 were 13.5 percent better off, 48 percent poor and 38.5 percent poorest, while at PCR in 2012, the categories were 28 percent for better off, 61 percent poor and 11 percent poorest. CARLEP will not follow AMEPP's household categorization in targeting due to practical problems of identifying specific categories of households in the field.

33. Since the poorest or vulnerable households may not normally come forward to take up any programme activities, special efforts will be made to identify and include them in the programme activities. While common infrastructures to be created under the programme will benefit all households in the villages, the activities aimed at individual households will be targeted to vulnerable households along with the poor households. Efforts would be made to include them in all institution building such as farmers' groups and cooperatives, marketing groups, dairy groups and others with prior informed consent. In particular, women and youth from all categories of target households would be included in the programme activities.

[115] A Situational Analysis of Children, Youth and Women in Bhutan 2012, UNICEF.
[116] AMEPP (Agriculture, Marketing and Enterprise Promotion Programme) Project Completion Report, IFAD, 2012.

34. ***Recent RGoB initiatives in poverty targeting*.** Bhutan is currently undergoing a process for identifying the poorest households in every dzongkhag as per recent notification of RGoB in Prime Minister's Office. The purpose of the initiative as informed during interactions with Dasho Dzongdags[117] of Trashi Yangtse and Lhuentse is to identify the poorest households in each dzongkhag across the country and provide direct interventions to these households so that they could come out of severe poverty situations. In the first round of enumeration of extremely poor households, the Trashi Yangtse Dzongkhag Administration has identified 156 households[118] considered as the poorest who would require direct government interventions to come out of extreme poverty conditions. The criteria used for identifying these extremely poor households were food security, financial security, housing conditions, health conditions, education and community vitality. The data provided by the Trashi Yangtse Dzongkhag Administration showed that most of these households identified as extremely poor have some common characteristics such as widow or widower, old age and hence cannot do any work, no sources of income, single women households with small children and fatherless, old parents having differently abled child/children (such as partially blind, polio-affected, mental sickness, etc.), old/aged parents abandoned by children or whose children have died, family with mental disability, households living in unrepaired dilapidated houses or families too poor and to repair their houses, destitute households, absence of community support, etc. It is understood that similar exercise is in progress in all the other remaining dzongkhags in the East. CARLEP's target groups could be from similar households who would be assisted to self-target for taking up activities under diversified crop production and/or small livestock.

Value Chain targeting

35. To facilitate growth of market-led (semi-)commercial agricultural production, the programme is designed to, in the first phase, support and focus on strengthening **two value chains**, one in agricultural crops (**vegetable value chain**) and one in livestock (**dairy value chain)**. These two value chains have already contributed significantly in enhancing rural farmers' income and have an immediate comparative advantage in Bhutanese agriculture for further expansion to market demand. These two value chains also have an immediate opportunity to increase geographic coverage, thereby increasing the number of programme beneficiary households. Support to the vegetable value chain will start in the six eastern dzongkhags, building upon past investments, with the aim to over time scale-up to central-southern and west-southern districts, while ultimately becoming nation-wide. Support to value chain strengthening in the dairy sector will focus only on the six eastern dzongkhags, where the value chain will be expanded and intensified. Both the value chains would be pro-smallholders, pro-poor, pro-women and pro-youth.

Geographical targeting

36. CARLEP will develop the vegetable and dairy value chains, starting in the six dzongkhags in the Eastern Region comprising of Lhuentse, Mongar, Pemagatshel, Samdrup Jongkhar, Trashiyangtse and Trashigang. The dairy value chain will remain focused on the six eastern dzongkhags unless the MTR recommends otherwise. Support to the vegetable value chain will also start with the six eastern dzongkhags, but with a clear aim to develop a nation-wide value chain at the end of the CARLEP. Scaling-up of the vegetable value chain is planned phase-wise, through the high potential areas in the central-southern dzongkhags of Tsirang, Sarpang and Zhemgang, and the south-western dzongkhag of Chhukha. After this initial expansion, all other dzongkhags will be targeted under the vegetable value chain with sequencing based on comparative advantage. Rice production will be supported in the four high potential dzongkhags of the east, Mongar, Pemagatshel, Samdrup Jongkhar and Trashigang. Maize production will be supported in all dzongkhags where the CARLEP is working, since it concerns a complementary crop to vegetables and well as dairy (fodder) production.

37. The selection of the dzongkhags is based on a combination of production potential, marketing synergy and poverty targeting. All selected dzongkhags have a relatively high poverty rate (Table 1) compared to the national average of 12.0 percent, with Mongar (10.5 percent), Trashiyangtse (13.5 percent), Trashigang (11.5 percent) and Chhukha (11.2 percent) hovering around the average and Samdrup Jongkhar (21.0 percent), Zhemgang (26.3), Lhuentse (31.9 percent) and Pemagatshel (26.9 percent) clearly way above average. The only exception is Sarpang dzongkhag with a poverty rate of

[117] Appraisal mission interactions with Dasho Dzongdags of Trashi Yangtse and Lhuentse during November 9-10, 2014 with list of 156 extremely poor households provided subsequently.
[118] This forms only 0.04 percent of rural households of Trashi Yangtse which has 3 408 rural households as per 2012 district data.

4.2 percent, which is selected mainly because of its comparatively high production and marketing opportunities and additional rice production potential. In terms of depth and severity of poverty in the programme areas, the PAR 2012 showed that overall Lhuentse, Samdrup Jongkhar and Pemagatshel scored very high in all respects of poverty (poverty rate, poverty gap or poverty squared gap).[119]

38. Within the dzongkhag targeting process as described above, the programme will target gewogs, based on areas with high production and marketing potential in the selected value chains. The ultimate **geographical targeting entity for CARLEP is thus the gewog**. This will be based an assessment of the number of (clusters of) communities that meet a set of market-based criteria as (i) demonstrated agricultural production potential in selected commodities that have clear demand in local, national and international markets, (ii) relative accessibility to road and marketing channels, (iii) demonstrated interest and commitment of communities and farmer organisations. The selection of gewogs (and within gewogs, areas with high potential) will therefore result from the development and scaling-up strategy of the especially the vegetable value chain;[120] a decision-making and planning process to be conducted jointly by the CARLEP implementation team, FCBL, DAMC, line departments, dzongkhags and gewogs. Based on the value chain development plans, CARLEP activities at the gewog level will be included into the gewog development plans and CARLEP resources will subsequently be allocated on an annual basis. CARLEP resources will thus be reflected in the annual gewog/dzongkhag plans and budgets. Implementation support will be provided where required by the programme team and TA.

Number of beneficiaries

39. In the **six eastern dzongkhags** the programme aims to reach a total of approximately 28,975[121] smallholder households, most benefiting from climate resilient farming practices (see Table 1 below). Several households are expected to join both the value chains in the Eastern dzongkhags due to synergy between the two as vegetable residues and weeds can be used as fodder for dairy. It is assumed that about 80% members in new dairy groups and about 70% in existing dairy group would be members of existing and new vegetable groups, respectively. Similarly, we expect that the agricultural enterprises would employ farmers, especially youth whose families are involved in one or the other value chains. It is assumed that about 15% agriculture entrepreneurs would be members of vegetable or dairy groups. To preclude double counting, beneficiaries participating in multiple activities have been accounted for in only one activity. It is assumed that about 50% of households in eastern dzongkhags not benefiting from value chain activities would benefit from support for climate resilient farming. Beneficiaries outside the eastern dzongkhags through scaling-up of the extension outreach models for climate resilience and the value chain and enterprise development support are not included. Direct beneficiaries from irrigation scheme renovation are assumed to be covered under the vegetable groups and not counted separately. Indirect beneficiaries from improved access to markets because of CARLEP support to value chain development have not been included. It is assumed that each dairy/vegetable group has 15 members and each household has five members. It has been assumed that the agricultural enterprises will employ four persons besides the owner himself/herself. Assessment of beneficiaries may be done again at the MTR once second phase interventions outside the eastern dzongkhags are decided upon.

[119] Detail analysis of Depth and Severity of Poverty in Bhutan is available in Bhutan Poverty Analysis Report 2012 published by Bhutan Statistics Bureau and The World Bank, 2013.
[120] The DoL strategy for dairy value chain development has already identified high potential geogs based on e.g. access.
[121] National Statistical Bureau, RGoB (2014)

Table 1: Number of direct and indirect programme beneficiaries

Description	# of Groups/ Enterprises	Groups with Overlapping Membership	Non-overlapping Households	Non-overlapping Beneficiaries [122]	Non-overlapping Households in Eastern Dzongkhags
Direct Beneficiaries					
New Vegetable Groups	300		4 500	22 500	3 000
New Dairy Groups	150	120	450	2 250	450
Existing Vegetable Groups	120		1 800	9 000	1 800
Existing Dairy Groups	43	30	195	975	195
Other Agricultural Enterprises	200	30	170	850	170
Indirect Beneficiaries					
Climate Resilient Farming[123]			21 860	109 300	14 700[124]
Total			28 975	144 875	20 315

Sequencing of targeting

40. Sequencing of targeting would be done by rolling out component-wise/activity-wise involvement of primary target groups or categories. Targeting strategy would be by inclusive involvement of all categories of target groups as per suitability of the target groups. Table 6 gives an idea of component/activity-wise primary target groups and likely outreach.

Table 6. Matrix of components/activities and targeting strategy

Component / Sub-components	Key activities	Primary target groups	Likely outreach (of baseline data)	Direct HHs outreach
1.Support to market-driven agricultural production				
1.1 Support to crop sub-sector	- Support to crop production (paddy, maize, vegetables, etc.) - Formation farmers groups and capacity building	- Land owning HHs in paddy - Smallholders/Land owning poor HHs in vegetables and maize including female headed HHs	90 percent of all smallholders	6 470 HH under vegetable value chain etc + at least 14 700 HH under miscellaneous crops
	-Power tiller operations	Rural youth	20 percent of youth	
1.2 Support to livestock sub-sector	- Support to dairy cattle, poultry and fishery - Formation of groups in dairy, poultry, fishery etc. and their capacity building	- Dairy cattle by both poor and non-poor land owning HHs - Some landless HHs taking up dairy or poultry - Aquaculture by land owning HHs	- 80 percent of land owning HHs -30 percent of landless HHs -30 percent of land owning HHs	1 995 HH under dairy cattle + 2 000 HH under other livestock.
2. Support to value chains and marketing development	-Establishment of 'three-window shops' (or famers shops)	-Youth couple	10 percent of all OSFS	
	- Establishment of marketing infrastructures	- Smallholders	100 percent smallholder farmers	
	-Farmers groups and cooperative development	-Educated youth as service providers/trainers to groups	10 percent	
3. Institutional strengthening and policy support	- Strengthening marketing institutions (FCBL) - Strengthening farmers groups / cooperatives / marketing groups	- Smallholder men and women and some youth.	100 percent of men and women from smallholders belonging to farmers groups	

[122] With approximate estimate of 5 members per HH, which is a typical of eastern Bhutan.
[123] Households will benefit from one of these interventions, viz. diversified agricultural crops, other livestock (piggery and poultry), biogas, benefits from irrigation, etc.
[124] Estimated number.

Annex 1

IFAD's Targeting Policy – Checklist for Design

Targeting checklist	CARLEP Design RESPONSE
1. Does the main target group - those expected to benefit most- correspond to IFAD's target group as defined by the Targeting Policy (poorer households and food insecure)?	Yes. In fact, 95% of rural households in CARLEP programme areas in eastern Bhutan are smallholder farmers who would be the target groups. In terms of poverty rate, the region has the highest poverty rate in the country, being 31.9% in Lhuentse, 26.9% in Pemagatshel and 21.0% in Samdrup Jongkhar. The focus of programme activities including group formation (farmers' groups / vegetable groups / dairy groups / marketing groups / cooperatives etc.) will be targeted to these categories of HHs. A major thrust is achieving sustainable income (hence assured food, nutrition and livelihoods security) through climate-resilient production intensification and market linkage.
2. Have target sub-groups been identified and described according to their different socio-economic characteristics, assets and livelihoods - with attention to gender and youth differences? (Matrix on target group characteristics completed?)	The programme target sub-groups are women, men and youth from smallholder households, most of whom are poor to poorest. Being market-led production with marketing value chains, inclusion of better off households (approximately 5% of rural households or nearly 28% of all the rural-urban households in programme areas) would be desirable to spin-off economy of scales for market support and market linkages. Experience showed that even better off families living in rural areas particularly in programme areas too could become vulnerable due to many uncertainties (such as climate risks, non-availability of timely agricultural inputs through government extension system, etc). However, special attention would be paid that women and men and youth from smallholder households are equally represented both in numbers and positions in all group formations (farmers groups and cooperatives) and programme activities. Inclusive approach would be the key approach keeping in mind the overall policy of the government for security of food, nutrition and income for all from rural areas. Target sub-groups have been identified and described on the basis of on-going IFAD-funded MAGIP programme in the programme area and specific matrix on target group characteristics have been provided.
3. Is evidence provided of interest in and likely uptake of the proposed activities by the identified target sub-groups? What is the evidence? (Matrix on analysis of programme components and activities by principal beneficiary groups completed?)	A matrix showing the evidence of interest in and likely uptake of proposed intervention by different target group categories provided (this section may be read with WP on agriculture and dairy). This is based on design task force's assessment and mission's assessment during field visits in some pockets of the country and interaction with the target group communities including drawing lessons from on-going IFAD-funded MAGIP programme.
4. Does the design document describe a feasible and operational targeting strategy in line with the Targeting Policy, involving some or all of the following measures and methods:	
4.1 ***Geographic targeting*** *– based on poverty data or proxy indicators to identify, for area-based programmes or programmes, geographic areas (and within these, communities) with high concentrations of poor people*	The programme will primarily work in the six Eastern Dzongkhags where poverty remains the highest (with 31.9% poverty rate in Lhuentse, the district is the poorest with the highest poverty rate in the country). Table 3 shows the percentage of target groups by Dzongkhag as per the data of the Royal Government of Bhutan. The WP on agriculture and dairy production intensification also identified key geographic target areas by Gewog (or sub-district) where the programme will work corresponding to concentration of the smallholder households but with highest potential for successful intervention based on connectivity, availability of land and other resources for production intensification, easier access to credits and agricultural inputs, existing outreach of market networks in the area, etc.
4.2 ***Direct targeting*** *- when services or resources are to be channelled to specific individuals or households*	For direct targeting, appropriate selection criteria have been set out either for agriculture production intensification or livestock/dairy development (respective WPs give more details). This is a market-led agriculture and livestock production enhancement programme with secure market linkages in which women, men and youth from smallholder rural households including the poor and very poor households will be the major beneficiaries of this

	programme. The target sub-groups have been identified in details. The programme will ensure that all target groups are included in the farmers' groups/producer groups or cooperatives to be formed. Youth from poor households and women would be assisted to access enterprise development fund of the RGoB from programme areas. Specific capacity building programmes would be designed targeting the women and youth. As outlined in para 18, the Dzongkhags are in the process of identifying extremely poor or the poorest households to enable the government to provide direct poverty interventions. For example, 0.04% rural households in Trashi Yangtse are the poorest (based on food and income insecurity, etc) who would require direct government support to overcome poverty. CARLEP will target such extremely poor households for direct targeting to take up programme activities based on their individual household inclination and capacity building.
4.3 ***Self targeting*** *– when goods and services respond to the priority needs, resource endowments and livelihood strategies of target groups*	A mechanism for self-targeting has been outlined and specified for example in accessing BOIC fund or BDBL or any other credit linked support from any other nationalised financial institutions particularly by the youth entrepreneurs. Smallholder households and better off households in a selected village including women-headed households would be facilitated to be included into any of the farmers groups based on their aptitude and inclination either for agriculture (vegetable production) or livestock rearing (dairy cattle) as practical approach to self-targeting. Every willing household would also be encouraged to undertake agricultural or diversification by planting diversified crops as practical approach to climate change adaptation. The poor or poorest households among them would also be encouraged to self-target for backyard poultry or small livestock rearing (about 70% livestock in programme areas are owned by women). The WPs on agriculture and livestock have already identified potential target gewogs within which the smallholders would form the self-targeting groups who would be provided with necessary input support, capacity building, credit and market linkages in order to demonstrate wider value chains both in agriculture (vegetable) and livestock (dairy) by including them in any of the farmers groups that would be formed.
4.4 ***Empowering measures*** *- including information and communication, focused capacity- and confidence-building measures, organisational support, in order to empower and encourage the more active participation and inclusion in planning and decision making of people who traditionally have less voice and power*	The community and women empowerment strategies under CARLEP will be ensured by inclusion of men and women from smallholder poor and poorest households in the various farmers' groups/producers groups or cooperatives that the programme will promote; by capacity building programmes these target groups would be oriented to actively participate in group activities including leadership positions that traditionally have less voice and power. Participatory processes will be employed to seek participation of the poor and poorest. Various farmers' groups/producer groups will prepare their activities to feed into Gewog and Dzongkhag annual plans. They would be part of all capacity building programme that CARLEP will undertake in addition to gradually managing the local level marketing activities such as collection centres, storage facilities and aggregation centres. It is anticipated that even the three-window shops (or farmers' shops) that would initially be handled by FCBL would gradually pass on the local farmers groups for owning and managing such infrastructures or assets and operations.
4.5 ***Enabling measures*** *–to strengthen stakeholders' and partners' attitude and commitment to poverty targeting, gender equality and women's empowerment, including policy dialogue, awareness-raising and capacity-building*	CARLEP programme design includes all enabling measures to strengthen stakeholders' and partners' attitude and commitment to poverty targeting, gender equality and women's empowerment. The enabling measures are integrated in the planning and M&E systems at various level of the programme management including the participating organisations/agencies in CARLEP. Lessons learned from AMEPP and MAGIP would be part of these enabling measures in which all stakeholders are part of the planning and training processes. Incidentally, the government staff in RGoB already undergo fair elements of training on various aspects of poverty targeting, gender equality, women empowerment (in line with the policy of the RGoB) including those in the Dzongkhag and Gewog level staff. MAGIP has provided trainings on these aspects to a sizable district staffs from the Eastern Region based on its gender strategy and action plan that will be continued under CARLEP with new staffs joining the programme and new groups participating in the programme.
4.6 ***Attention to procedural measures*** *- that could militate against participation by the intended target groups*	The programme design has put in adequate procedural measures to ensure participation of women, men and youth who are the intended target groups from the poor and poorest households. This includes their inclusion in various farmers' groups/producer groups such as vegetable groups, dairy groups, marketing groups and cooperatives with provisions for capacity building and

	their election/selection in leadership positions within the groups and committees to be formed. An activity under component 2 of the design is intended to assist the potential target groups for access to enterprise development fund being made available by RGoB through BOIC/BDBL partnership. This facilitation will ease the procedural complexities to access the enterprise fund and also support the entrepreneurs from target groups even after they access the enterprise fund to link with markets and other services required.
4.7 ***Operational measures*** *- appropriate project/ programme management arrangements, staffing, selection of implementation partners and service providers*	The programme will be managed by the PMO (who would largely be drawn from MoAF and PMO would be located in the programme areas in the East) under the aegis of the MoAF which is already sensitive to the interests of poor and poorest households in general and the women and youth in particular. Based on MoAF's long-term partnership with and participation in IFAD-funded projects, both closed and on-going, are well aware of IFAD's special targeting policies on smallholders, poor households, women-headed households, rural women and youth. RGoB with collaboration from CSO is keen to support youth from the programme areas for gainful employment through enterprise development both farm based and non-farm. The staffs selected for CARLEP together with the staffs from Dzongkhags, Gewogs and key partners such as FCBL and RAMCO would be appropriately oriented to IFAD's and RGoB's targeting policies and gender empowerment issues. This would be largely done during the start-up workshop but would also be periodically undertaken as a task under the gender mainstreaming and overall targeting activities of CARLEP during the processes of programme implementation.
5. **Monitoring targeting performance**. Does the design document specify that targeting performance will be monitored using participatory M&E, and also be assessed at mid-term review? Does the M&E framework allow for the collection/analysis of sex-disaggregated data and are there gender-sensitive indicators against which to monitor/evaluate outputs, outcomes and impacts?	The programme design document specifies use of participatory M&E and collection and analysis of gender disaggregated data. Both Appendix 2 on Poverty, Targeting and Gender and Appendix 6 on M&E provide outlines for gender sensitive monitoring to be undertaken by CARLEP. Target groups related information would be generated at baseline and monitoring targeting performance would be done during subsequent Annual RIMS Report (with sex-disaggregated data), Annual Outcome Surveys as well as during the Mid-Term Review (MTR) and Endline Survey. Periodically, CARLEP will also undertake specific evaluator studies on specific target groups and/or targeting effectiveness as would be outlined during the implementation supports and supervision missions. It may be mentioned that poverty targeting (by identifying the most vulnerable and extremely poor households for direct and specific interventions) is the policies of the RGoB which is undertaking Dzongkhag-wise surveys to identify the poorest households needing direct government interventions to come out of extreme poverty to provide basic needs of food, health, minimum income and housing. CARLEP will support these initiatives in specific gewogs and villages where the programme will work and where such extremely poor households have been identified. CARLEP M&E will also capture data on such specific target group interventions.

Appendix 3: Country performance and lessons learned

Changing development and service delivery context in Bhutan

1. With the relatively recent introduction of democratic institutions at the local level, citizens are increasingly empowered to voice development demand and the gewog level has been empowered to take more responsibility for local development processes. The MoAF, with a relatively large number of centralised research and service institutions, risks becoming more and more detached from local development processes, while its overall performance is increasingly measured by its ability to deliver development results on the ground through the still relatively under-capacitated gewog levels. Social media and civil society organizations further create community voice and facilitate more dynamic local development processes. At the same time (social) media is used increasingly by citizens to raise their voice for action on development demands and service accountability directly to Ministers and political parties, bypassing traditional dzongkhag and Ministerial structures. There is therefore a clear need for MoAF to adjust to this new reality and to address the increasing macro-micro gap[125]. MoAF has, however, a great opportunity because of its broad local presence, its clear benefit and importance for rural (farm) populations, the relative small size of Bhutan, its decentralized local governance structures and its comparatively well-capacitated civil service.

2. An important opportunity (among others) CARLEP provides to create more responsive institutions and organizations arises from its support to collaborative service delivery modalities and increased service outreach. Service delivery is presently largely input focussed (the 'what' of development), while people's development to a large extent depends on the quality of their relationships and their participation in development processes (the 'how' of development). Meaningful engagement of the public sector with citizens, community organizations, civil society and private sector will create larger benefits with the same public investments through complementarity of competences and investments. Such collaborations and partnerships are at the heart of value chain development and a critical success factor for CARLEP. Like any technical organisation with a 'professional' culture[126], the main drivers in MoAF are technical performance and technical innovation, while less attention and value is allocated to system performance and process innovation. New, more participatory (bottom-up) research and service delivery models are therefore often unconsciously perceived as challenging the professional hierarchy. In practice, however, collaboration with civil society and private sector creates a more dynamic professional environment, often perceived by civil servants[127] as stimulating. The lead farmer and CAHWs models, as well as partnerships with civil society and private sector are thus not only valuable service delivery and local development approaches, but can also provide professional satisfaction to civil servants, increasing the probability of acceptance and nation-wide utilization of these models.

3. These participatory and collaborative service delivery and development models and approaches, become even more important when acknowledging the broader concept of climate change resilience, where adaptation capacities of smallholders and communities are to a large extent dependent on vibrant and well-capacitated 'local institutions', beyond the agricultural sector *per se*. Once climate resilience is no longer interpreted as a mere technical issue (e.g. resilient seeds, cropping/farming practices and water use efficient technology) it becomes evident that participatory and collaborative development models and approaches create benefits well beyond service delivery, including for climate resilience, community self-development capacity and value chain development. MoAF's work will thus increasingly comprise of strengthening local institutions for sustainable agricultural development, next to the technical development work which is also required. This is in line with its present development support to e.g. farmers' groups and cooperatives.

[125] Ubels J, Klinken van R, Visser H Looking at the macro-micro gap' from the other end, clues for promoting local effectiveness, in A rich menu for the poor, food for thought on effective policies. Directorate General International Cooperation, Netherlands Ministry of Foreign Affairs, The Hague, (2008)
[126] Schein, E. (1996) The Three Cultures of Management: Implications for Organizational Learning. Sloan Management Review, 38, 9-20; and Schein E (2004), Organizational Culture and Leadership, Third Edition, New York: Wiley Publishers
[127] A good example of this is the enthusiasm and drive of the extension agents the mission met in Samdrup Jongkhar dzongkhag, where they are stimulated and empowered to learn and show results in the dynamic context of a lead farmer approach and additional support from DAMC, RNR Research institutes and the Samdrup Jongkhar Initiative.

Achievements of AMEEP and MAGIP

4. AMEPP achievements - Increase in food security evidenced by 69.2 % reported having food last for 12 months from their own farm production, 14.9% of the poor have improved their livelihood to next category of wealth ranking (B). The increase in yield for the year 2011 as compared to 2005 has been recorded as follows: paddy (14.95%); buckwheat (34.07%); millet (42.44%); barley (71.11 %); wheat (40.30%); potato (35.61%); mustard (61.51%), apple (108.25%), and mandarin (7.75%). The overall milk production in the region has increase by 6.74 % as compared to 2005. The volume of milk sale has increased by 120.33%. There has been 640.17% increase in production of chicken (meat) and increase in sale volume by 354.30%. Similarly, there is 122.61% increase in production of eggs and 209.29% increase in sale volume of eggs. Comparing household's income scenario from agriculture before AMEPP implementation with situation at completion, it reflected that 32.5% (as compared with 3.5% in 2005) have income above USD 330 p.a.. Decreases from 62.6% households to 16.7% households were recorded for incomes less than USD 8 p.a. from agriculture.

5. MAGIP's achievements - At MTR, MAGIP's performance in vegetable value chains had been analysed. There were 29 clusters of vegetable growers in all the six Dzongkhags by Nov 2011. A total of 1307 HHs were involved in vegetable production and marketing, more than the 1036 HHs originally planned, and earned Nu 4.9 million by MTR in November 2012. At MTR, the mission also calculated the crop profitability results of MAGIP's interventions to understand its farm and enterprise economics. The table below (Table 3) shows the "without project" and "with project" net incomes and labour return, with project production systems incorporating good seed, fertilizer and sometimes pesticides.

Table 1. Crop Profitability Returns

Crop	Without project		With project	
	Net return per acre(Nu)	Return per HH labour day (Nu)	Net return per acre (Nu)	Return per HH labour day (Nu)
Paddy	14,097	289	23,272	500
Paddy and Mustard	14,097	289	30,586	544
Maize	17,688	462	25,301	544
Potatoes and Maize	41,948	538	56,609	943
New Oranges			100,340	
Replant Oranges			84,740	
Maize/Soyabeans	17,688	462	44,161	631
Upland Rice			13,281	322
Paddy/Onions	14,097	289	40,112	563
Paddy Broccoli	14,097	289	31,537	956
Chilli			62,880	817
Paddy figures (2009)	1,419	24	12,469	257

Notes: (i) Net return is gross revenue (from sale of the crop) less all cash costs including hired labour. (ii) Return per HH labour day is net return divided by the number of days of (unpaid) family labour.

6. By MTR, MAGIP had 34 dairy groups with 909 members which was implemented with support from RAMCO. Under AMEPP, RAMCO was heavily involved in developing the marketing and processing of milk and this was continued under MAGIP. For example Woolong village in Samdruop Jongkhar was supported with cheese making equipment for the cooperative which had 48 members. Two younger members were responsible for the daily processing and were paid Nu 3000 per month. Since they started 2 years ago they had made no monthly loss and have accumulated Nu 200,000 in their bank account by MTR in November 2012. Additionally, MAGIP had provided 3 power tillers which were mainly used for cutting and carrying of forage. With a neighbouring village the group had plan for exploiting the fresh milk market in Samdrup Jongkhar. In Mongar the registered Khamdang Cooperative had been provided with a chiller and refrigerator for their milk booth in Mongar town and sold between 160 and 260 litres of milk per day. The group had savings of Nu 150,000 having spent Nu 130,000 on cow sheds.

7. The following is extract from RAMCO data as on April 30, 2015 primarily from MAGIP interventions, although some Farmers Groups initiated during AMEPP in 2011-12 have been included in RAMCO's compilation for 2012. Data is available Dzongkhag-wise but nearly 80% production currently comes from three Dzongkhags, viz. Mongar, Trashigang and Trashi Yangtse. Farmers Groups linked to schools are already demonstrating farming as a business.

Year	Total Number of Farmers Groups (FG) in the year	Total members (HH) in the year	Total quantity of vegetable produced in the year (MT)	Total income of the groups in the year (In Nul million)	Total FGs in the year linked to school	No of Schools/ institutes linked to FGs for vegetable supply
2012	69	1307	355.75	5.13	15	19
2013	104	1353	1229.36	20.67	57	31
2014	119	1527	1935.63	38.81	90	40
2015	146	1874	**3520.74**	**64.61**	95	43

Vegetables types supplied to schools in 2014	Quantity supplied (MT)	Percentage contribution of various vegetable
Potato	347.58	48.20%
Cabbage	122.18	16.90%
Beans	27.69	6.80%
Cauliflower	11.71	6.10%
Sag (green leafy vegetable)	36.45	5%
Radish	43.96	3.80%
Pumpkin	49	1.60%
Others	83.22	11.80%
Total	**721.79**	100

Lessons from MAGIP

8. The project formulation and design reflects the lessons learned from previous and on-going projects in Bhutan, particularly the IFAD supported projects. The key lessons drawn from the implementation of MAGIP are of particular relevance as CARLEP is designed to complement and expedite commercialization of market focused agricultural commodities. Lessons from implementation of on-going MAGIP include:

(i) Poverty targeting: Both AMEPP and MAGIP had distinct geographic targeting, concentrating in the Eastern Region covering six Dzongkhags. These are also home to largest number of poor people in the country. This enabled both AMEPP and MAGIP to concentrate in a particular region of the country, thereby having greater impact and effective use of its resources towards poverty reduction. Poverty targeting has been very effective in AMEPP. The project interventions reduced the proportion of poorest households from 38.5 percent in 2006-07 to 11 percent in 2012. This indicated that many of the poorest households graduated from being poorest to poor and hence percentage share of poor households increased from 48.0 percent during 2006-07 to 61.0 percent in 2012. However, the project interventions contributed significantly in improving many of the poor households to graduate to better-off, raising the percentage of better-off households from 13.5 percent during 2006-07 to 28.0 percent at project closure in 2012. The Project Completion Report of AMEPP showed that rural infrastructure in the form of farm roads and irrigation, together with livelihoods interventions in vegetable production, backyard poultry, dairy, fishery, etc. and small off-farm enterprises through its Micro Initiative Fund (MIF) had been most effective in reducing rural poverty in the programme areas. Building on AMEPP's experience, lessons from MAGIP showed that vegetable cultivation and dairy production together with rehabilitation of irrigation facilities are effective ways of poverty targeting.

(ii) Gender mainstreaming: MAGIP is currently implementing its gender mainstreaming strategy with encouraging results. Some of the main features which could be well replicated in CARLEP are:

- Equal wages for female and male participants in all MAGIP funded construction related activities such as roads, irrigation canals, etc.;
- Inclusion of both husband and wife in newly formed farmers' groups, including vegetable groups promoted by MAGIP with both having equal rights to leadership and other responsibilities;

- Interested poor households and female-headed households are encouraged and facilitated to participate in agriculture production intensification and market linkage (thrust area of CARLEP) from subsistence farming activities;
- Supply of power tillers and introduction of improved methods of yak cheese and butter production, both to ease labour shortage and reduce women's workload;
- Over 40 percent participants in the farmer's trainings are women participants indicating significant empowerment both in knowledge and skills;
- All women vegetable and dairy groups have been formed in order to improve the economic empowerment of women together with assured income;
- Use of sex disaggregated data in all reporting formats.

(iii) Marketing system weaknesses: The absence of an organized marketing system across the nation has limited potential farmers to move into commercial production. Owing to the lack of organised marketing system, smallholder farmers were unable to take advantage of the inter-regional markets. General weaknesses within the existing marketing system are:

- Farmers grow crops that are easy to manage, not what the market demands;
- Pricing mechanisms are weak, not based on real market value and often arbitrarily set by farmers and traders;
- Market information system regarding demand for quality and quantity and market prices is weak;
- Know-how and skills of farmers and other stakeholders for production, processing and marketing is weak;
- Private sector involvement in marketing and value chains is very weak;
- Storage, transport and market facilities are not adapted to specific commodity/product demands, causing losses.

(iv) Opportunities of a market-led approach: At the same time experience from AMEPP and MAGIP provides some key opportunities for CARLEP:

- Development of the farm sector to reduce rural poverty and enhance food security needs a two-pronged approach, combining strategies to enhance productivity and production at the household level with proactive marketing support to ensure remunerative prices to farmers;
- Current crop production volumes are still very low and farmers need to scale-up production. Establishing and strengthening of producer and marketing groups are vital to the successful intensification of agriculture production and marketing. There is also a need to better link agricultural and infrastructure support to take advantage of opportunities presented by the market and thereby facilitate synergies;
- More commercially orientated farmers are needed along with supplies of the right type of agricultural inputs, such as seeds, irrigation facilities and pesticides. There is proven success of development of market-focused production clusters, with scope for farmers to adopt a more commercial and market driven approach to their farming;
- Good prospects for linking vegetable production groups to (local) domestic markets in schools and urban areas and for increased exports of vegetables to India (seasonal niche market);
- Greater efficiencies could be achieved by better combining management support by organizations such as Regional Agricultural Marketing Cooperatives Office (RAMCO) with technical support by agricultural line departments and their field extension staff. This might require a more performance-based system of management with clear targets linked to incentives.

(v) Value chain approach and marketing: MAGIP already promoted a value chain approach and a focus on marketing. The project was, however, not specifically designed around selected value chains but comprised of different components. Where a value chain approach was developed and applied in MAGIP, as in collaboration with SNV for the more localised vegetable value chain, the approach was very successful with great potential for scaling up. The CARLEP therefore requires a design explicitly using a value chain approach and with marketing and enterprise development within the value chains as the core. The recently revalidated mandate of FCBL to lead development of marketing for agriculture provides good opportunity for this design approach.

(vi) Farmer organisation: While farmer groups for production and marketing and marketing cooperatives are acknowledged as important drivers for agricultural production, linking farmers to markets to increase group and household incomes, existing farmer organisations remain weak. There is a need to move from 'very informal' loose group formations to an organisation form that allows for

more joint decision making and shared responsibility for the functioning of the organisation, including for joint investments in scaling up of group production, processing and marketing. This provides a clear opportunity for CARLEP, albeit a challenging one.

(vii) Extension services for remote communities: MAGIP design already stated that "Despite the best will of most extension workers, reaching out to remote communities remains a challenge. This is on account of the country's mountainous topography, poor road connectivity (reaching out to many remote communities takes four days of hard walk, back and forth) and the current capacities (in terms of budget, daily allowance, time) of gewog extension staff. Their interactions with the remote communities are necessarily at best infrequent." This has proven to be true and still a major challenge to overcome in term of service and project outreach in remoter project areas. One of the ways MAGIP aimed to increase the efficiency of extension staff and to widen the coverage of extension services was by organizing farmers in groups, empowering them to help themselves and the Farmers' Field School (FFS) approach. Unfortunately the FFS approach could not successfully be developed under MAGIP within its structure, because of limited process facilitation time and incentives available to the responsible Extension Agents (EAs), which resulted in an input-driven process.

(viii) Master farmers and Farmer Field Days approach: The Samdrup Jongkhar Inititiative (SJI) is a project of the Lhomon Society organisation in Bhutan established in December 2010, designed to foster genuine Gross National Happiness (GNH)-based development in harmony with government goals. Initiated by Dzongsar Jamyang Khyentse Rinpoche as a potential model for the country**,** its purpose is to raise living standards in the South-Eastern dzongkhag of Samdrup Jongkhar and beyond by establishing food security and self-sufficiency, protecting and enhancing the natural environment, strengthening communities, stemming the rural-urban migration tide, and fostering a cooperative, productive, entrepreneurial and self-reliant spirit grounded in a rights-based approach to development, particularly focusing on women and youth. The SJI has successfully developed an extension approach with increased outreach and improved implementation, through "farmer promoters" (model/expert farmers) in gewogs, where the farmer promoters work closely with Agriculture Extension Officers (AEO) to implement farming practices and training other farmers in their respective villages/communities. The next step is for the farmer promoters to conduct Farmer Field Days and continuous follow-up trainings, where the promoters are to demonstrate and share their sustainable farming knowledge and practices with other farmers in their respective communities in order to ensure the larger scale outreach and implementation. SJI has also developed extension materials and guidelines for its approach. The model/ approach, which is in principle a variation on the Farmer Field School approach, developed and implemented by a Civil Society Organisation in close collaboration with the dzongkhag has proven to be feasible and successful and thus offers great potential for CARLEP to take up in the programme implementation approach and to be institutionalized with agricultural extension and marketing services.

(ix) Climate Smart Agriculture: The negative impacts of climate change in Bhutan on agricultural production (changing rainfall patterns, drought and excessive wet periods) and infrastructure (extreme rainfall events) are likely to be significant. MoAF has already developed proven Sustainable Land Management (SLM) practices and guidelines/manuals which can be scaled-up nation-wide. SLM practices and research results on climate resilient crops and adapted cropping patterns are available from research institutes and donor projects such as Samdrup Jongkhar Initiative, SNV, Helvetas and the Tarayana Foundation (which is also developing community based water harvesting technologies). These proven approaches and technologies can be applied and scaled-up through CARLEP.

(x) Water User Associations and Road User Groups: The MAGIP supervision mission of November 2014 reported that the 69 Water Users Associations (WUAs) promoted are generally not functioning optimally despite the provision of much training. The mission recommended improving the operation of the WUAs as these continue to cause concern in terms of beneficiary contribution toward maintenance. The mission also noted the issue of functioning of the 55 Road User Groups (RUGs) to ensure sustainability of farm roads as most RUGs seem unclear about their responsibilities towards road maintenance and communities are unable to fund clearing of major landslips as these often require machinery to properly repair and renovate the roads. MAGIP therefore recommended a study to identify more realistic and workable approaches to road maintenance. CARLEP can use the alternatives developed for the maintenance of infrastructure by the community.

(xi) Inadequate project management structure: Considering the limitations with the project set-up during AMEPP, the MAGIP project management office was based in Thimphu. This limited the

opportunities for sector managers and project officials to frequently interact and oversee project implementation in the field. While the alignment of project interventions with that of the central and the local government plans were well in place, reporting on project achievements was largely dependent on field officials. This affected reporting to IFAD as well as timely implementation of project. Moreover, the absence of a full-time M&E officer for the project was a major hindrance.

(xii) Fragmented approach to planning and implementation: Drawing on the lessons from AMEPP, MAGIP took a focused geographic targeting approach in terms of identifying gewogs in project dzongkhags. However, project interventions were spread across gewogs to maintain equity, which resulted in low investments per gewog, diluting the overall impact of the project. Coordination among different implementing agencies was not strategic and activity based, which made integration of production intensification and marketing efforts into a value chain challenging. Also dzongkhags and gewogs gave varying priority to implementing 'project activities' as part of their already overloaded work schedules, resulting in a further mismatch of supposedly complementary production and marketing activities. Moreover, household tagging within gewogs was not done. These lessons should be taken on board in CARLEP where a focused approach both by area and value chain is to be pursued.

(xiii) Weak learning and institutionalizing proven practice: One of the weaknesses with MAGIP was inadequate monitoring and reporting on impact/outcomes of project interventions, as well as in documenting and mainstreaming good approaches and practices. Progress reporting was largely limited to the achievements of output level results. This limits the scope for knowledge management and learning and fails to capitalize on the involvement of IFAD and other development partners who can share knowledge and experiences from other countries in the region.

9. CARLEP is in line with **RGoB's 11th FYP**, covering the period 2013-18 with poverty alleviation (targeted poverty intervention) and social development (reaching the unreached) as its overarching theme. The 11th FYP states, "*While it is projected that Bhutan will be graduating from the list of Least Developed Countries (LDCs), based on the income criteria, it remains below the graduation threshold on the Human Assets Index (HAI) and Economic Vulnerability Index (EVI)... EVI challenges include a small population size, being geographically remote and landlocked, instability of exports of goods and services, high vulnerability to natural disasters and instability of agricultural production*."[128] The 11th FYP incorporates strategies to promote economic opportunities through broad-based economic growth and support for critical sectors such as agriculture and rural industries/enterprises within a decentralized framework that stresses the devolution of power. The MoAF has developed a strategy of market-led agricultural development to facilitate a transition from subsistence to commercial agriculture. MoAF will ensure an enabling environment and promote private sector participation and contract farming as part of its strategy and has directed the FCBL to take the lead within this strategy[129]. CARLEP is designed to support successful implementation of this important MoAF strategy. It will contribute specifically to creating agriculture service outreach to the more remote and vulnerable and to increased resilience of smallholders to climate change and shocks, addressing key objectives of the 11th FYP. Further, RGoB has initiated an Economic Stimulus Plan (ESP) as a grant support outside the 11th FYP to enhance liquidity in the Financial Institutions through multiple approaches to facilitate access of private sector to funds while providing special support schemes for greater socio-economic benefit. Part of the ESP funds are allocated to develop informal enterprises in the farm sector, an area covered under CARLEP.

10. The programme is in adherence[130] to **IFAD's targeting policy** of reaching the rural poor and strategic framework of empowering the rural poor, both men and women alike, to improve their incomes and food security. Towards this end, the programme would provide support to poor subsistence farmers located in remote locations to enhance agricultural production and opportunities for marketing of their produce through an organized marketing system to improve their livelihood. The proposed support of instituting an organized national marketing system is well aligned to IFAD's private sector development and partnership strategy as this will entail engagement of small-holder farmers and private sector enterprises throughout the value chain development for the crop and livestock commodities identified for commercialization. The continuous engagement of IFAD in agriculture development through its various programmes over the years depicts IFAD's commitment

[128] Eleventh Five Year Plan - Main Document Volume I, Pg 5.
[129] Eleventh Five Year Plan - Main Document Volume I, Pg 18.
[130] See Appendix 13

and its strategy of ensuring a significant influence on rural poverty reduction in Bhutan. The current programme will not only capitalize by building on to the infrastructures, capacity development and other allied production and marketing structures supported through the past programmes but also allow for scaling-up into other areas.

11. The programme is also in line with **ASAP** objectives and guidelines[131]. Key elements of climate change are clearly addressed in the country analysis and the programme has integrated climate change in the programme goal/outcomes and areas of intervention, which is a good starting point for a comprehensive and holistic view on climate change consequences for the smallholder target groups and on how Climate Change can affect and inform all proposed programme interventions. The proposed interventions in terms of increasing resilience, through technology and (local) institutional strengthening, are in principle sound and highlight for the most the need to urgently and adequately deal with already existing development challenges of smallholders, e.g. climate variability (unpredictability), water scarcity, erosion and soil depletion, as well as lack of access to livelihoods diversification opportunities, including income from produce marketing.

[131] The Adaptation for Smallholder Agriculture Programme (ASAP) is a programme launched by IFAD in 2012 to channel climate and environmental finance to smallholder farmers so that they can increase their resilience. ASAP, a multi-year and multi-donor programme, received substantial financial support from the Governments of Belgium, Canada, Finland, Netherlands, Norway Sweden, Switzerland, and Officeed Kingdom. Other donor countries are appraising a contribution. The objective of ASAP is to improve the climate resilience of large-scale rural development programmes and improve the capacity of at least 8 million smallholder farmers to expand their options in a rapidly changing environment. Through ASAP, IFAD is driving a major scaling-up of successful "multiple-benefit" approaches to increase agricultural output while simultaneously reducing vulnerability to climate-related risks and diversifying livelihoods.

Appendix 4: Detailed programme description

A. Programme Components

1. Based on the institutional landscape in Bhutan, the development and implementation of value chains will be split into two interrelated value chain segments: 1) production and (part) processing, primarily in the domain of DoA, DoL, dzongkhags and gewogs, and 2) processing, marketing and enterprise development to be primarily the responsibility of FCBL, DAMC, dzongkhags and gewogs. **FCBL will be responsible for overall value chain design and development, interlinking both components**. Whether a part of processing would be institutionally best embedded within the 'production' or 'marketing' segment would depend on the value chain and local context. For example, grading of vegetables clearly falls in the production sub-component but chilling of milk could be handled at the level of groups as part of production if the volumes are adequate or by the market aggregator if the volumes are too small to install a bulk milk chilling unit. Based on this division in two value chain segments CARLEP is designed with **three programme components: 1) Market-led sustainable agricultural production, 2) Value chain development and marketing, and 3) Institutional support and policy development**. The components are closely interlinked and will be implemented in close coordination and phased across the programme lifetime.

Component 1: Market–led Sustainable Agricultural Production

2. The objective of the Market-led Sustainable Agricultural Production Component is to bring about sustainable increase in agricultural production by rural households and enhanced resilience of agricultural production systems to climate induced changes/shocks. The three outputs expected to contribute to this are: i) increased production resilience and diversification in agriculture, ii) intensification and expansion of vegetable production by rural households, and iii) expansion of dairy production by rural households.

Outcome 1: Resilient agricultural production by rural households has sustainably increased

3. Bhutan has made significant progress over the past decades towards increasing agricultural production. To allow for further sustained growth in the sector by linking smallholder production with markets through value chains production volumes need to be substantially increased. Working Paper 3 provides an overview of the main constraints and challenges in agricultural production in Bhutan, which are further detailed and summarized in Table 6 of the Working Paper. Key issues to be addressed are related to e.g. i) inadequate research and insufficient production of resilient seeds, ii) lack of reliable availability of irrigation and low irrigation efficiency, iii) low quality of production, iv) pre- and post-harvest losses, v) weak farm input supply and outreach of services, vi) limited innovation and diversification of farm production to ensure resilience, vii) low farmer group organization capacity, viii) limitations of gewog/dzongkhag based production planning, and ix) a near absence of private sector and civil society service providers.

4. These constraints and challenges are also applicable to dairy production, with some additional livestock specific challenges, such as i) lack of scientific basis for cross-breeding and limited research on production improvement, ii) inadequate quality and outreach of animal extension, health and breeding services, iii) inadequate production of quality fodder and feed, and iv) unsustainable approaches to common property management.

5. The ongoing programmes and value chain and market-led approaches provide clear opportunities to address the agricultural production challenges. Climate Smart Agriculture research and farmer-based pilots are already ongoing. Sustainable water, land and soil management practices have already been documented. Proven practice from other countries is also available. All these resilience technologies and practices could be relatively easily adapted and fine-tuned and scaled-up in Bhutan. Furthermore, Bhutan has a comparative climatic advantage for production of seasonal vegetables for export to readily available markets in neighbouring countries. The climate is suitable for dairy development and has large domestic market. High potential production areas for maize and rice have also already been identified.

6. Working Paper 3 also presents an overview of opportunities and strategies on how CARLEP could build upon existing strengths of MoAF and dzongkhags towards increasing production volumes

and diversity, as well as increased resilience. The key production related activities proposed under each of the three outputs under Outcome 1 are presented. These production related programme activities will need to be implemented in close coordination and complementarity with the value chain, marketing and policy related programme activities presented under Outcomes 2 and 3.

7. **Output 1.1. Production resilience in agriculture increased and agriculture production diversified:** Under this output the programme will support strengthening production resilience of smallholders through improvement of (i) *agricultural management practices* at farm, land and soil level; (ii) *water use efficiency*, including studies and investments in sub-catchment area protection, water harvesting practices/technology and irrigation technology, including upgrading irrigation schemes to meet resilience standards; (iii) support to *resilient seed production* at farm-level, development of an organization strategy and business plan for the National Seed Centre and increased private sector engagement; (iv) production support to commodities outside the selected value chains, which will be complementary and will increase diversity for smallholder resilience, e.g. production support to rice, maize, fruits, agricultural niche products as well as diversification of smallholder livestock production through back-yard poultry and piggery. The key activity is to promote climate smart agricultural production and management, comprising of several sub-activities described below.

8. Activity 1.1.1 Promoting climate smart agriculture production and management: The sub-activities under this activity would include: a) Strengthening existing farmers' groups and establishing new groups, b) Strengthening extension services and increasing their outreach, c) Support for agricultural inputs, including seeds, d) Water-use efficient irrigation development, e) Agricultural innovation through ICT, and f) Pilot on strengthening local institutions for increased climate resilience.

a. Strengthening existing farmers' groups and establishing new groups: Capacity development support will be provided to farmer production groups and extension agents on climate smart agriculture, especially agricultural crops, farming systems and sustainable soil/land management practices to prevent erosion and to increase rainwater harvesting. Climate change adapted crops and cropping patterns will be promoted based on ongoing field tests of e.g. RNR RDCs, Samdrup Jongkhar dzongkhag and SNV Netherlands Development Organisation. The programme will therefore, initially in the six eastern dzongkhags, provide support to upgrade existing farmer group training on CSA, on-farm climate-induced disaster preparation and improved farming practices for crops as well as livestock. It will also support training on climate resilience to extension agents. Training on climate resilience to farmer production groups is taken up as part of the capacity development of farmer groups under output 1.2. Support will also be provided for production inputs for crop diversification, e.g. maize and rice production, post-harvest inputs, fruit trees, terracing preparation.

b. Strengthening extension services and increasing their outreach: The socio-economic viability of value chains and private sector engagement depends in part on the outreach, quality and sustainability of service delivery. The present outreach of extension agents is low, largely because of scattered and remote farm populations, a mountainous terrain and poor transportation infrastructure/services. Considering the need for more intense engagement with farmers for resilience and commercialization, extension and groups formation processes need to be strengthened, which will in part be done by strengthening the existing extension services at the gewog level through training. In addition, the lead farmer model[132] presently piloted under the MAGIP and in Samdrup Jongkhar dzongkhag will be further developed, expanded and prepared for nation-wide scaling-up. Farmer organisations in Bhutan are still weak although their development has clearly benefited from production focussed training by extension agents and DAMC/RAMCO. To support commercialization of agriculture and to deal adequately with projected climate change scenarios the capacity and resilience of farmers and farmer organizations needs to be strengthened. A collaboration between extension staff, gewog officials and lead farmers will allow for a more dynamic facilitation and learning process, where good practices can be captured and cross fertilization between farmers and gewogs can take place. The lead farmer model will thus be an important innovation of the extension services system in Bhutan and will as such be prepared for nation-wide scaling up. The programme will

[132] See MAGIP supervision mission report, Annex 4 'The Proposed Master Farmer Approach: decentralized agriculture extension at the Geog level. MAGIP/IFAD November 2014.

therefore support the model development and scaling-up of a lead farmer model, which will substantially improve the service outreach to farmers.

Support will be provided to **Samdrup Jongkhar dzongkhag** to strengthen and expand its **lead farmer model** and farmer group strengthening programme presently ongoing. The lead farmer model will be developed and packages for scaling-up nation-wide under CARLEP. Support would include i) recruitment and training of lead farmers, ii) training of agriculture extension agents and gewog/dzongkhag staff, iii) farmer group strengthening and technical training, iv) strengthened resilience of farmers through CSA, diversification, value addition, post-harvest technology, and local market development, v) developing (adapted) training materials to be used nation-wide for farmer group training, and vi) documentation of lessons learned and systemizing the lead farmer model, as well as proven farming practices. Training will be provided through Technical Assistance and a Training of Trainers approach, from which also relevant Dzongkhag/Gewog staff can benefit. CARLEP will allocate implementation funds to Samdrup Jongkhar dzongkhag to extent of 251,567 USD, over four years. This CARLEP allocation to the development of the lead farmer model may need to be augmented if CARLEP is not able to build upon the existing work in the dzongkhag. Parallel funding (to be confirmed after final approval) is provided to the Samdrup Jongkhar dzongkhag for a period of four years by the National Organic Programme (NOP) through deputation of a technical expert who would oversee the overall model development and implementation of the proposal. The gewogs/Gups have agreed to allocate 50,000 Nu of the 2 million Nu yearly Gewog Development Grants for each gewog for related activities.

Additional inputs for demonstration purposes will be provided to farmer groups with a lead farmer as a member to facilitate commitment and development and uptake of good (climate smart) practice. The initial target is to recruit and train 100 lead farmers whose groups will be provided additional inputs by the programme, including seeds and 50 poly-tunnels for demonstration purposes.

Support, monitoring and learning services will be provided to Samdrup Jongkhar dzongkhag to ensure the results are achieved and the model will be made ready for nation-wide scaling-up. During initial two to three years the lead farmer model will be expanded to the whole of Samdrup Jongkhar dzongkhag, after which the Samdrup Jongkhar dzongkhag will support scaling up of the model and practices to two adjacent dzongkhags. In the second phase of the CARLEP a nation-wide scaling up strategy will be developed and implemented and the approach will be institutionalized in existing policies and education institutes.

a. Strengthening existing farmers' groups and establishing new groups: CARLEP will provide support, initially in six eastern dzongkhags, to enhance capacity of existing farmers' production groups on climate-smart agricultural practices, including cropping patterns and crop rotation, sustainable farming systems, soil health management, prevention of soil erosion and rainwater management. Support will also be provided for promoting new farmers' production groups and their capacity development. Development of training and extension materials for such capacity building activities based on ongoing field tests (e.g. by RNR RDCs, Samdrup Jongkhar dzongkhag and SNV Netherlands Development Organisation) will also be supported.

b. Strengthening extension services and increasing their outreach: CARLEP will support strengthening the existing extension services at the gewog level through training. In addition the lead farmer model[133] presently piloted under the MAGIP and in Samdrup Jongkhar dzongkhag will be further developed, expanded and prepared for nation-wide scaling-up. The programme will support further development and scaling-up of a lead farmer outreach model (e.g., those already tested by MAGIP-RDC Wengkhar, Samdrup Jongkhar, etc.) to improve the service outreach to farmers nationally (details in WP 15 on Lead Farmers).

c. Support for agricultural inputs, including seeds: CARLEP will support provision of seed kits to farmers' production groups to promote diversification of agriculture to enhance climate resilience and farm productivity. This will include seeds for crops besides those being covered under the value chains.

d. Water-use efficient irrigation development: According to the assessment conducted by the Department of Agriculture for major irrigation infrastructure,[134] 21 schemes in the east need major

[133] See MAGIP supervision mission report, Annex 4 'The Proposed Master Farmer Approach: decentralized agriculture extension at the Geog level. MAGIP/IFAD November 2014.
[134] Major irrigation infrastructures are those that has command areas of more than 70 acres

renovation. The lack of adequate capacity of Water User Associations to operate and maintain the irrigation schemes effectively has been assessed as the main reason for the schemes becoming dysfunctional. In addition, no detailed localized studies are conducted at present on climate change impacts (and scenarios) on water sources and water availability as part of the irrigation scheme design, nor is climate resilience vis-à-vis the impacts of extreme rainfall events (flooding, landslides, erosion) adequately captured at present. This also leads to increased demand for scheme management and maintenance and irrigation schemes becoming (partly) dysfunctional over time.

The programme will therefore provide support to technical feasibility studies, climate resilient design and investment in upgrading to climate resilient standards of 700 acre of existing dysfunctional gravity-based irrigation schemes in the four southern dzongkhags of the east (high potential production areas).

Support will also be provided to three (3) pilot irrigation schemes with water pumping stations, including technical feasibility studies (business plans), climate resilient designs considering cost and benefits for farmers (including fee structure for pumping costs and O&M) and the actual construction of the scheme.

Training will be provided to district engineers, extension agents and the RNR Engineering division on climate resilient irrigation scheme design (including feasibility studies) and construction (supervision) for all six eastern dzongkhags.

The programme will also support training of WUAs (as per DoA training modules and climate resilience focus) to ensure adequate Operation and Maintenance capacity (in the four southern dzongkhags of the east, including WUA managing irrigation schemes directly targeted under CARLEP).

e. Agricultural innovation through ICT: To strengthen agricultural research and climate resilience CARLEP will support two pilots, respectively, on the use of information and communication technology (ICT) and permaculture as a climate-smart alternative farming system.

CARLEP will strengthen agricultural research and climate resilience by implementing a pilot with a tablet-based soil monitoring technology developed by Grameen Bank (or another comparable innovative technology). The research and development phase will take place over three years in selected gewogs where the lead farmer model is being developed and implemented to build on the existing capacities of dzongkhag, extension agents, selected lead farmers, RNR RDC research staff and selected staff of the National Soil Centre. The training will be held in one of the pilot gewogs. After the MTR it will be decided to which extent scaling-up will be supported. Grameen Bank will provide the TA for the research and development phase support while CARLEP will provide funding for 100 low cost handheld tablets (USD 90), the software license (USD 60), and a soil test kit (USD 150) for testing soil parameters for input into the software programme. Grameen Bank provide, will free of cost, resource persons for developing the research proposal and for providing in-country training to participants (4 trainings with 2 resource persons in 3 years. The programme will bear the costs of hospitality, travel and logistics.

The pilot on permaculture (literally meaning permanent agriculture) will be anchored by RDC Wenkhar. “Permaculture is a philosophy of working with, rather than against nature; of protracted and thoughtful observation rather than protracted and thoughtless labor; and of looking at plants and animals in all their functions, rather than treating any area as a single product system"[135]. Fundamental to this approach is the generation of optimal yields per unit of human or other forms of energy expended (details in WP 12 on Permaculture and Biogas).

f. Pilot on strengthening local institutions for increased climate resilience: In addition to strengthening climate smart technology and service delivery approaches through extension agents as well as the lead farmer model (both of which are also part of local institutions), a more integrated approach to sustaining development services at the local level is required. The capacity of, and interplay between, gewog and dzongkhag staff, farmer groups, Water User Groups (WUG), Road User Groups (RUG), civil society and private sector are important elements in the quality and sustainability of service delivery to smallholders although these are often overlooked. To attain real climate resilience local institutions also strengthen social capital, improve access to health and education benefits and provide improved response of disaster-related events. These local institutions

[135] Mollison (1991)

are therefore critical not only in ensuring that development activities generate the benefits they are supposed to deliver for sustainability over time of such services, but also in ensuring sustained benefits of value chains. Given that under CARLEP (semi)commercial agriculture at the community level is promoted, costs of service delivery and operation and maintenance need to be kept to a minimum, especially considering the already high transaction costs of smallholders in remote and mountainous areas. Business risks also need to be understood, minimized and mitigated. The programme will therefore pilot in a selected geographical location an integrated approach to service delivery and service sustainability to draw lessons for a strengthened national development approach

Within the geographical target area of the CARLEP a cluster of communities will be selected, where the programme is already providing support for value chain development (preferably both dairy and vegetables) and for establishing and strengthening farmer groups for production as well as marketing. Considering the complementarity with the lead farmer model development, the area will also be selected within the Samdrup Jongkhar dzongkhag.

Support will also be provided for the development of a business model and long-term sustainability plan for service investments and O&M as well as (agricultural) benefits. This will increase cost consciousness on in-kind and monetary investments and will be the basis for the research to assess the best approaches and models and to validate the idea that capacitating local institutions beyond present sector-driven approaches is economically viable.

Support will be provided for steering complementary programme investments in production (e.g. irrigation scheme upgrading) and marketing (e.g. market infrastructure) to the selected area to ensure integrated value chain benefits are generated for the communities involved. These increased benefits form commercial agriculture and the value chain approach will in turn increase the perception of usefulness of provided services and the willingness to invest in good operation and maintenance.

CARLEP investment in upgrading two (short) farm roads to climate resilient standards, after the training on RUG has been provided.

The programme will also support capacity development of existing farmer groups, WUGs and RUGs to ensure they will be committed and able to maintain the upgraded and new infrastructure.

Support will be provided for the development of adequate O&M models, based on existing guidelines (e.g. irrigation and farm roads) and testing feasibility of community contributions versus paid labour provision.

The design and implementation modality of the research proposal will be further detailed by the PMO with support from the long-term TA and if needed, short-term TA.

9. **Output 1.2. Vegetable production increased:** Adequate volume with acceptable quality and planned and timely production is necessary to establish sustainable value chain and assured linkages to fair markets for any commodity or group of commodities. CARLEP seeks to intensify vegetable production and expand the area under vegetable crops by inducting new smallholder producers so that larger volumes of high quality become available in a timely manner so that successful value chain for marketing vegetables described at Outcome 2 can be established. Production intensification to increase output of vegetables for trading would initially be taken up in gewogs with high production potential to be identified in the course of planning for and design of the vegetable value chain by FCBL under Outcome 2. The activity/sub-activities to be supported by the programme are described below.

10. Activity 1.2.1 Expansion and intensification of vegetable production by rural households: This will include strengthening vegetable producers' groups that have already been established so that production is intensified and streamlined and quality assured, setting up new groups and building their capacity to be able to manage their own affairs and produce marketable surplus of vegetables of acceptable quality in a timely manner, provision of input support to farmers and their groups for vegetable production and provision of support for research in seeds and production of seeds. The various tasks under this activity are described below.

a. Strengthening existing vegetable producers' groups and promoting and capacitating new groups: Vegetable producer groups have been supported under the MAGIP and AMEPP projects. Under MAGIP project vegetable producer groups were formed and linked to schools for better market access. There are presently 120 such groups and CARLEP will promote 300 new groups during the

project period. All relevant aspects of (market-led) production, including climate resilience (linked to output 1.1), vegetable production intensification and crop health management for improved production quality and reducing risks, will be addressed in the training. Besides the technical and commercial capabilities to produce vegetables for the market, capacity building will also address issues of group development, group management and democratic governance of groups and leadership skills. This is especially relevant considering the additional responsibilities and tasks of these production groups related to marketing and linking to value chain actors. Training will thus be designed and provided by DoA and DAMC in close collaboration with FCBL to ensure progression from routine production of vegetables as alternate crops to becoming marketing groups and cooperatives in tune with market signals and demand.

CARLEP will also support developing training and extension materials for vegetable production through identification and adaptation of good existing materials (e.g. the JICA supported horticulture programme in RDC Wengkhar) and suitable need-based TA support. Existing materials in other hill regions like Nepal, Himachal, Uttarakhand and the Northeastern states of India, will also be collected and analyzed in developing material for Bhutan. The training (materials) will be adjusted to different target groups, including RNR officials, MoAF officials, extension workers, lead farmers, farmers' groups and other implementing agencies. Different topics to be covered in training would include resilient and sustainable production and farm practices for vegetable production, post-harvest management of vegetables, quality aspects and assessing and tuning into market demand for vegetables.

b. Provision of vegetable production inputs: In order to substantially increase vegetable production so that viable value chain can be established, production groups will be supported under the programme with inputs and equipment on cost-sharing basis (40 percent matching grant for equipment[136]). The inputs to be provided would include climate resilient vegetable seeds as per production and marketing plans developed jointly by farmer groups and FCBL, 4 700 sets water efficient irrigation equipment (sprinkler[137] or drip) and production and post-harvest tools and equipment.

c. Vegetable seed research and production: CARLEP will support field trials and research to identify vegetable seeds suitable to local agro-climatic conditions that are most critical for value chain development. Development of Package of Practices (POPs) for specific crops will be done as good quality seeds alone may not have expected impact on production unless prescribed farming practices are used. Support will also be provided to stimulate production of selected seeds by farmer groups and farm-level producers (enterprise based) who are members of production groups. Potential seed producers will be trained and provided handholding support to ensure that quality is maintained. In addition production support will be provided to the National Seed Centre at Paro and its regional subsidiary at Trashigang through provision of glasshouses and seed processing units.

Output 1.3: Dairy production increased: Under the livestock segment, the dairy value chain has been selected and dairy production will be supported in the six eastern dzongkhags. Some other production support may also be provided to other livestock commodities besides dairy for diversification and resilience purposes. For sustainable value chain and marketing development, adequate production volumes of high quality milk needs to be ensured. The main thrust of the programme, therefore, is to increase milk production through clusters of smallholder producers in high production areas (gewogs) as identified in the design and planning of the dairy value chain under Outcome 2. A major constraint identified for dairy production[138] is that current livestock services are not sufficient to cater to the existing livestock. DoL is the only service provider for veterinary services, with very limited engagement of private sector or civil society in providing veterinary services. There is one veterinary officer per dzongkhag and one livestock extension officer per gewog with about 5 000 animals. Due to the vast area to be covered and a difficult terrain, they are not able to provide health care and breeding (Artificial Insemination) services guidance for enhanced nutrition to all farmers in their service areas. Poor breeding services lead to poor genetic development of animals resulting in very low milk productivity (~1.3 litres per day and 300-380 litres per lactation). Inadequate number of

[136] Seeds are provided to farmer groups free of cost, to stimulate scaling up of production; CARLEP will where possible link farmer groups to lending institutions to obtain investment loans.
[137] Each complete sprinkler set costs about USD 300 and can service about 1 acre. See SNV Cost Benefit Analysis for Water Management Technology, SNV Bhutan, in Collaboration with RAMCO, DAOs, under MAGIP-IFAD, November 2012.
[138] See Working Paper 3.

health professionals combined with inadequate supply of medicines and vaccines leads to outbreaks of Foot and Mouth Disease and other diseases with high morbidity and mortality rates. Intensification and expansion of dairy will thus critically depend on the ability of Bhutan to improve the outreach and quality of livestock service delivery. The principal activity to be supported by CARLEP is to intensify and expand dairying by smallholder farmers.

11. Activity 1.3.1 Intensification and expansion of dairy production by smallholder dairy farmers: The programme will strengthen existing smallholder dairy farmers' groups, establish and capacitate new groups, establish improved service outreach for livestock, support fodder and feed production and provision of dairy production inputs. The programme also support installation of bio-gas units in each dairy unit developed under the programme. These are detailed in the following.

a. Strengthening existing smallholder dairy farmers groups and establishing new groups: The Programme will support capacity development of 43 existing dairy farmers' groups and establishing and capacity development of 150 new groups. Dairy Farmers' Groups through the Dzongkhag staff and RGoB annual block grants in the selected areas where dairy production in the value chain will be intensified and up-scaled. Support will also be provided for developing training and extension materials, where appropriate through short-term TA. Relevant existing materials from Bhutan, India and Nepal will be collected to develop comprehensive training materials for extension agents and stakeholders. The training materials will be adjusted to different target groups, including DoL officials, extension workers, lead farmers, dairy groups, Community Animal Health Workers (CAHW), civil society, private sector entities and other agencies engaged in the dairy sector. Various topics to be covered in training would include management practices including hygiene (cleaning of sheds, keeping sheds dry, etc.), feeding practices (e.g. urea treatment of hay, silage making, chopping of fodder, use of feeding troughs, balanced feeds, feeding during pregnancy and early lactation stages, provision of adequate clean and warm drinking water, etc.), housing requirements, scheduling preventive medication (e.g. deworming) and vaccination (e.g. against Foot and Mouth disease), hygienic milking and milk handling practices and breeding practices (detecting heat, timely AI), farm record keeping and accounting and group dynamics and management.

b. Improved service outreach for livestock rearing: The programme will address the critical impediment of inadequate outreach of dairy extension and animal health and veterinary services by supporting development and scaling-up of the CAHW and lead farmer models described below.

CAHW model: CARLEP will strengthen the existing health and breeding services (in identified dzongkhags) by developing a model for CAHWs. The CAHWs will provide AI as well as curative and preventive health and breeding services. The inputs in the form of medicines, vaccines, semen straw and liquid nitrogen will be provided by the Government along with breeding bulls for far-flung areas. The CAHW will be identified from the dairy groups. The CAHWs will be supported through robust training with continued refresher training to be undertaken periodically. The CAHW model will be initially implemented in the 38 gewogs identified for intensive dairy development so that there is adequate livestock population for the viability of the model. This can be further expanded to other areas following the MTR to cover all the 65 gewogs.

The programme will develop and implement a suitable **incentive mechanism** for CAHWs in the form of stipend/service fee (linked to services rendered) for the initial 2-3 years to cover cost of local travel/ transportation and ensure a reasonable income so that the CAWHs continue to work as private service entrepreneurs beyond programme completion. The programme will arrange the training of CAHWs in India, by inviting resource persons to Bhutan or a combination of both approaches. Refresher trainings will also be built into the training schedule. Where appropriate, the Programme will engage TAs to facilitate the development and implementation of the CAHW model, especially the process aspects of bringing CAHWs on board, getting them engaged as service providers with adequate follow up and handholding support and continued review and revision of the model. It is critical that the CAHWs are not recruited in a routine manner against periodic targets.

Lead farmer model for dairy production: The lead farmer model as described for agricultural crop production will also be developed for improving outreach of dairy services to Smallholder Dairy Farmers' Groups. The model will initially be developed and scaled-up in Samdrup Jongkhar dzongkhag. DoL and its service centres will provide technical support.

c. Support for fodder and feed production: Only about 4 percent of total geographical area is under meadows and pastures in Bhutan and about 3 percent is used for agriculture where mostly food

crops are grown. There is very limited land available to cultivate fodder. Also, there are only a limited number of feed mills in the country to produce feed concentrates. To ensure that adequate fodder is available, the programme support fodder production in fallow and marginal land by providing training to 85 Smallholder Dairy Farmers' Groups on the use of crop residues and feed/fodder. RGoB extension staff and lead farmers will supply seed for winter crop demonstrations and give training and follow-up/ refresher training on fodder development as part of extension services. Dairy farmers' groups will also be provided supply of seeds and cuttings for fodder development. The programme will also support training of feed producers on feed formulation and quality control to ensure good quality feed for improved cattle. Support will also be available for suitable TA to develop a joint strategy for dairy development while limiting damage to forests through dialogue with the Department of Livestock and the Department of Forests along with other key stakeholders.

d. Provision of dairy production inputs: As in case of MAGIP, CARLEP will continue to provide support to Smallholder Dairy Farmers' Groups for the purchase of crossbred cows under the same terms, whereby the programme will provide 40 percent subsidy towards purchase of the animal, while for the remaining 60 percent will be a contribution of the farmer. Considering the poor income status of the target groups and their inability to access institutional credit on their own, CARLEP will pro-actively support linking farmers to financial institutions. In all 2 000 crossbred cattle will be purchased during the course of the programme and in order to minimize risks, the programme will also meet the entire cost of quarantine as well as insurance coverage for the animal for one year. While the cost-sharing arrangement will generally be limited to purchase of one animal per household, in selected cases this may go up to 2 animals per household. Providing 2 animals per HH might reduce the number of beneficiary households to some extent, but it will help to hasten the commercialization process by increasing milk production per household and ensuring availability of marketable surplus of milk throughout the year. The programme will also provide support for construction of cow sheds to farmer groups who purchase crossbred animals by providing building materials that need to be purchased from the market, such as CGI roofing sheets and cement. The farmer groups will contribute local building materials and labour. The total number of cowsheds under the programme will be 2 000. Since some farmer groups will receive 2 crossbreds each, remaining cow sheds will be utilised for farmers with biogas plants and those who received crossbreds under MAGIP but did not a cowshed. The programme will also provide small equipment, such as chopping machines for fodder production.

e. Installation of bio-gas units: As part of an overall strategy of promoting climate smart farming systems, CARLEP will provide support to install 2 000 bio-gas units, one for each of the households participating in the dairy programme and possessing cross-bred cattle. This will reduce pressure on forests for firewood, improve supply of quality manure for agriculture, especially vegetable production, will reduce drudgery for women and have health benefits by reducing smoke and soot in the house in the course of cooking. Availability of bio-gas will also enable dairy farmers to provide warm drinking water to cattle for drinking, especially in colder climates/seasons (details in WP12).

Component 2: Value Chain Development and Marketing

12. Scattered and remote settlements with limited marketable surplus per household due to small land holdings has been one of the major bottlenecks in developing the agriculture sector in Bhutan. Component 2 therefore focuses on instituting organized/structured value chain and marketing systems for vegetable and dairy products by establishing and clustering farmer groups into networks in order to facilitate the organization and marketing of vegetable and dairy products. This will enable farmer groups, cooperatives and enterprises to engage in profitable market-oriented agricultural production and processing activities and to promote partnerships and market linkages with other value chain actors to enhance farmers' incomes. To ensure a focussed approach the marketing support will be provided within the selected value chains only. FCBL will be the main vehicle for market-led value chain development and for enabling other value chain actors to come on board. FCBL will seek close collaboration of DAMC and the departments in this endeavour. DAMC will be responsible for facilitating agricultural marketing and development of marketing groups and cooperatives and putting in place required infrastructures jointly identified with FCBL and Dzongkhag RNR sectors. FCBL will provide all physical agricultural marketing services. Dzongkhag RNR sectors will be key point for developing value chains in the dzongkhags and will provide all necessary support to FCBL and DAMC in identification of potential sites of production and setting up necessary market infrastructures in the villages.

Outcome 2: Increased smallholder income from crop and livestock value chains

13. Programme activities will be implemented to produce three outputs, namely, i) resilient vegetable and dairy value chains, ii) commercialized agriculture and farm enterprises, and iii) community-driven market infrastructure. Activities implemented will lead to three outputs to realize the objective of successfully developing value chains and marketing infrastructure for commercialization of smallholder agriculture. These would contribute to increased incomes for smallholder farmers from participation in commercial farm production.

14. **Output 2.1: Resilient vegetable and dairy value chains developed:** In the first phase of the programme support will be provided to developing the vegetable and dairy value chains. As earlier FCBL will take the lead in the development of the value chains and marketing system in coordination with the CARLEP PMO. FCBL is presently in the process of establishing a warehouse/ collection center management system for the Commodity Exchange Trading System it is implementing. The primary aim of the system is to control the movement and storage of agricultural goods and FCBL will require support to ensure the collection and distribution of commodities is as cost-efficient as possible to reduce overall transaction costs. FCBL will also need to develop a business strategy for the collection and distribution system in order to provide a fairly priced service to all producers, including those in remote places with higher transaction costs, while ensuring the overall system is as cost-effective as possible to generate the maximum marketing/selling margin. The programme will support the entire process of design and implementation of vegetable and dairy value chains and development of FCBL capacity to effectively carry out the value chain development programme as well as its present responsibilities.

15. Activity 2.1.1 Strengthening FCBL capacity for value chain development: FCBL was originally set up to serve the social mandate of ensuring food security by managing distribution of food commodities across the country, including to government establishments/programmes, such as the police and school feeding programmes. FCBL has now been mandated to also spearhead commercial marketing of farm produce, which include value chain development envisaged in CARLEP. FCBL is yet to fully develop internal organization and human capacity[139] to carry out its expanded mandate, especially marketing of farm produce and value chain development which requires different human competences/skills from those needed to manage a food (and lately, various fast moving consumer products). New competencies need to be acquired in varied technical, financial and social fields and an organisation structure needs to be instituted that separates its social mandate of distributing essential food commodities to ensure food security from its commercial function of profitably marketing farm produce. The design of a strategy and business plan for FCBL and implementation of the strategy are the two tasks under this capacity that would lead to strengthening of FCBL.

a. Strategy and business plan development: CARLEP will support provision of suitable Technical Assistance to help FCBL design an organizational strategy and business plan for the organization as a whole and specifically for its marketing division. This will include developing skills and systems in the organization to account for and allocate costs of service delivery, including for warehouse/collection center management. The strategic design will also address FCBL's exit strategy whereby it hands over as many tasks as possible to farmers' groups, young entrepreneurs and private service providers without jeopardizing sustainability and effectiveness of the value chains/marketing systems and the interests of farmers. A strategy for building staff capabilities to effectively engage with and nurture farmers' groups, cooperatives and agriculture enterprises and create an enabling environment for them to take over the responsibilities to further develop and sustain the value chains. The organization strategy will also comprise a detailed capacity development plan which addresses institutional, organizational and staffing capacity requirements and goes beyond the traditional 'training' focus.

b. Implementation of strategy and plans: CARLEP will support the implementation of the plans developed for capacitating FCBL at the institutional, organizational and staffing levels, especially for marketing related functions. The strategies and plans will be monitored with respect to their relevance

[139] A Review of the Food Corporation of Bhutan (FCB): Overall Performance and Marketing Functions, vis-a-vis Food Security Objectives, Compiled by MoAF Task Force – GB Chettri DoA, NK Pradhan, CoRRB, Kencho Wangdi CoRRB, Pema Khandu, MoEA, Tshewang Norbu, DAMC, 2012; and Operational Improvements Study –Support to the Food Corporation of Bhutan (FCB), Bastiaan Bijl iD Consultancy (Asia), Consultant for World Food Programme (WFP), 2008.

and effectiveness and updated as and when required. The plans will be updated at least on a yearly basis as part of the AWP development.

16. Activity 2.1.2 Value chain and business plan design and implementation: CARLEP will support the design of value chains and corresponding business plans for both for vegetables and dairy and its implementation. The design process will be led by FCBL with support from DAMC and line agencies at the dzongkhag and gewog levels. The tasks involved are design of vegetable value chain and business plan, design of dairy value chain and business plan and implementation of both the value chain plans as described in the following.

a. Design of vegetable value chain and business plan: The first step towards developing the nation-wide vegetable value chain will be to undertake a detailed design of the value chain involving all stakeholders, including farmers, input suppliers, traders and marketers. The design will build upon the existing successful approach of linking local vegetable production to local institutions (schools) and international niche markets developed under the MAGIP with the Vegetable Value Chain Programme in East (VVCP-E). The design will address all relevant issues, including backward and forward linkages, infrastructure requirements and the economic and financial feasibility of the same, production volumes, costs and margins, financing needs and sources, input supply needs and sources, capacity building needs and mechanisms and sustainability/exit strategy. Locality specific conditions and design features will be linked to regional/national value chain structures. The design will also address issues of **climate resilience** by analysing climate risks and sensitivity of value chain actors, processes and infrastructure effects of climate related disasters and extreme events on their functioning and appropriate mitigation strategies. Since the main attribute of successful value chains are the relationships of stakeholders and their individual capacities, stakeholder workshops will be organized involving donors, policy makers, researchers, government departments, potential investors, traders and farmers' groups before the designs are finalized. Core elements of the value chain will be identified for direct support from the programme, while other elements will be supported over time based on emerging value chain demand from stakeholders.

b. Design of dairy value chain and business plan: As in case of the vegetable value chain, before initiating the activities related to dairy a detailed value chain design will be prepared to understand and address issues at all levels in the chain from farmers to consumers. This will build upon the existing FCBL and DoL infrastructure, networks and experience. As in case of the vegetable value chain, the design of dairy value chain will also address all value chain issues and follow similar design processes of consultation and contextualisation. Issues of climate resilience will also be identified and mitigation strategies built into the designs. Core elements of the value chain will be identified for direct support from the programme, while other elements will be supported over time based on emerging demands from value chain actors.

c. Value chain implementation, strengthening and expansion: Implementation of value chain designs will be led by FCBL and it will seek the support of DAMC and the departments at dzongkhag and gewog level for that purpose. FCBL will receive support from the PMO and suitable TA, especially on quality assurance, research, design adaptation, stakeholder engagement, business plan development, capacity development of value chain actors, process facilitation and creating change momentum. As part of value chain development FCBL will also undertake facilitation of multi-stakeholder collaboration through market visits, buyer seller meets, participatory stakeholder processes, networking, research as well as the provision of infrastructure and equipment; market research/studies to assess the dynamics of existing and potential new markets in the selected value chains, including domestic/export market research/studies and promotion of inter-dzongkhag/regional trade; facilitation of private sector partnerships. One of the main activities towards market linkage will be engaging private sector to ensure reliable and sustainable marketing of agricultural products. Awareness programs on importance of public private partnership (PPP) will be conducted in all parts of the region with design of suitable incentive schemes to be offered under the programme.

17. **Output 2.2. Commercial farming expanded and new farm enterprises developed:** In order to strengthen the value chains, support will also be provided to groups and enterprises that work along the vegetable and dairy value chains, such as in input supply, production, processing, and marketing. The programme will support agriculture enterprise development, facilitation of access to finance and development of multi-stakeholder platforms as described in the following.

18. Activity 2.2.1 Support to agriculture enterprise development: The programme support to develop capacities of farmers' production (and marketing) groups, cooperatives, and individual enterprises on organizational and business development through DAMC and FCBL. FCBL and DAMC, with support from DoA and DoL will (i) develop an entrepreneur identification and engagement process as part of the value chain development process, targeting existing entrepreneurs as well as potentially interested people, specifically women and youth; (ii) identify potential marketing groups from established production groups in vegetable and dairy value chains and provide group organisation and technical training; (iii) strengthen the existing marketing and cooperative capacity development packages, based on the value chain approach; (iv) develop and provide technical training for vegetable marketing groups and entrepreneurs on vegetable marketing aspect like quantity, quality, size, seasonality, cleanliness, packaging, transport, and marketing options; (v) develop and provide technical training for dairy marketing groups, entrepreneurs and technologists for developing technology for longer shelf life of local (butter and *datse*) and new products (*lassi*, ice-cream) along with suitable packaging size and ensuring availability in local markets, including training in dairy marketing to ensure a proper supply chain for RNR scientists in dairy technology so that they can in turn provide support to private entrepreneurs interested in setting up dairy enterprise; (vi) develop training packages for agriculture entrepreneurs, in close collaboration with relevant service providers as well as with other relevant stakeholders; (vii) support capacity development for making business plans, contract management and group saving schemes for producer/ marketing groups; (viii) provide training to farmer (marketing) groups, cooperatives, and individual enterprises, including general training initially by FCBL and also by service providers recruited for specific topics and targeting purposes, e.g. the Youth Media Foundation for youth entrepreneurs, the Bhutan Association of Women Entrepreneurs for women groups and women entrepreneurs, the SAARC Business Association of Home based workers for outreach and training models; and (ix) provide on-the-job support to cooperatives and agriculture entrepreneurs with business plan implementation and fulfilling financial loan obligations (if any).

19. Activity 2.2.2 Facilitation of access to finance: Farmers need regular and timely access to cash flows for working capital by way of cash-credit limits at affordable rates of interest. A supportive credit policy and delivery system is necessary to facilitate access to finance for farmer groups, cooperatives and agriculture enterprises, particularly women and youth, supported as part of any endeavor to promote RNR enterprises and. Rural people as owners of RNR sector enterprises, especially in the production segment, would continue to face hurdles in accessing loans from e.g. BOiC as well as other financial institutions. The programme will facilitate farmer entrepreneurs' access to institutional finance, social inclusion in producer groups and provide support for market-led production as below.

a. Facilitate access to institutional finance: The programme will support and enhance accessibility under the agreements (MoUs) between BOiC/BDBL and FCBL as well as MoAF/DAMC to pro-actively link entrepreneurs to these available funding sources to finance enterprise investments. Interest has been evidenced by both, BOiC and BDBL, to support programme beneficiaries. Nodal Officers in DoA, DoL and DoF will facilitate access to BOiC revolving funds. The programme would further support MoAF/DAMC in the technical appraisal of proposals in line with the complementary programme interventions. Support will also be provided to help cooperatives and individual enterprises develop business and financing plans and proposals to seek BOiC funding, and assisting entrepreneurs with business planning and fulfillment of financial obligations following from the loan obtained.

b. Social inclusion in producer groups: As many poor people are unable to join existing farmers' producer groups due to their inability to match the contributions already made/accumulated by existing group members to the group fund, the programme will support their inclusion by making the required contribution. This will facilitate inclusion of poorer farmers in the value chains being developed.

c. Support for market-linked production: The programme will provide a revolving fund of Nu 50 000 each to farmers' producer groups to support market-linked production by group members based on business plans developed with FCBL assistance and entering into marketing agreements with FCBL. Members will borrow from the group to procure necessary inputs and services for production and repay out of revenues from the sale of produce to FCBL.

20. Activity 2.2.3 Development of multi-stakeholder platforms and networks: Value chain development depends to a large extent on understanding the different needs and interests of different value chain

actors and on the quality of actor relationships. Opportunities, risks, costs and benefits need to be assessed and understood in order to develop fair contractual arrangements and trust. The PMO with appropriate TA will facilitate the development and strengthening of value chain actor networks and multi-stakeholder platforms for example production and market information exchange, to discuss and share opportunities for investments along the value chains, to address key bottlenecks and constraints that may hamper value chain development and/or to negotiate and monitor informal and formal agreements. These platforms will also be used to address specific programme targeting issues, e.g. pro-poor development, engagement of women and youth, environmental sustainability and climate change.

21. **Output 2.3. Community-driven market infrastructure developed:** CARLEP will support FCBL to create value chain infrastructure at the local community level, such as village storage houses, cold stores, small trucks, market sheds, etc. to be owned and managed by communities, farmers' groups/ cooperatives or small entrepreneurs. While the focus during the first phase would be on vegetable and dairy value chains, where possible, a multi-use perspective will be followed in the design to accommodate future value chains and commodities. The programme will support design, construction and supply of necessary infrastructure and equipment for the vegetable and dairy value chains as below.

22. Activity 2.3.1 Design, construction and supply of value chain infrastructure and equipment: This will include planning and design of value chain and market infrastructure, development of business plans and setting up Three Window Shops (TWS) or Farmers' Shops (FS), investment support in vegetable value chain infrastructure and investment support in dairy value chain infrastructure as described in the following.

a. Planning and design of value chain and market infrastructure: FCBL will prepare detailed plans, business plans and designs of the infrastructure necessary based on the vegetable and dairy value chain designs and business plans. Infrastructure will be designed based on i) demand projections, ii) a multi-use perspective, iii) economic feasibility for direct privatization or PPP management models, and iv) climate resilience specifications.

b. Development of business plans for and setting up Three Window Shops (TWS) or Farmers' Shops (FS): The programme will also fund preparation of site-specific business plans for 12 TWS' and construction of these TWS' based on operationally, economically and financially viable business plans. The need for the TWS to ensure better access of farmers to required inputs including seeds, fertilizers and pesticides as well as access to marketing services would have been broadly identified in the value chain studies but site-specific viable business plans would be needed before investments are made. Operated and managed by FCBL initially, privatised management will be recruited, based on a PPP model, to eventually run and manage these TWS'/FS'.

c. Investment support in vegetable value chain infrastructure: CARLEP will support investment in equipment and infrastructure needed for post-production and marketing activities for the vegetable value chain, such as, packaging of produce, transport to the market place, storage/warehousing and marketing. Based on the vegetable value chain design, the programme will support FCBL to supply marketing equipment[140] such as fridges for schools participating in vegetable contract agriculture and infrastructure[141] for vegetables. Initially, FCBL will also supply packaging materials (crates, bags), etc. to the farmers to promote the use of such materials; these would later be purchased at cost from FCBL by farmers.

d. Investment support in dairy value chain infrastructure: The programme will support investments in equipment and infrastructure for collection, storage, chilling, processing as well as marketing of milk and milk products through retail outlets. Based on the dairy value chain design, the programme will support FCBL to supply to dairy groups necessary equipment, such as improved milk cans. FCBL will also be supported to construct milk processing and marketing infrastructure. While the actual number and specifications of infrastructure units would be decided on the basis of the value chain design, indicatively 90 milk collection sheds, 24 milk collection centres with chillers and 4 dairy processing units fitted with essential equipment have been budgeted.

[140] Equipment under vegetable and dairy value chains will be owned and managed by farmer groups, schools and FCBL.
[141] Infrastructure under vegetable and dairy value chains will be owned and managed by FCBL, marketing groups, or dzongkhag/geog, as per value chain design; management of infrastructure can be outsourced under PPP.

Component 3: Institutional Support and Policy Development

Outcome 3: Agricultural institutions and policies strengthened for improved and resilient agricultural and marketing practices

23. An institutional and policy environment that fosters collaboration and partnerships is necessary for climate resilient, market-led production and value chain development in the RNR sectors and for addressing the prevailing structural development constraints. Climate resilient practices require proactive communication and collaboration between various stakeholders, including communities, researchers, policy makers and market players. Success of value chains, similarly, depends on proactive collaboration and information exchange between multiple players in the chain. Collaborative service delivery and increased service outreach, the key elements in the programme, provide an opportunity to institutionalise communication and collaboration between various public agencies and between them and community based institutions and the private sector. Activities under this component will lead to two outputs to realize the objective of strengthening agricultural policies and institutions for robust and resilient agricultural and marketing practices briefly described below.

24. **Output 3.1. Value chain and marketing knowledge and communication strengthened:** As part of its knowledge management work, CARLEP will capture and document knowledge and good practice from programme implementation, especially related to climate resilience, value chain and market development. CARLEP's knowledge products will be broadly shared with programme stakeholders and beyond to leverage policy support for broader value chain and market development.

25. Activity 3.1.1 DAMC market information system strengthened: DAMC will be supported for strengthening the existing market information system, to ensure real time market information is made available to farmers. DAMC will also be supported to expand on the type of information and the means of making information accessible and interactive, including the promotion of mobile technology to inform and empower farmer groups.

26. Activity 3.1.2 Curriculum development of RNR training and education institutes: CARLEP will engage with the RNR training and education institutes such as the Rural Development Training Centre (RDTC) in Zhemgang and the College of Natural Resources (CNR) in Lobeysa for the development of training materials. Where possible, CARLEP will recruit these institutes as training providers and their teachers as resource persons, since both institutes already presently provide programme relevant training. As part of this exchange, both institutes will also be supported with to upgrade their course curricula with knowledge and proven practice developed under CARLEP. Areas to be considered include climate resilience, climate smart agriculture, sustainable farming practices, value chain development, agricultural marketing, enterprise development and CAHWs and lead farmer models, etc.

Output 3.2: Climate change resilience and value chain development lessons mainstreamed in agricultural policies and sector strategies

27. Activity 3.2.1 Participatory policy development and monitoring approach: CARLEP will support the MoAF with the development of a multi-stakeholder consultation process for policy development, as well as a participatory monitoring process. Innovative models and approaches supported by CARLEP regarding participatory and collaborative service delivery will also be applied in the development and monitoring of sector policies and rules and regulations. Engagement of policy beneficiaries as citizens, private sector, civil society and local governments in the development of policies is important in an increasingly more vocal society. Also, a feedback and monitoring process to measure the intended and un-intended effects and impacts of the policy is useful to fine-tune policies during implementation.

28. Activity 3.2.2 Mainstreaming climate resilience and value chain development lessons in agricultural policies: CARLEP will support MoAF with a screening of existing agriculture policies on their climate resilience as well as on how to strengthen or adapt them based on lessons learned from the programme in areas such as sustainable farming practices, CAHWs and lead farmer models, value chain development, marketing, the new institutional role of FCBL and engagement with training and education institutes.

29. Activity 3.2.3 Developing a conducive regulatory framework for private sector development and Public Private Partnership: Engagement with private sector is important for agriculture enterprise development, employment and generating additional private investments for developing sustainable

and growing value chains. However, creating business opportunities needs to be complemented by suitable regulatory and policy frameworks that ensure competition to avoid monopolies and exploitation of less powerful value chain actors. Negative environmental and social externalities of businesses also need to be addressed, for which adequate rules and regulations as well as detailed cost and benefit analysis are required. Key for successful Public Private Partnerships is understanding and fair distribution of costs, benefits and risks for which a conducive regulatory PPP framework is required. At present this regulatory framework is not adequate, especially in the rural context of most value chains. MoAF will therefore be supported to strengthen the PPP regulatory framework in Bhutan.

Appendix 5: Institutional aspects & implementation arrangements

1. Introduction

1. This appendix describes the entities that would be responsible for programme management, coordination and implementation, including setting up of CARLEP Programme Management Office (PMO) in the east (Mongar) and a Liaison Office at Thimphu. Specific tasks and proposed approach to capacity building are also outlined. Details are in WP 11.

2. **Project management lessons from AMEPP and MAGIP.** Programme management of CARLEP will build on the experience from the on-going Market Access and Growth Intensification Project (MAGIP) as well as AMEPP. CARLEP will be implemented under the aegis of the Ministry of Agriculture and Forests (MoAF) with the market-focused development led by FCBL. Drawing on the experience of MAGIP and AMEPP, CARLEP is proposing a hybrid project management system with Programme Management Office (PMO) in the east (the programme area) staffed by adequately senior and experienced staff and a Liaison Office in the PPD of MoAF (reporting to the PMO) to ensure effective linkages with MoF to ensure smooth fund flow and also coordination with other agencies of RGoB located at Thimphu.

3. AMEPP, located in the programme area, experienced inadequacies in its project management structure. The project was managed by a Project Facilitation Office (PFO) located in the east at Kangma. Although headed by a senior civil servant with stable tenure, the PFO was not able to provide required backstopping for sectoral activities due to inadequate technical capacity. Most sectoral staff were junior to their Dzongkhag counterparts and were relatively inexperienced in their respective fields. In addition, the financial management and contract management capacities were inadequate. The sectoral departments of the MoAF were not involved in planning and supervision of the activities. Thus, the experience with the implementation of AMEPP showed that managing a project outside the MoAF was unsatisfactory. Therefore, MAGIP was implemented within the existing Government structure, where the line departments of MoAF become fully responsible and accountable for their respective activities, while providing oversight, technical assistance and guidance to the district and gewog staff who carry out the day-to-day activities.

4. Accordingly, MAGIP's Project Coordination Unit (PCU) was established within MoAF Secretariat at Thimphu. Led by a fully-dedicated Project Director (PD), the PCU is staffed with a Finance Officer and an Accountant and relies on support from a Planning and M&E Officer nominated in the Policy and Planning Division (PPD) of the MoAF. The Departmental Focal Points as Sector Managers from the line departments of the MoAF are responsible for providing the necessary technical backstopping in their related areas of expertise and responsibilities to project implementers in a decentralized manner to the Dzongkhags. MAGIP accordingly has the Departmental Focal Points (DFP) as Sector Managers (SM) from each line Department of the Ministry, such as SM (Agriculture), SM (Livestock), SM (Forestry) and SM (Engineering) and RAMCO/DAMC. The DFPs or SMs assist in planning, provision of technical review and other technical support. Similarly, at the district level, each District Sector Heads (e.g the District Livestock Officer or District Agriculture Officer) are responsible for coordinating various activities falling in their areas of responsibilities. District staff are hence responsible for implementation of project activities at the field level through their staff in the gewogs.

5. In practice, however, this arrangement too was found to be inadequate for effective programme implementation. In this case, only the Project Director and an Office Assistant is full time dedicated to MAGIP. All others, including the finance and accounts staff, M&E officer and SMs are part-time, though there are fewer problems with finance and accounts as they are housed within the PCU of MAGIP. Even the Dzongkhag staff have many other tasks to perform besides the work of MAGIP. Consequently, this arrangement too is found to be not fully or adequately effective for programme implementation. Data collection on programme results from the field remains one of the more serious challenges. MAGIP could not effectively use PLaMS for its M&E system. Documentation of good practices from the field experienced several obstacles as the SMs are in Thimphu whereas the Dzongkhag officers who are in the field are not fully capable to do documentation, or transfers and posting of new staff in the Dzongkhags lead to frequent changes in personnel. While the Project Director is responsible to ensure compliance with project financing agreement and compliance of tasks relating to programme management, including reporting requirements, he is often challenged

due to part-time nature of SM's involvement in the project; who many a times remain unavailable when required by MAGIP or are engaged elsewhere with other tasks that they have to perform.

2. Institutional arrangements for implementation of CARLEP

2.2 Programme Management Office (PMO) at Mongar

6. The PMO will be responsible for overall management of the programme on a day-to-day basis. Implementation at the field level will involve various stakeholders whereas coordination of planning, fund management and disbursement, monitoring and evaluation and reporting will be responsibility of the PMO. PMO will also be responsible for generating knowledge from programme interventions and disseminate/share the knowledge including good practices, successful initiatives and unsuccessful results with all the key stakeholders, particularly RGoB and IFAD. PMO will also be responsible for successful closure of the programme at the end of the programme period. Programme Start-up Workshop will be carried out by IFAD once all the staff are in place.

7. The PMO for AMEPP was located in the east. However, severe fund flow and disbursement issues existed mainly due to poor furnishing of withdrawal forms and lack of stringent follow up with the Ministry of Finance (MoF) and IFAD. To smoothen that process, PMO for MAGIP was set up at Thimphu under the MoAF Secretariat. This set up has helped in easing fund flow and led to efficient fund flow management with timely processing of withdrawal applications (WAs), and fast disbursement of release requests to programme partners. However, monitoring aspects and interaction of programme management personnel with beneficiaries and programme implementers in the fields were minimal. It has led to erratic monitoring and evaluation of programme activities in the field by SMs' and Focal Points for Agriculture, Livestock, Forestry and Infrastructure. Additionally, with sector/component managers working only part time, the programme suffers from divided attention.

8. Drawing lessons from both AMEPP and MAGIP, the PMO for CARLEP is proposed to be moved to the east (preferably at Mongar), with a liaison office in the MoAF Secretariat at Thimphu with a focal finance officer / accounts officer identified at the Administration and Finance Division (AFD) of MoAF in Thimphu to help with furnishing proper withdrawal applications and follow up with the Ministry of Finance. Coordination will be supported by a focal officer at PPD. Since the components of the programme mainly comprise of enhancing crop and livestock production and marketing, it is not only convenient but effective in management if the programme management is located in close proximity to the existing MoAF agencies in the region mandated with production enhancement and marketing services. The programme management team will be an independent unit under the Secretary of the MoAF but located at the programme site.

2.3 Liaison Office at Thimphu

9. The Liaison Office in Thimpu will report to the PMO in the East. To enhance coordination of implementation supervision missions, conceptualization and formulation of new programmes, etc. a focal official at PPD will be assigned for the IFAD portfolio as is currently being managed. The concerned official will be responsible for liaising with the IFAD team and with agencies both within and outside the ministry on matters relating to the programme in view of the programme officials being based in the region.

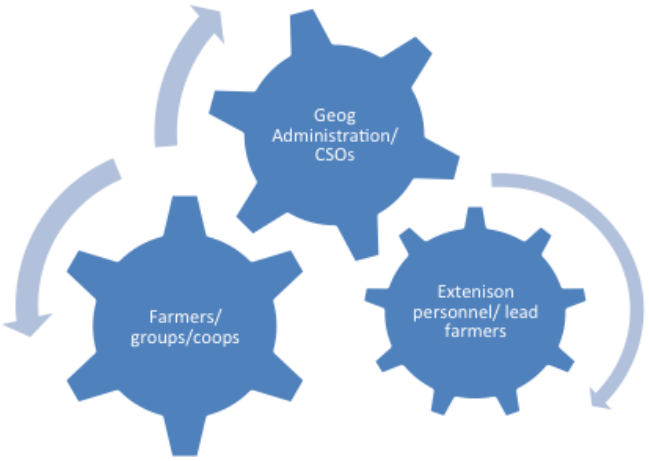
10. Being mindful of the past issues related to fund disbursement, getting withdrawal applications right and following up with financial issues, a finance officer at AFD/MoAF needs to be designated as focal finance person for the programme. S/he shall ensure timely processing of withdrawal applications and fund flow with the Ministry of Finance, especially the Department of Public Accounts (DPA) and Department of National Budget (DNB), and IFAD. S/he will work closely in liaison with IFAD Focal Point of PPD and apprise PPD and the Secretary of fund flow status on a regular basis in addition to coordinating with the PMO.

2.4 Programme implementation and management at the Dzongkhag, Gewog and Village Level

11. **Dzongkhag Level.** At the Dzongkhag level, the RNR sector is represented by the agriculture, livestock and forestry sector heads that play a key role in implementing sector related activities in the field. The main implementation on the ground will be coordinated by Dzongkhag Agriculture and Livestock sector heads through their extension personnel located in each gewog. The Dzongkhag sector heads in consultation with the respective gewog staff will identify activities for respective

gewogs, amalgamate it and incorporate in the AWPB annually, which then becomes part of the programme's AWPB. After the AWPB is approved, the budget for respective activities other than those implemented centrally by the PMO, RAMCO and FCBL will be released to the respective Dzongkhags. The sector heads then implement the activities and report both physical and financial progress to the PMO. They would also be responsible for knowledge management functions in relation to their respective sectors, particularly in documenting good practices and lessons learn from time to time.

12. **Gewog/ level.** The RNR sector is further represented down at the gewog level by three key personnel, namely the agriculture, livestock and forestry extension officers. In particular for this programme, the livestock and agriculture extension personnel together with the gewog administration are crucial for coordinating and mobilizing farmers/groups/Coops to implement the activities. The smallholder farmers either in groups or individually form the main implementing partners on the ground for both the activities of production and marketing as they are the main target beneficiaries. Therefore, it is envisaged that at the grassroots level of implementation, these three agencies viz.,extension personnel, gewog administration and smallholder farmers will have high level of interaction at all time.



13. **Chiwog/Village level.** At the village level, the village tshogpas will play an important role in assisting extension personnel in identifying and mobilizing public participants suitable for programme activities, testing, scaling-up or capacity building for specific programme related activities. The village tshogpas will have the important socio-economic and demographic data of the households in their villages. The households will participate by being members in farmers' production groups and cooperatives, including vegetable groups, dairy groups, etc. and some of these groups could graduate to marketing groups to focus on the marketing aspects of the programme interventions in value chains along with production.

2.5 Staffing for Programme Management

14. **Staffing at PMO.** CARLEP staffing chart at PMO is given at Annex 2. The PMO will be led by a National Programme Director and have the following staffing all located within the PMO - The National Programme Director would be a senior officer from MoAF, RGoB with service grade preferably equivalent to Dzongdas. The staffing of the PMO is presented in Table 1. The full time Managers or Officers would come from different departments or agencies of the MoAF as outlined above. The Managers/Officers will take the lead role in implementation and reporting progresses to the Manager (Planning, Monitoring and Evaluation). The Manager (Planning, Monitoring and Evaluation) should be someone familiar or experienced with PLaMS as CARLEP's M&E system will largely integrate with PLaMS as mandated since 11th FYP (2013-2018). S/he will also be the Focal Point for Gender and Knowledge Management (KM). One of the Office Assistants will be designated to assist the Manager (M&E) in data compilation and management as may be required. All Sector Managers will also be responsible both for gender and KM functions of the PMO. A full time Manager (Finance, Accounts and Procurement) should be appointed in the PMO and to be assisted by an Accountant. It should be ensured that finance personnel are not transferred till the Programme implementation is completed. Change of finance personnel during the Programme implementation affects Programme implementation progress and performance as new finance officer has to be trained on IFAD financial and procurement systems.

15. **Staffing at Liaison Office at MoAF Secretariat in Thimphu.** The staff at the **CARLEP Liaison Office**, Thimphu will consist of the IFAD Focal Officer in PPD and a designated Focal Accountant for CARLEP at AFD of MoAF. At the MoAF secretariat as indicated earlier the focal officer at PPD will coordinate supervision missions and other policy related issues while a focal finance officer at AFD will facilitate smooth fund flow, ensuring proper furnishing of withdrawal applications and follow up

with MoF on other fund related issues. The office will also liaise with various agencies of RGoB and other external agencies based in Thimphu as may be required.

Table 1. CARLEP Programme Management Office staffing

Sl no	Positions	No of positions	Remarks
	PMO at Mongar		
1	National Programme Director	1	RGoB
2	Finance Officer	1	RGoB;
3	Accountant	1	Contract;
4	M&E and Gender Officer	1	RGoB
5	Asst. KM, Gender and M&E Officer	1	Contract
6	Support officer	1	Contract
7	Component Manager (Agriculture Production)	1	DoA, RGoB;
8	Component Manager (Livestock Production)	1	DoL, RGoB;
9	Manager (Value Chain (VC)& Marketing)	1	FCBL;
10	Office Assistant	1	RGoB
11	Drivers	2	RGoB
	Liaison Office, Thimphu		
12	IFAD Focal Officer at PPD, MoAF	1	Designated from PPD, MoAF
13	IFAD Focal Accountant at AFD, MoAF	1	Designated from AFD, MoAF
	Total staff	14	

16. **Staff recruitment and HR.** All staff would be recruited by RGoB on full time deputation to CARLEP and may be drawn from FCBL and MoAF. The positions for Assistant Manager (M&E and KM) and KM and Gender Officer would be recruited from open market for which the requisite qualification, experiences and competencies would be determined by CARLEP PMO or any other authority in MoAF. To the extent possible, gender balance should be maintained in staff recruitment or deputation to PMO. The staff recruited for PMO should be senior and experienced commensurate in service to their counterparts in the Dzongkhags. Day to day Programme management and implementation will be carried out by regular Programme staff and focal officers identified at various levels from the civil service pool. Occasional thematic reviews and completion reports will be produced through recruitment of consultants/Technical Assistant, either national or international as the case may be. The HR policies of CARLEP would be as per RGoB norms.

17. **Activities sequence chart and reporting mechanism.** PMO will coordinate quarterly/half-yearly/Annual progress reports in coordination with Dzongkhag counterpart officers. The Manager (Planning and M&E) will compile, process/analyse, and report to MoAF and IFAD on an interval that is identified as appropriate based on national and IFAD's requirements. The consolidated reports on programme progress and results, will include the annually reported RIMS indicators of outputs and outcomes on First and Second Level Indicators (2nd level indicators to be provided only after Mid-Term Review). Suggested templates are provided in the WP on M&E. In addition, the M&E unit of PMO will visit the field sites and report to the National Programme Director and PMO, which will help management take timely decision. Occasional thematic reports may also be generated through recruitment of consultants/TAs. RIMS and AOS studies would be part of the M&E functions of the PMO. The M&E unit will also coordinate all Programme supervisions from IFAD by way of providing timely Programme reports and documents. The M&E unit will also be responsible during Mid Term Review and preparation of the Programme Completion Report and baseline and end line impact surveys of the Programme at the beginning and end of the Programme implementation period. An outline of the draft activity sequence chart of CARLEP is given below (see also Annex 3):

Table 2. CARLEP Activity Sequencing Chart

Components/Activities	Programme Years					Coverage Area	Key responsibility
	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020		
Setting up of PMO							RGoB/MoAF
Staff Recruitment							PMO/MoAF
Programme Start-up Workshop							PMO
Notification of National Programme Steering Committee							PMO/MoAF
Procurement of vehicle							PMO
Components							
1. Market-led resilient agricultural production intensification						Mostly six eastern districts + other areas	
1.1 Phase I crops							
1.2 Phase II crops							
1.3 Livestock							
2. Value Chain and Marketing infrastructures						Nation-wide	
3. Institutional support & policy development						Programme areas	
4. Programme management							
4.1 AWPB & Procurement							
4.2 Annual Progress Report							PMO
4.3 Financial Statement, Audit & WA							PMO
4.4 RIMS and AOS							PMO
4.5 NPSC meeting and other reviews							PMO
4.6 Programme Review Meetings							PMO
4.7 Gender mainstreaming strategy preparation and activities							PMO
4.8 KM strategy preparation, workshops, reviews, documentation							PMO
4.9 PMO review meetings							PMO
4.10 Baseline survey including Vulnerability Assessment Study							PMO/outsourced
4.11 Mid-term review							PMO and IFAD
4.12 End-line Impact studies							PMO/outsourced
4.13 Programme Completion Report							PMO/outsourced

18. **Programme review mechanism by PMO and RGoB.** PMO will have its own programme review mechanism which can be monthly / quarterly / half-yearly or annual as the case may be with all the implementing partners and agencies. PMO will coordinate with Dzongkhags and all participating agencies for periodic programme review. The programme review will also include progress in gender mainstreaming and knowledge management strategy of CARLEP. Review by NPSC and RPIC would also form part of the programme review mechanism.

3. Programme coordination and supervision

3.2 Lead Ministries for programme oversight

19. **Ministry of Finance.** MoF is the borrower with a focal officer in the Department of Public Accounts (DPA) for IFAD responsible for coordinating with the PMO, MoAF and IFAD for smooth fund flow, disbursements and preparation of consolidated financial progress reports and any other fiduciary responsibilities such as audit, repayment of loans and other financial management and administration. The focal point will be responsible for clearance of Withdrawal Applications and will facilitate operation of the Designated Accounts. The focal officer will also participate in programme review meetings and meet with supervision mission members and participate in mission wrap up and other meetings to discuss and resolve fund related issues.

20. **Ministry of Agriculture and Forests.** The MoAF will be the Lead Programme Agency (LPA) providing policy guidance, policy priority direction and facilitate implementation by making required technical staff available from their pool of civil servants. The MoAF will also provide technical backstopping through its line departments and various agencies in the field. MoAF will have the overall responsibility for the programme. MoAF will also ensure stability of the staff deputed in CARLEP particularly National Programme Director, key sector managers and finance staff (as finance staff in particular are to be transferred every 3 years as per Bhutan Civil Service Rules).

3.3 Programme Steering and Coordination

21. **National Programme Steering Committee (NNPSC).** The NPSC will meet at least half-yearly (or quarterly if required) and will provide policy directives that will largely facilitate implementation at the field level and give guidance to the programme management. The NPSC will also take decision on the endorsement of AWPB and serve as platform for discussion and resolving issues. Secretary, MoAF will chair the NPSC and will be represented by DG Agriculture, DG Livestock, Director DAMC, CEO or nominee of FCBL, Director DLG and Director DPA of MoF. The NPD, CARLEP will be the Member Secretary of the NPSC. The NPSC, *inter alia*, will also review programme progress, discuss issues and bottlenecks and provide working solutions for smooth implementation of the Programme in the field. Annex 6.1 provides an idea of programme management structure and composition of NPSC. NPSC may coopt as members or invitees any other agencies or organisations such as from financial institutions and the private sector to be included in the NPSC in the interest of CARLEP as may be decided by PMO with approval by Secretary, MoAF. The suggested NPSC structure is given at Annex 1.

22. **Regional Programme Implementation Committee (RPIC).** MoAF will also establish a Regional Programme Implementation Committee for CARLEP. The RPIC will steer synchronization of AWPB and implementation at gewog, dzongkhag and regional level to enable combining of some dzongkhag level activities and sharing experiences for possible replication in other areas. The RPIC will be composed of the Dzongdas of the programme dzongkhags, two nominated Gups representing gewog level implementation, representatives from Regional Offices of FCBL and DAMC/RAMCO, Regional Directors of various MoAF agencies and representative from collaborating development agencies and Civil Society Organizations as would be decided by PMO in consultation with Secretary, MoAF.

3.4 Programme supervision and reviews

23. The IFAD implementation and supervision missions, the frequency of which will vary depending on the requirement will monitor programme implementation status and report to RGoB/NPSC and IFAD through aide memoir and mission wrap-up meetings. Besides, the Mid Term Review conducted towards the mid period of programme implementation will provide opportunities for realignment and making adjustments to pursue changes in the design. IFAD will also undertake PCR validation mission which will include review of the PCR prepared by the programme. Other reviews by IFAD may also include Programme Performance Assessment (PPA) by the Office of Independent Evaluation (OIE) after programme closure.

4. Implementation arrangement and implementation responsibilities

24. CARLEP's implementation arrangements and coordination will be guided by the strengths and experiences of on-going MAGIP and past programmes executed in the region such as AMEPP

supported by IFAD. Further, the lessons and success of other projects such as AREP[142] and HRDP,[143] the Technical Cooperation Projects supported by JICA whose Research and Extension Methodology, "Outreach Concepts" adopted in the implementation of MAGIP after the first supervision mission may also be dovetailed, particularly providing extension support to the farmers during the course of programme implementation.

25. The programme management shall consider the following guiding principles in the implementation of the programme:

- *Focus towards climate-resilient commercialization in agriculture and livestock production areas linked to market on value chain principles i.e. connected by farm roads and power tiller tracks and organized marketing instead of fragmenting investments by attempting to cover large area, thereby reinforcing market focused production clusters, up-scaling into promoting commercial and market driven farming and contribute towards poverty alleviation.*
- *Provide support towards developing appropriate technologies suitable for commercialization of agriculture and livestock starting with vegetable and dairy value chains but simultaneously also promoting agricultural crop diversification (paddy, maize, millets, fruit crops, oilseed crops, roots and tuber crops) and livestock (e.g. backyard poultry, piggery) to develop climate resilient livelihoods.*
- *Promote farming as enterprise and employment opportunity to contribute towards employment generation in rural areas.*
- *Promote gender responsive interventions, youth involvement and encourage private sector involvement in farming as well as marketing.*
- *Replicate Offseason Vegetable Production and Marketing Initiatives and linking up production sites to market outlets and initiate organized input supply and collection system.*
- *Promote mechanization of farming as well as more efficient means of use of water resources enhancing crop productivity for every drop of water.*
- *Replicate commodity development focused in potential villages (e.g. vegetable villages, dairy and poultry villages, Citrus village, pear village, Mango village, Avocado village,) promoting agriculture intensification.*
- *Strengthening technical competency of farmers and field staff through hands-on practice approach in trainings followed up by application of skills.*
- *Infusing post-harvest technology to farmers to reduce post-harvest and transport loss.*
- *Inculcate cost sharing mechanisms especially in activities involving larger investments either with beneficiary contribution or by linking programme supports, beneficiaries and available credit facilities such as those from the Bhutan Development Banks, NGOs and Business Opportunity and Information Centre (BOiC).*

26. **Programme Implementation responsibilities.** The table below provides an overview of the key departments and agencies responsible for implementation of programme components and outputs, as well as key technical support inputs.

Table 3. Overview of implementation responsibilities for CARLEP

	Programme	**Responsible**	**Key support**
I	**CARLEP Goal and Objectives**	MoAF – CARLEP PMO	FCBL
	Component 1: Market-led sustainable agricultural production	DoA, DoL, Gewogs, Dzongkhags	Overall: Technical Agencies [1], service providers
	Output 1.1 increased climate resilience: development and implementation of climate smart agriculture practices, resilient farming systems, soil and land management, seed systems, agroforestry, strengthening local institutions, etc.	DoA, DoL, Gewogs, Dzongkhags	For outreach model development (see below); RDC Wengkhar for Agriculture Lead Farmers and RLDC Kanglung for Livestock Lead Farmers and CAHW; biogas by DoL
	Output 1.2 vegetable production: increased volumes of vegetable production through	Gewogs, Dzongkhags, DoA,	DAMC/RAMCO support for groups establishment and

[142] Agriculture Research and Extension Support *Project (AREP)* supported by JICA
[143] Horticulture Research and Development Project (HRDP) supported by JICA

	inputs, intensification, area expansion and smallholder production clustering.		contract agriculture with schools/institutions; RRDCs;
	Output 1.3 dairy production: increased volumes of dairy production through inputs, intensification, area expansion and smallholder production clustering.	Gewogs, Dzongkhags, DoL	Kufouku Investment Private Ltd for production clustering approach (for marketing of milk); RLDC for lead farmer and CAHW
II	**Component 2 – value chain development and marketing**	FCBL, DAMC/ RAMCO, Gewogs, Dzongkhags, MoAF	Overall: Technical Agencies [1], service providers
	Output 2.1 resilient value chains; design and implementation of vegetable and dairy value chains, multi-actor linking, and FCBL capacity	FCBL, DAMC/ RAMCO, Gewogs, Dzongkhags, DoA, DoL	Value chain design specialists;
	Output 2.2 agriculture commercialisation and enterprise development: enterprise development, access to finance, networking	FCBL, DAMC/ RAMCO, Gewogs, Dzongkhags, DoA, DoL	Youth Media Foundation for youth entrepreneurship development; PPP and business model development specialist; BOiC/BDBL
	Output 2.3 market infrastructure: planning, design, business plans, investment	FCBL, DAMC/ RAMCO, Gewogs, Dzongkhags, DoA, DoL	Infrastructure design specialist;
III	**Component 3 – Institutional support and policy development**	MoAF's PPD	Overall: Technical Agencies [1], service providers
	Output 3.1 value chain and marketing knowledge/communication: DAMC market information system, Bhutan Commodity Exchange, Curriculum development	PPD, RNR training and education institutes, GNHC	ICT expertise, education and training expertise Commodity exchange/FCBL
	Output 3.2 CC resilience and VC lessons mainstreamed: knowledge management, regulatory framework for private sector collaboration, participatory policy development	PPD, NEC, BCCI, MoEA, MoLHR, CSOs, GNHC	Private sector collaboration regulatory framework specialist

[1] Programme implementation will be technically assisted and guided by: (i) the Regional Research and Development Centre (RRDC) Wengkhar for Agriculture Components, (ii) Regional Livestock Development Centre (RLDC) for livestock Components, (iii) the Livestock and crop Input Production farms such as Pig and poultry Production farm at Lingmethang, Nublang breeding farm at Tashiyangphu and the Regional Seed Farm at Trashiyangtse. Further inputs will also be provided on request basis by other agriculture technical institutes and agencies. The technical agencies should assign a full time staff of the respective centres to assist the programme implementation. In addition expertise will be utilised from civil society organizations, ongoing development programmes, service providers and (inter)national expert networks.

27. Additional support will be required by the PMO and implementation agencies for the development of models and approaches in relation to extension service outreach and animal health. These areas have been identified as key attention areas under CARLEP to ensure viability and sustainability of programme interventions.

28. **Food Corporation of Bhutan Limited.** FCBL will play a major role in organizing a systematic physical marketing system in place. Additionally, production will be enhanced through FCBL's contract farming scheme with local farmers/groups/cooperatives. The FCBL will facilitate production in both forward-backward linkage through supply of farms inputs such as seeds, fertilizers, farm implements and with in-kind credit facility for grocery items to be paid in-kind during harvest time. FCBL will also work closely with farmers to provide assured buy back mechanism for quality produce using agreed price every year. FCBL will ensure to pay farm gate prices equivalent to the cost of production plus a premium to farmers, to encourage farmers to get into mass production. The agricultural produce thus collected from farmers shall be bulked, processed, packaged and marketed by FCBL to be sold in the market at market rate. This will not only make Bhutanese produce competitive with the open market but also make it affordable for the general population contributing to the national food security. The government will assist FCBL, and thereby local farmers indirectly, through schemes such as Minimal Price Support (MSP) to cover the cost differences. FCBL will also gradually move to an online commodity exchange for agricultural produce along with traditional auction yard operations.

29. **Farm Shops**. One of the important production cum marketing support functions of FCBL would be three-window Farm Shops (FS) having three major functions, viz. farm inputs outlets, grocery outlets and farm products buy-back outlets, hence such entities are popularly known as 'three-window' Farm Shops. FCBL has identified 56 locations for establishment of FS all-over the country, of which 28 of them are located in the east. However, to begin with, CARLEP will support in the establishment of 12 FS, after the assessment of the value chains, with provision for further support after Mid-Term evaluation of performance. Details on operational modalities of FS are given in WP 11.

5. Innovation for increased smallholder resilience

30. CARLEP aims to directly strengthen livelihoods resilience through climate smart agriculture interventions and smallholder income generation by linking to smallholders markets and value chains. In addition CARLEP aims to strengthen local institutions and service outreach, to allow smallholders to continuously benefit from demand-based services and sustainable rural infrastructure. CARLEP specifically supports the following innovations: (i) lead farmer model development for agriculture and livestock; (ii) animal health service model for veterinary (curative) care and artificial insemination; (iii) e-Agriculture platform for on-farm information and decision-making; (iv) perma-culture approach; and (v) linking smallholder marketing development to the ongoing initiative of the Bhutan Commodity Exchange.

31. Although these innovations in themselves are not new, their application in the Bhutan context under CARLEP, in an integrated way is innovative. For example, under past IFAD projects an attempt was made to develop an animal health services model, but this was done in isolation from the incentives provided under CARLEP related to commercial agriculture and climate resilience. Furthermore strengthening local institutions for improved outreach and sustainability of services, in complementarity and building upon Government service networks has not yet previously been undertaken by RGoB and projects in an integrated manner. The linking of technical innovation with model development is therefore an innovative process in Bhutan.

32. **Lead Farmer model development.** There will be Lead Farmer Models both for agriculture and livestock extension systems. The Agriculture Lead Farmers (also known as Outreach Farmers) for farmers-to-farmers extension would be led by RDC, Wengkhar. Similarly, the Livestock Lead Farmers Model and Community Animal Health Worker models would be led by RLDC, Kanglung.

33. **Agriculture Lead Farmers models.**[144] The Goal of Lead Farmer model is to secure increased community resilience through Climate Smart Agricultural practices, increased reach of extension services by Lead Farmer Approach and Value Chain Integration.[145] Under MAGIP several farmers have been trained in the eastern six dzongkhags to take up a role as lead farmer. RDC Wengkhar has provided technical support to the involved dzongkhags for this. **Samdrup Jongkhar dzongkhag** has made leading progress in developing the lead farmer model, with intense support from DAMC/RAMCO, RDC Wengkhar and the Samdrup Jongkhar Initiative (SJI) a local NGO. Implementation of the new lead farmer approach in SJ dzongkhag is facilitated by 6 climate smart agriculture pilot impact areas in various parts of the dzongkhag focusing on the following sustainable and climate resilient technologies: i) soil conservation (Serthi gewog), ii) SRI rice growing (Phuntshothang, Pemathang, and Langchenphu gewogs), iii) agroforestry (fruit trees) (Gomdar gewog), iv) cash crop (asparagus) (Orong gewog), v) vegetable growing (Dewathang gewog), and vi) solar drying (vegetables/fruit) (Lauri gewog). In total, the pilot impact areas are implemented in 8 out of the 11 gewogs in Samdrup Jongkhar, and serve as sites for learning and scaling-up of climate smart agriculture best practices while at the same time promoting economic diversification and income generation within the sector. The sites are carefully monitored by the SJI team in coordination with Dzongkhag staff and documented in the form of case studies.

34. Based on the success of the multi-actor approach in Samdrup Jongkhar dzongkhag, CARLEP through RDC Wengkhar may consider starting SJ dzongkhag as a focus area for further developing the lead farmer model till it is ready for up-scaling to other dzongkhags in the country. CARLEP therefore could aim to continue intensifying/vertically scaling up the current lead farmer approach in Samdrup Jongkhar dzongkhag for the coming 2 years, while comprehensively documenting and systematizing the process based on lessons learned and best practices. Depending on progress

[144] RDC, Wengkhar provide a detail write-up on Lead Farmer Model at WP 11.
[145] MAGIP supervision mission report, Annex 4 'The Proposed Master Farmer Approach: decentralized agriculture extension at the Geog level. MAGIP/IFAD November 2014

made, from year 2 onwards the model could be scaled up, initially in adjacent gewogs and dzongkhags. At present the lead farmer model is only developed for climate resilient agriculture development. To improve coverage in the remote Eastern gewogs, CARLEP may consider partnering with SJI through RRD Wengkhar. Implementation responsibilities for th lead farmer model development, based on the ongoing moder under development with support from MAGIP has the following features that could be dovetailed by RDC Wengkhar for CARLEP.

Table 4. Overview of responsibilities for lead farmer model development

Organisation/Function	Key role/task
PMO	Overall guidance and support
Gewog	Coordinate and support model development and implementation of programme activities
AEA/LEO	Farmer group formation; train, advice and support lead farmers; provide technical expertise and local context knowledge
Dzongkhag sector staff	Provide technical expertise and guidance to lead farmer model development, capture and document lessons
Lead farmers	Advice and capacitate farmer groups on best practices regarding to climate resilient agriculture, farm management, group strengthening and linking to markets; capture (structural) challenges and opportunities from farmers and link to EA for improved practices and technical support
Farmer groups	Organise and coordinate members for effective training, input supply, production, and linking to markets.; Analyse and capture (structural) challenges and opportunities and convey to lead farmers and EA
RRDC/LDRC/technical institutes	Provide overall guidance on lead farmer model development; provide technical knowledge based on mandate; capture development challenges and opportunities and bring up towards policy level.
Service provider model development	Support overall implementation of the model development; provide CD support to all actors involved; analyse constraints and opportunities; capture lessons on model development and generate inputs to further development of the model; develop scalable model; networking, advocacy, public relations, policy influencing

35. **Livestock Lead Farmer Model for Animal Health Services**[146]. The livestock lead farmer model will be led by RLDC, Kanglung which is already working with MAGIP on the model including training of community artificial insemination technicians for the eastern Dzongkhags. The livestock lead farmer model will have the following categories: (a) cattle lead farmers (mainly for preventive health services and fodder development with hygienic milk management); (b) piggery lead farmer for improved breeds in piggery; and (c) poultry lead farmers for improved breeds in poultry. In addition, there will be Community Animal Health Worker (mainly for curative health services and AI services).

36. **Delineation of responsibilities for animal health services.** When it comes to livestock, through the combined efforts of the extension agents and lead farmers, the following issues can be addressed: (i) farm and fodder management; (ii) basic animal health services, mostly preventative (deworming, vaccination); and (iii) dairy production efficiency, quality and hygiene. However, especially in the context of commercial agriculture, this service model is not adequate in terms of veterinary inputs, especially (i) artificial insemination; (ii) curative health services; and (iii) frequency and reliability of service delivery. For these aspects a Community Animal Health Workers (CAHW) model will be developed, which is complementary to the extension agent – lead farmer model. It should be noted that the CAHW model will likely only be feasible for those farmers/areas where commercial dairy farming is promoted, which generates adequate incomes to cover expenditures for animal health services. For those areas where commercial dairy farming is not perceived as feasible, the CAHW model will not be applied and services will solely depend on the AE/lead farmer model together with existing gewog extension officers.

37. **Community Animal Health Workers model development.** CARLEP will strengthen the existing health and breeding services (in selected gewogs of the six eastern dzongkhags) by developing a model for CAHWs. The CAHWS will provide AI as well as curative and preventive health and breeding services. The inputs in the form of medicines, vaccines, semen straw and liquid nitrogen will be provided by the Government along with breeding bulls for far-flung areas. The CAHWs will be identified from previously trained animal health workers and the dairy groups. CAHWs model development in Bhutan, as well as experiences worldwide, show that the development of a

[146] RLDC Kanglung provided a detailed write-up on livestock lead farmer model and CAHW at WP 11.

sustainable CAHWs model require adequate competences and process facilitation. An earlier model of CAHWs has been experimented in the country under IFAD, but was not very successful. A detailed study was conducted by SNV Bhutan to understand the reasons for **limited success of the earlier CAHW model development**.[147] The scheme on CAHWs in eastern Bhutan started in 2005. The review of the CAHWs throughout the country in 2006 identified that (i) the program on CAHWs was implemented too rapidly without proper availability of training facilities or trainers; (ii) mobility of CAHWs was not addressed adequately; (iii) the Dzongkhags implemented the program merely to meet the targets for the approved programme budget; (iv) a lack of proper incentives (or income to cover expenses) for CAHWs who were expected to work largely voluntarily for the benefit of the community; and (v) the monitoring and supervisory system did not materialize. However, farmers receiving services from CAHWs expressed enormous benefits.

38. Based on these lessons, CARLEP will provide adequate CAHW-model development support, to address issues as incentives, cost-benefit analysis, fee-structure[148], coverage (commercial agriculture only), quality and availability of AI and veterinary supplies, and enabling legal framework for privatised animal health services. Technical support will be provided by the dzongkhag livestock sector staff, the LDRC and other specialised livestock (research) institutes. The start of the CAHW model could initially be in Samdrup Jongkhar dzongkhag[149], linked to the selected gewogs where the livestock lead farmer model will be developed. This will ensure adequate integration and complementarity of service delivery and a support network for the service provider. Once the model has matured enough to be scaled-up, this will be done in the 38 high-potential dairy gewogs in the east, as identified by DoL. This can further be expanded to other areas following the MTR, with the aim to scale-up nationally.

39. The CAWHs will receive **training**, which will cover the technical aspects of health and breeding services. Training will be conducted in-country with resource persons provided by technical (training) institutes in Bhutan or Indian resource persons. Refresher trainings will also be built into the training schedule. The programme will support the AI workers with training, a kit for AI, credit facility for motorcycle purchase for enhancing mobility and a stipend as incentive. CARLEP will provide the running costs for the motorcycles, while MoAF will provide input support in the form of semen straws and nitrogen supply for breeding, and vaccines and medicines for health services. MoAF/DoL will also ensure supply of breeding bulls for natural breeding services in far-flung areas, although the programme will develop a model where interested farmers can provide this service commercially.

40. CARLEP will provide support to the **CAHW model development** through an (Indian[150]) service provider who will develop the model and the ToT package for extension agents and sector staff. The service provider will require ample experience in such model development under similar conditions as Bhutan and will support the analysis and development of the start-up the development (4-5 months) as well as provide further development inputs and guidance part-time over 2 years (4 months per year). Key to model development will be to make the CAHWs financially independent over time, through a fee-structure. Since the model will initially only be developed in gewogs where commercial dairy farming is promoted, it is assumed that income generation from dairy will allow farmers (over time) to pay for services. CARLEP PMO, RLDC and other TA will also provide process support for development and implementation of the model. The PMO and TA will also draw lessons and adapt the approach based on local context and experience. This is especially important within the context of Bhutan, where people have become accustomed to 'free' services and inputs from Government. The development of a sustainable fee-based system (e.g. monetary contributions or a voucher system) will thus be challenging. Alternatively the whole package development and implementation may be outsources to a service provider.

[147] Subedi, Udyog (2009), "Study On Community Animal Health Worker Scheme In Eastern Bhutan" SNV, Bhutan
[148] Provision of mobility support to CAHW has not been agreed by RGoB; stipend and service charges would be levied based on cost norms to be prescribed by RGoB.
[149] Although for ease of implementation SJ dzongkhag is selected to start model development, the working areas of individual CAHWs will not follow rigidly administrative boundaries but will be decided upon based on demand and operational efficiency.
[150] There are experienced state institutions as well as CSOs available in India.

41. Key responsibilities and tasks for the CAHW model development could be the following.

Table 5. Overview of responsibilities for Community Animal Health Worker model development

Organisation/Function	Key role/task
PMO	Overall guidance and support
Gewog (selected high production potential)	Coordinate and support model development and implementation of programme activities
AEA/LEO	Delineation of roles and responsibilities, advice on type, quality and frequency of animal health services required; Cluster demand for services to ensure efficient service delivery. Participate in fee structure and quality of service delivery discussions.
Dzongkhag sector staff	Provide technical expertise and guidance to CAHW model development, capture and document lessons. Participate in fee structure and quality of service delivery discussions.
Lead farmers	Capture type, quality and frequency of animals health services required and provide advice to model development. Inform farmers on model development and services available; Cluster demand for services to ensure efficient service delivery. Participate in fee structure and quality of service delivery discussions.
Farmer groups	Analyse and cluster demand for services, provide feedback on service delivery. Participate in fee structure and quality of service delivery discussions. Cluster demand for services to ensure efficient service delivery.
RRDC/LDRC/technical institutes	Provide overall guidance on CAHW model development; provide technical knowledge based on mandate; capture development challenges and opportunities and bring up towards policy level.
Service provider model development	Support overall implementation of the CAHW model development; provide CD support to all actors involved; analyse constraints and opportunities; capture lessons on model development and generate inputs to further development of the model; develop scalable model; networking, advocacy, public relations, policy influencing

42. **e-Agriculture pilot.**[151] ICT-based agricultural extension tools can play an important role in strengthening agricultural extension services as well as creating local employment and growth opportunities. They have proven to be useful in providing smallholders with on-farm knowledge and linking them to value chain actors, thereby strengthening service outreach and reducing agriculture transaction costs. On-farm and real time knowledge for small holders is an important aspect of improving localized decision-making and smallholder productivity. Under the global collaboration of IFAD and Grameen Intel Social Business Ltd/ Intel, CARLEP will introduce the Grameen-Intel ICT platform and software, starting as a pilot in a selected geographical area (gewog) , with the objective to assess if and how it could be beneficial to smallholders in Bhutan, especially in the context of Bhutan's emphasis on commercial agriculture and value chain development. Grameen-Intel will support the pilot with knowledge and experience from successful introduction in other locations. The Grameen-Intel ICT-based agricultural extension tool (known as eAgro Suite) addresses key crop lifecycle problems faced by the small hold farmer in a holistic way, by improving farmer knowledge, capacity, crop resilience, planning, productivity and incomes, while also providing a basis for rural entrepreneurship development with impetus/opportunities for gender equity. Specifically, Grameen-Intel will adapt the existing suite of mobile ICT applications (mrittika, ankur, protikar and vistar) to make localized recommendations on seed selection, soil nutrient management, pest control, and crop harvest planning/ sales. Furthermore information on agricultural production and input requirements from individual smallholders can be combined to create opportunities for bulk input purchases and clustering production to generate adequate volumes for marketing. This empowers smallholder organizations in accessing markets, as well negotiations with suppliers and buyers. The information generated by the ICT platform has the potential to strengthen the entire value chain, including governments, suppliers, agriculture experts, producer orgs and buyers.

43. Within the pilot, it is important to embed the ICT tool firmly within the smallholder context and to provide adequate support for development and utilization of on-farm knowledge, as well as to strengthening smallholder (organization's) relationships with value chain actors. A team of strong agriculture experts is required to provide the local agriculture knowledge for creating the localized ICT expert database, which will be formed from dzongkhag sector staff and relevant sector agencies. Furthermore a strong anchoring organization is required, which owns the initiative and overseas

[151] DoA is currently piloting e-pest surveillance, which is ICT based support to farmers for pest problems. Results of this pilot will be dovetailed into the proposed e-Agriculture to be initiated under CARLEP.

identification, training, ongoing guidance and monitoring of last mile individuals- typically rural entrepreneurs / extension workers/ lead farmers etc. In addition sensitization and mobilization farmers into groups is needed to enable them to learn about and gain access to these ICT enabled agriculture services. CARLEP will therefore link the pilot of the tool with the ongoing lead-farmer model development in Samdrup-Jongkhar, where an adequate support network is in place of dzongkhag staff and technical agencies. RNR RDC Wengkhar will lead the technical development and overall coordination of the pilot and SJ dzongkhag the farmer engagement processes and local pilot implementation. Once the pilot is successful, RNR RDC could lead the expansion of the pilot, initially to other dzongkhags in the east where the lead-farmer model is implemented. The lead organizations for the agriculture expertise as well as for the implementation of the pilot will be identified at the start of the pilot.

44. In terms of financial resources required, CARLEP will provide resources for the purchase of ICT platforms (android smart phones/tablets from 3rd parties), the eAgriculture software suite (from Grameen Intel) and the soil testing kits (third parties in India/ Nepal). CARLEP will also provide a support budget for the pilot implementation to ensure adequate embedding within the lead-farmer model development. Grameen-Intel will provide a. two trainers/consultants free of cost for about 1 months a year (1 week per quarter) for 2 years as part of its social responsibility objective, and b. its eAgriculture software licences as per the said global collaboration between IFAD and Grameen-Intel/Intel. CARLEP funding will cover the international and domestic travel (typically from Bangalore or Bangladesh)+accomodation+local logistics of the trainers/ consultants.

Table 6. Overview of responsibilities for e-Agriculure platform pilot

Organisation/Function	Key role/task
PMO	Overall guidance and support
DoA and Grameen-Intel	DoA will lead the implementation from RGoB perspectives while Grameen Interl will lead from the technical point of view and facilitate overall pilot development
Dzongkhag sector staff	Provide technical expertise and guidance on data base parameters and suit utility
AEA/LEO	Main user of platform on behalf of farmers, Conduct soil testing and input on-farm data for advice to farmers. Collect farmer data on inputs, production and marketing in order to provide advice to farmers and farmer groups. Explain the utility of the platform and provide feedback to dzongkhag and Grameen-Intel
Lead farmers	Collect farmer data on inputs, production and marketing in order to provide advise to farmers and farmer groups. Explain the utility of the platform and provide feedback to dzongkhag and Grameen-Intel
Farmer groups	Cluster demand for inputs and coordinate production clustering for marketing, based on information generated with the platform. Share advice and lessons for mutual benefit.
RRDC/LDRC/technical institutes	Provide technical input to database development and monitor pilot development from a technical point of view (soil testing, technical advice generated by platform).
Service provider for lead farmer model development	Support overall introduction of the e-agriculture platform and pilot within the ongoing lead farmer model development. Provide on the ground facilitation support and feedback for learning and pilot development towards a scalable initiative. Networking, advocacy, public relations, policy influencing.

45. **Permaculture (details at WP 12).** CARLEP will initiate 'permaculture' as an innovation to enhance farmers resilient to climate change. The initiative would be led by RDC, Wengkhar based on outlines provided at WP 10. About 10-12 units of permaculture would be piloted on the basis of agro-ecological zone and altitudinal gradients. In the context of Bhutan, spatial and temporal challenges can be met through the adoption of a permaculture strategy that keeps immediate food requirements in mind while designing a sustainable long-term food-forest production system. The small landholdings characteristic of Bhutan can be structured to generate production from the upper canopy to below the ground – referred to as vertical intensification. Sequencing the planting and emergence of different tree, understory, herbaceous, ground cover, tuber crops, climbing vines and fungi will enable the production of a steady stream of food for household consumption and sale, while improving soil nitrogen, beneficial plant and microbial associations, natural pest management and improved water holding capacity among other synergistic associations. The strategic stocking of vegetation for meeting multiple objectives such as food, water conservation, soil fertility improvement, pest management and timber availability among others, can generate a much higher volume of goods than is currently produced from a typical Bhutanese farm.

46. In permaculture "species guilds" are promoted to facilitate synergistic associations for improving soil fertility, pest management, and pollination. A guild is a group of species, where each species provides a diverse set of functions that work in combination or harmony. Mutual support guilds are groups of plants, animals and insects etc. that work well together to improve productivity and to build resilience. While leguminous plants add nitrogen to the soil they can also provide high quality fodder for livestock, likewise some plants attract beneficial insects while others repel pests, and when this plant mix is grouped together they form a beneficial guild. The Department of Forestry and the SLM programme have compiled lists of flora, and identifying those that are beneficial for introduction into a permaculture system will be key to developing indigenous plant guilds. In a permaculture system the combination of livestock (cattle and pigs) and poultry (chickens and ducks) have multiple benefits, as they not only provide milk products, meat and eggs but also, organic fertiliser, biogas, draught power and in the case of poultry, pest management and zero-till soil preparation. For example, in addition to eggs and meat, chickens undertake a vital activity of preparing the ground for planting by scratching for worms and fertilising the soil, and also, by eating various pests.

47. Considering the steep topography of Bhutan the zoning of farm activities in a permaculture system will help maximise labour efficiency. Zones are strategically designed on the basis of the frequency of labour and plant or animal needs. Production elements that require frequent attention are placed close to the house while less frequently manipulated production aspects are zoned on the periphery. Zoning also takes into consideration the topography and solar orientation also as a means for maximizing energy efficiency.

48. Considering that many of the Bhutanese farms have only rudimentary soil and water conservation structures at best, as a starting point simple soil and water conservation (S&WC) structures, technologies and approaches will need to be introduced. The Global Environment Facility (GEF) and World Bank supported Sustainable Land Management Project have developed a number of simple and highly effective S&WC approaches and technologies that can be adopted into a permaculture system. In addition, the World Overview of Conservation Approaches and Technologies (WOCAT) has developed a global data base with a wealth of S&WC practices. Many of the S&WC practices do not require significant labour and "labour sharing groups" as commonly practiced in Bhutan will suffice to address the on-farm requirements. Permaculture will address all these aspects.

49. **Resilient and water use efficient irrigation development**. According to the assessment conducted by the Department of Agriculture for major irrigation[152] infrastructure, 21 schemes in the east need major renovation. The lack of adequate capacity of Water User Associations to operate and maintain the irrigation schemes effectively has been assessed as the main source of malfunction. In addition, no detailed localized studies are conducted at present on climate change impacts (and scenarios) on water source availability as part of the irrigation scheme design, nor is climate resilience to the impacts of extreme rainfall events (flooding, landslides, erosion) adequately captured at present. This also leads to increased demand for adequate scheme management and maintenance and irrigation schemes becoming (partly) dysfunctional over time. CARLEP will therefore provide (i) support to technical feasibility studies, climate resilient design and investment in upgrading to climate resilient standards of existing dysfunctional gravity-based irrigation schemes in the four southern dzongkhags of the east (high potential production areas); (ii) training to district engineers, extension agents and the RNR Engineering division on climate resilient irrigation scheme design (including feasibility studies) and construction (supervision) in the six eastern dzongkhags; (iii) training of WUA (as per DoA training modules and climate resilience focus) to ensure adequate Operation and Maintenance capacity (in the four southern dzongkhags of the east, including WUA managing irrigation schemes directly targeted under CARLEP). CARLEP support to gewogs and dzongkhags will be provided through engineering and facilitation support, integrated within the irrigation scheme costing.

50. Lessons from these activities will feed back into improvement of the climate resilience of other irrigation schemes to be developed in Bhutan. In addition CARLEP will support a pilot for water-use efficiency and innovation in irrigation is three localities where gravity irrigation is no longer viable due to climate change impacts (drying of water sources). Under MAGIP already one irrigation scheme with pumping station is implemented, but no research and monitoring is done to learn from this innovation projects. CARLEP will therefore develop adequate climate resilient designs and ‘business models’ for

[152] Major irrigation infrastructures are those that has command areas of more than 70 acres

the three pump-based irrigation schemes considering cost and benefits for farmers (including fee structure for pumping costs and O&M), next to actual investments in the schemes.

Table 7. Overview of responsibilities for resilient and water efficient irrigation development

Organisation/Function	Key role/task
PMO	Overall guidance and support
Dzongkhag sector/engineering staff	Adequate planning and resilient design of irrigation schemes, community mobilisation and implementation of the technical manuals for irrigation scheme O&M. Procurement of services and supervision.
Gewog	Support to adequate planning and resilient design of irrigation schemes, community mobilisation and implementation of the technical manuals for irrigation scheme O&M. Procurement of services and supervision.
Farmer groups	Adequate O&M in line with MoAF manuals. Feedback on challenges and opportunities.
Service provider	Technical verification on irrigation scheme planning, design , construction, supervision, handing-over quality, WUA capacity development, feasibility studies, business model development for pump-based pilots, drawing lessons learned for improvement of approaches, designs, manuals, policy.

51. **Strengthening local institutions for service delivery and sustainability.** A more integrated approach to sustaining development services at the local level is required to ensure community resilience. The capacity of and interplay between gewog and dzongkhag staff, farmer groups, lead farmers, Water User Groups (WUG), Road User Groups (RUG), civil society and private sector are important, although often overlooked, elements in the quality and sustainability of service delivery to smallholders. To attain real climate resilience, strong local institutions are required which ensure reliable access to e.g. production inputs, markets, health and education services and also improved response to disaster-related events. These local institutions are therefore critical not only in ensuring that development activities generate the benefits they are supposed to deliver, by ensuring sustainability over time of such services, but also in ensuring sustained benefits of value chains. Given that under CARLEP (semi)commercial agriculture at the community level is promoted, costs of service delivery and operation and maintenance need to be kept to a minimum, especially considering the already high transaction costs of smallholders in remote and mountainous areas. Business risks also need to be understood, minimized and mitigated. The programme will therefore pilot in a selected geographical location, an integrated approach to service delivery and service sustainability to draw lessons for a strengthened national development approach. The research proposal will entail the following:

- Within the geographical target area of the CARLEP a cluster of communities will be selected, where the programme is already providing programme support to value chain development (preferably both dairy and vegetables) and to establishing and strengthening farmer groups for production as well as marketing. Considering the complementarity with the lead farmer model development, the area will also be selected within the Samdrup Jongkhar dzongkhag;
- Development of a business model and long-term sustainability plan for service investments and O&M as well as (agricultural) benefits. This will increase cost consciousness on in-kind and monetary investments and will be the basis for the research to assess the best approaches and models and to validate that capacitating local institutions beyond present sector-driven approaches is economically viable;
- Steering complementary programme investments in production (e.g. irrigation scheme upgrading) and marketing (e.g. market infrastructure) to the selected area to ensure integrated value chain benefits are generated for the communities involved. These increased benefits form commercial agriculture and the value chain approach will in turn increase the perception of usefulness of provided services and the willingness to invest in good operation and maintenance;
- CARLEP investment in upgrading two (short) farm roads to climate resilient standards, after the training on RUG has been provided;
- Capacity development of existing farmer groups, WUG and RUG to ensure they will be committed and able to maintain the upgraded and new infrastructure;
- Development of adequate O&M models, based on existing guidelines (e.g. irrigation and farm roads) and testing feasibility of community contributions versus paid labour provision;

52. The design and implementation modality of the research proposal will be further detailed by the PMO with support from the TA team.

Table 8. Overview of responsibilities for strengthening local institutions

Organisation/Function	Key role/task
PMO	Overall guidance and support
Dzongkhag sector/engineering staff	Area selection, community mobilisation, infrastructure (upgrading) design, implementation of the technical manuals for irrigation scheme (WUA) and farm road (RUG) O&M. Procurement of services and supervision.
Gewog	Support to area selection, community mobilisation, infrastructure (upgrading) design, implementation of the technical manuals for irrigation scheme (WUA) and farm road (RUG) O&M. Procurement of services and supervision.
Farmer groups, communities	Adequate O&M in line with MoAF manuals. Feedback on challenges and opportunities.
Service provider	Research design and implementation guidance, business model and long-term sustainability plan for service investments and O&M as well as (agricultural) benefits, technical and economic cost-benefit studies, technical verification of infrastructure planning, design, construction, supervision, handing-over quality, WUA and RUG capacity development, drawing lessons learned for improvement of investment and O&M approaches, designs, manuals, policy.

53. **Bhutan Commodity Exchange.** Since early 2014 a committee comprising members of RSEBL, FCBL, DAMC, GNHC, RMA have been working to establish an agricultural commodity exchange market in Bhutan. The ultimate goal is to commercialize the Bhutanese agricultural sector by facilitating trade, to reduce transaction cost, to create price transparency, and to lift smallholders out of poverty. The exchange is supposed to begin its operations with the marketing of potatoes while gradually expanding its scope to other export crops such as oranges, apples, ginger, cardamom, and cordyceps. The exchange itself will be set up as an independent and self-sustaining entity, focusing on matching sellers and buyers via their designated brokers. Its success, however, largely depends on an organized post-harvest infrastructure, i.e. (i) cross-country collection centers for farmers to deposit, grade and register their commodities, and (ii) reliable transportation to carry commodities to (iii) strategically located warehouses and designated delivery points along the border to India. Given its existing and currently revised infrastructure consisting of depots and warehouses, FCBL is the key stakeholder for the programme. Considering the complementary of objectives of the BCE and CARLEP regarding creating access for smallholder to markets, BEC and CARLEP could explore for close consultation during implementation of both programmes particularly since FCBL is the lead organisation for implementation of both programmes.

6. Technical assistance to programme management and implementation

54. **Technical Departments.** The PMO will be technically assisted and guided by a number of Technical Agencies of RGoB as already outlined earlier. Some of these would be Regional Research and Development Centre RRDC Wengkhar for Agriculture Components, Regional Livestock Development Centre RLDC for livestock Components, the Regional Agriculture Marketing and Cooperative Office, Mongar (RAMCO, Mongar), the Food Corporation of Bhutan Ltd (FCBL), Livestock and crop Input Production farms such as Pig and poultry Production farm at Lingmethang, Nublang breeding farm at Tashiyangphu and the Regional Seed Farm at Trashiyangtse. The technical agencies should assign a full time staff of the respective centres to assist the programme implementation. This section will however identify few areas of Technical Assistance (TA) that CARLEP may require about which PMO will take due and diligence exercise during the course of programme implementation.

55. **Capacity development approach, technical assistance and service providers.** The Capacity Development (CD) approach of CARLEP goes beyond knowledge and skills transfer at the individual level, and embraces organisations, sectors, institutions and cultural contexts[153]. Past projects have focussed too singular on providing training, which has as in other projects globally often failed to deliver the CD results expected[154]. CARLEP has therefore embedded its training investments within organisational and institutional capacity strengthening processes and the development of innovative

[153] Visser, H. (2010), Capacities at multiple levels and the need for connection, Chapter three of 'Advances in the Practice and Theory of Capacity Development – A resource for professionals', Earthscan Publications, August 2010, editors: J Ubels, A Fowler, Naa Aku.
[154] World Bank 2008, Independent Evaluation Group, 'Using Training for Building Capacity', 2008

service delivery models. This will ensure that training targeting individual's skills and knowledge is designed based on demand arising from the specific context and also facilitates structural organisational and institutional improvements. Furthermore training will as much as possible build upon existing capacities and in-country expertise. Methodologies used are e.g. Trainer of Trainers approach, requesting trainees to disseminate learning, developing in-country training using resource persons from short-term TA, service providers, education and training institutes or where appropriate ex-country resource persons from the region (North/NE India and Nepal). With this approach, all CARLEP training will thus be provided in-country so as to reach the maximum number of trainees with the available resources and to strengthen in-country capacities for providing training.

56. The Table below provides an assessment of overview of areas for TA support that CARLEP may require. Mission has also taken liberty of providing some examples of potential service providers on the basis of mission's assessment of the areas of strength of these potential service provides. CARLEP will follow standard procurement processes with due and diligence, acceptable to IFAD and RGoB, should the need arises to procure the services of any of these potential service providers given here as examples.

Table 9. Overview of areas for external TAs

Sl	Activity/Areas	Terms of Reference
1	Climate Smart Agriculture Production and Management;	○ Support to assessment and upgrading of existing farmer group training packages, specifically for i) mainstreaming Climate Smart Agriculture technology and practices, ii) improved farming/soil management practices, iii) on-farm climate-induced disaster preparation. For agricultural crop (vegetables) as well as dairy sectors; ○ Provide ToT for selected FCBL/DAMC/ extension staff; ○ Provide training to extension agents.
2	Strengthening local institutions for increased climate resilience of smallholders.	○ Development of a research proposal for a long-term area-based sustainability plan for service investments and Operation and Maintenance, including projections of costs and (agricultural) benefits. The research should address capital and recurrent investments in infrastructure and services provided by dzongkhag, as well as recommendations on improvement of existing approaches and models for O&M of infrastructure based on existing guidelines (e.g. irrigation WUA and farm road RUG), including community capacity and ability to contribute. The research has the objective to assess if overall investment in strengthening local institutions to sustain area-based services and infrastructure, are cost-effective in generating increased community benefits in commercial agriculture as well as in social sectors as health and education
3	Developing materials for training and extension (vegetable production);	○ Updating with good practice existing training materials and expansion on new issues
4	Vegetable seed research and production;	○ Development of Packages of Practice for farmer-based seed production
5	Developing training and extension materials (dairy production and processing);	○ Updating with good practice existing training materials and expansion on new issues
6	Fodder and feed production;	○ Participatory development of joint strategy (DoL, DoFPS, DoA, other key stakeholders) for expansion of dairy development while limiting exploitation of forests and other natural resources, also considering projected climate change impacts
7	FCBL capacity strengthening for value chain development;	○ Design of an organizational strategy and business plan for FCBL as a whole and specifically its marketing division. ○ Targeted capacity development interventions for strategy implementation, providing (as per the CD Plan) for value chain and marketing related organizational functions.
8	Vegetable value chain design and business plan;	○ Undertake a detailed design of the value chain involving all stakeholders, including farmers, input suppliers, traders and marketers.
9	Dairy value chain design and business plan;	○ Detailed Value Chain design will be prepared to understand and address issues at all levels in the chain from farmers to

		consumers; market research/studies to assess the dynamics of existing and the potential of new markets within the selected value chains
10	Value chain development, strengthening and expansion;	○ Market research/studies to assess the dynamics of existing, and the potential of new, markets in support to implementation of the value chain designs and business plans, ensuring that designs are adapted based on new insights or changing local context and dynamics
11	Support to agriculture enterprise development;	○ Development of an entrepreneur identification and engagement process ○ Strengthening of the existing marketing and cooperative capacity development packages, ○ Developing and providing technical training for vegetable marketing groups and entrepreneurs
12	Planning and design of value chain and market infrastructure;	○ Infrastructure designed, in line with the vegetable and dairy value chain designs and business plans, based on i) demand projections, ii) a multi-use perspective, iii) economic feasibility for direct privatization or PPP management models, iv) climate resilience specifications
13	Development of business plans for twelve numbers of Three Window Shops;	○ Context analysis for different locations and demand of TWS, developing management modalities and business plans for each modality
14	DAMC market information system strengthened	○ Market information demand studies ○ ICT and interactive information delivery technologies
15	Curriculum development of RNR Training and Education institutes;	○ Development / strengthening of course curriculum
16	Participatory policy development and monitoring approach;	○ Development of a multi-stakeholder consultation process for policy development, as well as a participatory monitoring process
17	Mainstreaming climate resilience and value chain development lessons in agricultural policies;	○ Screening of agriculture policies and provide recommendations on new policy areas and strengthening of existing policies on climate resilience, sustainable farming practices, CAHWs and lead farmer models, value chain development, marketing, new institutional role of FCBL, and engagement with training and education institutes.
18	Developing a conducive regulatory framework for private sector development and Public Private Partnership;	○ Assessment of the regulatory environment for private sector engagement in the agricultural sector and for PPPs in value chain service delivery; participatory development of a PPP framework and recommendations on institutional strengthening

Table 10: Examples of potential service providers with key service areas

	Potential Service Providers	Service area
1	Loden Foundation	Social entrepreneurship development, business plan development
2	Bhutan Association of Women Entrepreneurs	Engagement with and capacitating women groups and entrepreneurship development
3	Youth Media Foundation	Engagement with and capacitating of youth entrepreneurs
4	SAARC Business Association of Home based workers (SABAH)	Home-based enterprise development practices
5	Samdrup Jongkhar Initiative	Lead farmer and CAHW model development, CSA agriculture
6	Department of Cottage and Small Industries (existing practice)	Expertise, access to training, institutional support
7	Rural development Training Centre, Zhemgang	Provide training to farmer groups, cooperatives, and individual enterprises; in-situ (resource persons) and in-house (courses)
8	College of Natural Resources, Lobeysa	Provide training to farmer groups, cooperatives, and individual enterprises; in-situ (resource persons) and in-house (courses)
9	SNV Netherlands Development Organisation	Capacity development, value chain, marketing and business development, climate smart agriculture
10	Helvetas	Value chain development, dairy and capacity development
11	Consulting Firms	Business plan development, various
12	Indian (state) organisations	Value chain and extension service outreach approaches

57. **Process facilitation TA.** Some critical areas for process facilitation support have been identified. Firstly, for support to developing and implementing an overall Theory of Change and CD strategy for the CARLEP. Secondly, for capacity strengthening of FCBL, strategic value chain and marketing

development, business development support and creating an enabling regulatory and policy environment. Since FCBL will be the driving force behind the multi-stakeholder process of resilient value chain development, its capacity is deemed a critical success factor for CARLEP. For this reason, and for support to addressing the complexity of multi-stakeholder value chain processes and business model development targeting especially youth and women, an international TA has been budgeted. Thirdly, for increased community climate resilience and resilient value chain design, as well as the capacity of community organizations and local institutions is assessed as critical. This will require on-the-ground development of e.g. models and approaches for increased service outreach for agriculture and livestock development, as well as actual design and implementation support to multi-stakeholder processes, including for e.g. strategic value chain and marketing design, entrepreneur identification, training and coaching, and community and empowerment. Furthermore, the TA will provide overall support to the transition process of the agriculture sector as envisioned in the 11th Five Year Plan through "*The strategies to achieve these [FYP] objectives include targeted and commodity focused interventions; foster transition from subsistence to commercial agriculture; ensure an enabling environment; and promote private sector participation and contract farming.*"[155] For the above identified needs, a national/external TA has been budgeted. All TA and service providers will work hierarchically under the NPD/PMO based on agreed Terms of References (ToR).

Some suggested areas for national/external TA

58. Key areas of support to include capacity strengthening of FCBL, strategic value chain and marketing development, business development support and supporting an enabling regulatory and policy environment

59. Key responsibilities/tasks/ToR could include amongst others to ***initiate, provide guidance, implementation support and technical inputs to:***

- Development of a Theory of Change and a CD strategy for CARLEP and for FCBL;
- Design and implementation of the Capacity Development Plan for CARLEP, integrating all CD activities projected in the PDR and emerging during implementation;
- Development and monitoring of the CARLEP targeting approach based on vulnerability within an inclusive approach;
- Institutional strengthening in the agriculture sector;
- Implementation coordination and on-the-ground support;
- Overall Quality monitoring;
- M&E, adaptation of implementation approaches, creating feedback loops;
- Drawing lessons for KM and policy influencing.

60. ***Other specific ToRs*** *may also include in the areas of* increased community climate resilience and resilient value chain design, as well as the capacity of community organizations and local institutions including:

- Implementation coordination and on-the-ground implementation support;
- Support on-the-ground model development for CAHWs and the Lead Farmers, assess good practice and support development of an scaling-up strategy;
- Support on-the-ground implementation and learning of the innovation projects under water efficient irrigation, and strengthening local institutions;
- Gewog and dzongkhag Quality monitoring and support;
- M&E, adaptation of implementation approaches, creating feedback loops from community level upwards;
- Drawing lessons for KM and policy influencing.

7. Capacity development services

61. Training has since long been a central element of Capacity Development and unfortunately in many cases training is still equated with Capacity Development. Capacity Development goes, however, far beyond knowledge and skills transfer at the individual level, and embraces organisations, sectors, institutions and cultural contexts[156]. Training has therefore often failed to deliver the CD

[155] Eleventh Five Year Plan - Main Document Volume I, pg 18.
[156] Visser, H. (2010), Capacities at multiple levels and the need for connection, Chapter three of 'Advances in the Practice and Theory of Capacity Development – A resource for professionals', Earthscan Publications, August 2010, editors: J Ubels, A Fowler, Naa Aku.

results expected. According to a World Bank evaluation[157] only half of the by WB-projects provided training resulted in improved capacity for development outputs. Making the leap from individual learning to workplace performance outcomes and, subsequently, to development capacity impact requires both good training design and an appropriate organizational and institutional context in which to apply the learning from training. Training therefore can be effective if it is embedded within broader CD strategies that provide complementary support for learning application.

62. CARLEP has therefore embedded its training investments within organisational and institutional capacity strengthening processes and innovative service delivery model development. This will ensure that training targeting individual's skills and knowledge is designed based on demand arising from the specific context and also facilitates structural organisational and institutional improvements. Furthermore training will as much as possible build upon existing capacities and in-country expertise. Methodologies used are e.g. Trainer of Trainers approach, requesting trainees to disseminate learning, developing in-country training using resource persons from short-term TA, service providers, education and training institutes or where appropriate ex-country resource persons from the region (north India and Nepal). With this approach, all CARLEP training will thus be provided in-country so as to reach the maximum number of trainees and to strengthen in-country capacities for providing trainings.

8. Detailed CARLEP Risks

63. **The programme risks** have been analyzed and the Risk Table is presented below

Table 11. Risks and mitigation measures by Programme components/interventions

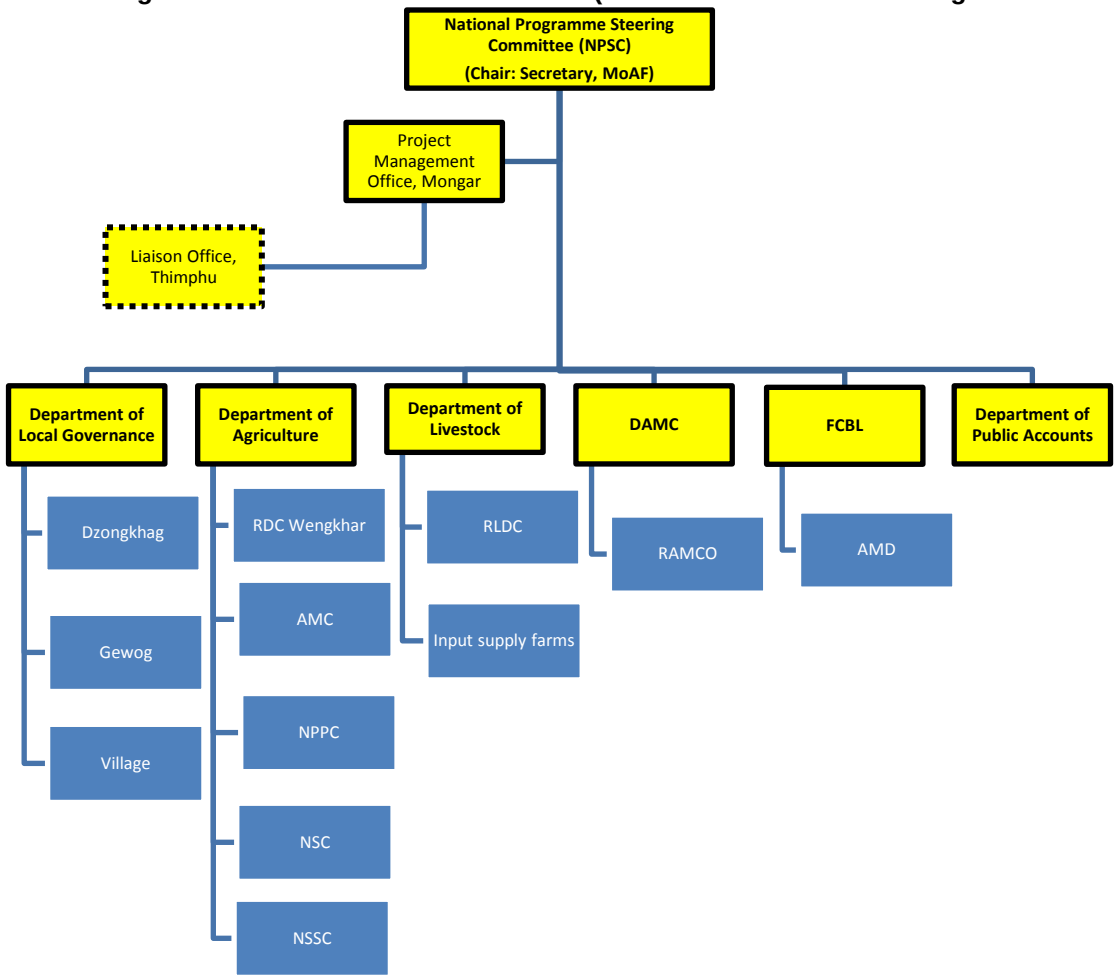
Risks	Risk before mitigation	Risk reduction approach	Residual risk
Programme Components			
Programme activities with earmarked RGoB funding not implemented due to fund shortage (see above)	Medium	Critical programme activities have fund allocations from IFAD, re-prioritization of activities based on available budget to ensure programme feasibility can take place as part of programme management and e.g. MTR is structural.	Low
Different stakeholders involved in planning for value chain development and area-based (dzongkhag) activities within the value chains	High	AWPB process has been clarified and described and PMO has explicit responsibility and authority for stakeholder coordination and holistic planning process. Programme TA for value chain and enterprise development allocated in support to PMO	Medium
Production efforts delinked from marketing development because of different implementing parties	Medium	Value chain approach adopted in programme design with integrated value chain planning process (see previous). Programme TA for value chain and enterprise development allocated in support to PMO	Low
Extension service outreach is limited	High	Training of extension staff, development of lead farmers and farmer field school approach and recruitment of CSO service providers in selected dzongkhags	Medium
Agriculture research uptake is low	Medium	Farmer group training and collaboration with CSOs on practical research approaches and dissemination of proven technology and practices	Low
Production of vegetable and other seeds is inadequate for production intensification and up-scaling	Medium	Programme will support the NSC and seed production through farmer groups. MAGIP import of seeds procedures can also be followed	Low
Failure to establish sufficient management capacity of the marketing groups and cooperatives	Medium	Comprehensive technical support, training and exposure and access to new techniques and know-how provided by DAMC and FCBL. CSO good practice will be added	Low
Market price fluctuations affect the income patterns of production models	Medium-high	Access to market information through DAMC and grassroots agro-technical service to help establish flexible coping strategies; FCBL support and groups and cooperatives encouraged in cooperative farming and organized production to help share better price premium.	Medium
Natural calamities including flood and drought lower output of farm production	Medium-high	Improvement of productive infrastructures and adoption of climate-smart technologies and varieties to advance production season will help ease the risk; Access to meteorological and market info by farmers	Medium

[157] World Bank 2008, Independent Evaluation Group, 'Using Training for Building Capacity', 2008

Poor adaptability of crops and techniques introduced	Medium	Selection of climate-resistant and crops and techniques with proven adaptability to local agro-ecological systems, building on good practice of RNRRDCs and CSOs	Low
Epidemic disease causes failure of dairy production at farmer household level	Medium	Compulsory vaccination for all animals against major epidemic diseases; technical training for maintaining a healthy environment for livestock production, including the disinfection of facilities and waste management.	Low
Increase of construction material prices impede completion of the designed quantity of civil works	Medium to High	Use of contingency to cover the cost gap; and civil works implemented in the same fiscal year.	Medium to Low
Inadequate profit margins due to poor access, lack of transport and of market information Lack of capacities of smallholders to negotiate fair deals with private investors	Medium to High	FCBL and DAMC will support market development and FCBL will institute a buy0back-guarantee. Market information, improved technology advice, promotion of producers' groups and market linkages. Training and strengthening producers groups and improving community infrastructure facilities such as aggregating centres and milk collection centres and linkages between producers and entrepreneurs.	Medium to Low
Sustainable use of programme-built assets and Inadequate capacity on community-based O&M.	Medium	Use of existing good practice manuals and guidelines for capacity development support to individual HH and groups, hand-over of works to the community to increase ownership of the beneficiaries'; PPP modality developed to support entrepreneurs with infrastructure management and investments	Low
Damages to civil works built caused by natural disasters, like floods and land sliding.	Medium	Ensuring proper design and protection measures taken to avoid any predictable damages; government institution like DT, GT and dzongkhag administration are responsible for the repair of unusual damages occurred that beyond the community's ability.	Low
Enterprise development in the value chains lack behind, slowing value chain growth and hampering market access and sustainability	Medium	FCBL will be supported and PMO will link under component 3 to entities mandates to support enterprise development and access to finance. Programme TA for value chain and enterprise development allocated in support to PMO	Low
Programme management			
Targeting deviation resulting in mediocre inclusion of vulnerable households and women	Medium	Gender mainstreaming strategy and action plan will be developed, gender focal person in PMO, targeted gender training. Promotion of members of vulnerable groups and women in farmer groups and cooperatives and adequate representation in planning and decision-making processes. Percentage coverage required for the vulnerable and female-headed households as beneficiaries of support at household level	Low
Insufficient cash flow in support of programme implementation	Medium	Training of financial officers and desk officers; Committed government advanced budget and counterpart funding budgeted as part of the governments' annual planning.	Low
Low or slow disbursement caused by management inefficiency and poor coordination between related agencies	Medium	Capacity building for staffs, technical team at PCO; PIM as implementation guidelines and IFAD spontaneous field implementation support	Medium low
Transparency	Medium to Low	PMO supervision and monitoring of fund utilization in accordance with RGoB financial manual and IFAD rules. Use of standard accounting system and procurement procedures in compliance with Government and IFAD requirements. Field inspections and audits, progress and special reporting. Community meetings and social audits	Low

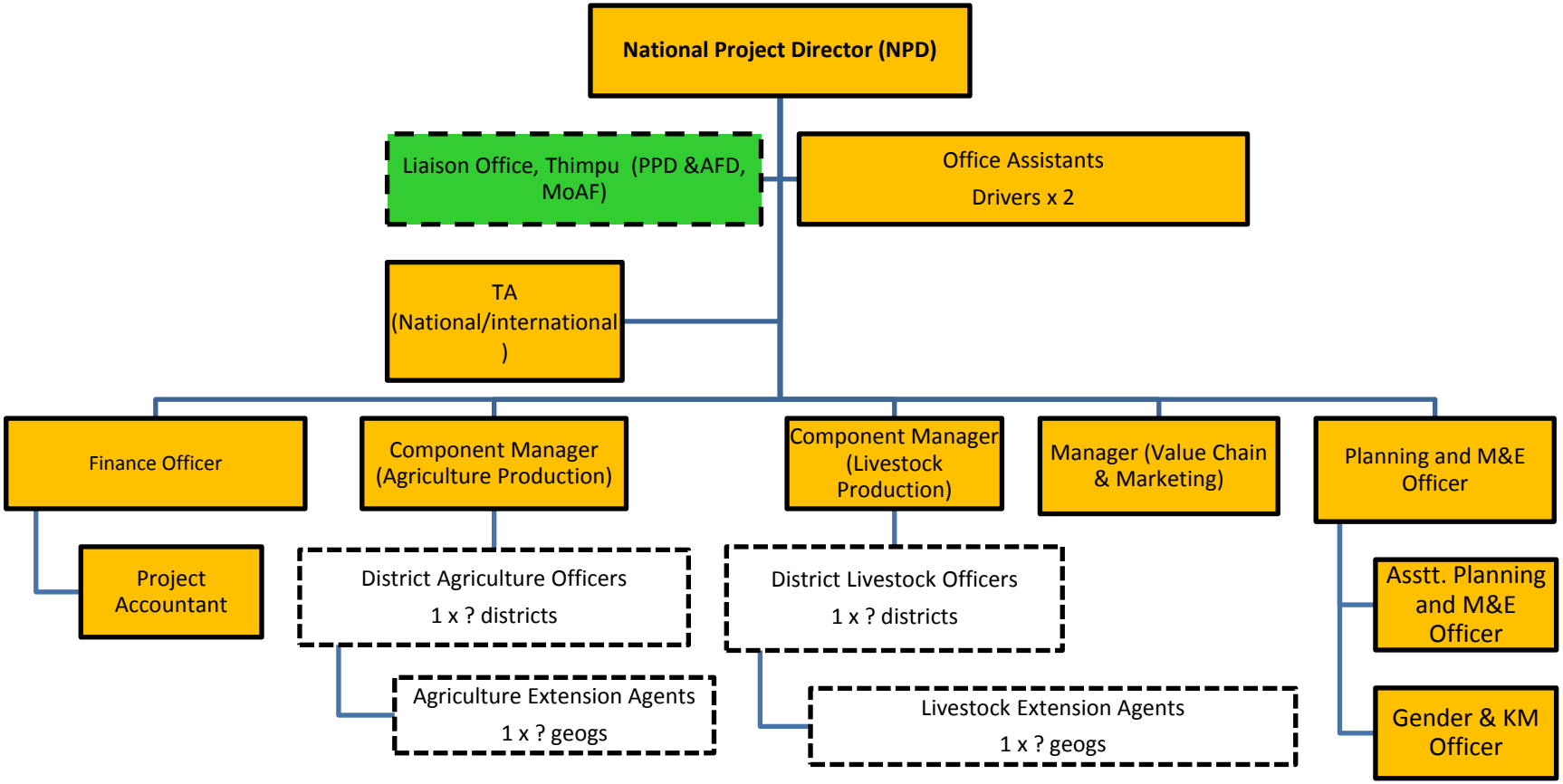
Annex 1

CARLEP Programme Management and Coordination Structure (NPSC and other technical agencies involved in CARLEP)



Note: The yellow box will constitute the National Programme Steering Committee (NPSC)

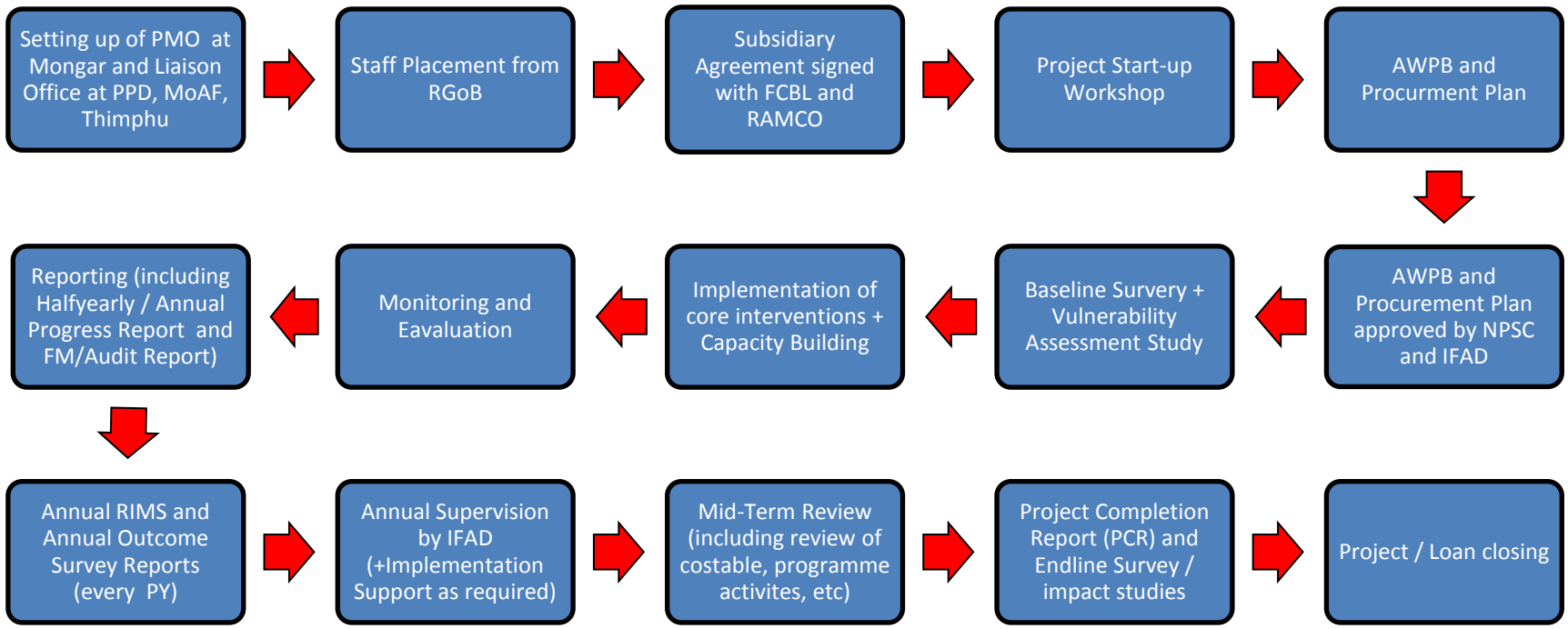
Annex 2



CARLEP PMO structure
Note: The box with orange colour will be based in and form the PMO at Mongar; the white box will be in the respective Dzongkhags and gewogs/gewogs. CARLEP PMO will have TA on need-basis.

Annex 3

CARLEP key Implementation Sequence and activities in the programme cycle (order of sequence is not necessarily as shown)



Appendix 6: Planning, M&E, learning & knowledge management[158]

1. Introduction

1. Monitoring and evaluation are two different but closely inter-related management tools to inform decision-making and demonstrate accountability. All IFAD-funded projects have M&E activities to gather information to assess progress against implementation plan (which is monitoring) and projects gather information to assess the outcomes and impact that the project has achieved (which is evaluation). The M&E system in IFAD-funded projects typically performs and achieves four essential objectives: (a) to monitor and manage project progress; (b) assess project outcomes and impact; (c) capture and disseminate lessons learned and good practices; and (d) build local capacities for M&E. Overall, M&E is recognized to be beyond mere collection and reporting on data to meet project reporting requirements. M&E will thus not only entail monitoring of both physical and financial progress, but also on qualitative reflection of achievements, identifying challenges and opportunities for policy dialogue and provision of timely feedback for effective project management. Every M&E activity in IFAD-funded projects has another purpose viz. to generate knowledge and learning. The significance of M&E in projects are critical; when done and used correctly, M&E contributes to strengthening the basis for managing results, foster learning and generate knowledge for all the stakeholders including IFAD, Government and communities. Thus, knowledge gained from M&E is at the core of IFAD-funded projects. Elements of Knowledge Management are also included in a later section of this appendix.

2. Lessons from past and on-going project

2. Review of M&E and knowledge management with the on-going IFAD project (MAGIP) revealed the inadequacy of current set up, especially with the M&E function being shouldered by an officer on part time basis. Additionally, the part-time M&E Officer in MAGIP is also responsible for the Gender and KM activities of the project. The official assigned for the task is overburdened with other responsibilities, resulting in inefficient delivery of service and results. M&E reporting has therefore been limited to the annual progress reports and supervision mission reports. Given the situation with the current set-up, a full time dedicated M&E officer within the PMO will be required for CARLEP.

3. At the time of design, it was agreed that MAGIP's M&E system would use the national Planning and Monitoring System (PLaMS) which was launched during the 10th Five Year Plan (2008-2013). However, during project implementation, MAGIP could not take full advantage of PLaMS due to lack of adequate HR capacity for PLaMS as also part-time availability of the M&E Officer who is based in the Secretariat of MoAF in Thimphu. Both the flow and quality of required data/information from Gewog to Dzongkhag and Dzongkhag to MAGIP PCU leave much to be desired. Subsequent supervision missions of IFAD to MAGIP assisted in designing a series of reporting formats to be used by Gewog and Dzongkhag officers for capturing data/results. The respective sector managers responsible from different RNR departments linked to MAGIP project coordinate data collection from Dzongkhags for each sector corresponding to the MAGIP's components. Even this arrangement in MAGIP is unsatisfactory in terms of timeliness and quality of M&E data collection as each sector manager works only part-time for MAGIP. Consequently, the current M&E system in MAGIP remains somewhat ad-hoc, making it difficult for the M&E personnel in MAGIP to coordinate, collate and comprehensively use data for generating knowledge from M&E.

4. AMEPP had a kind of 'stand-alone' M&E system. The planning, monitoring and evaluation system was initially designed by SNV supported TA. Dzongkhags were using it for the first initial years but subsequently the system was found to be not user-friendly (more so because of transfers of staff in the Dzongkhags; the first batch of Dzongkhag officials were trained in the use of the system but subsequent officials were not trained and therefore found it not user-friendly). AMEPP introduced a new M&E system designed in excel package to track AWPB targets and report progress for different components and sub-components, consolidated on a half-yearly and annual basis. The consolidated Annual Progress Reports were supplemented with data fed through M&E tour reports, survey reports and special data collection mechanisms undertaken by the PFO, usually sector-wise.

[158] Details in WP on M&E and KM

5. Although AMEPP's M&E system was aligned with PLaMS but, a time-specific short duration project, it was advised not to switch to PLaMS. The salient features of AMEPP's M&E systems can be summarized as below:

- It integrated all agreed parameters of RIMS (result matrix at outcome & impact level);
- Each gewog had a sheet to fill or each gewog should have AWPB/quarterly reports of its own;
- Dzongkhag results sheet was automatically summed through linking and auto summing functions;
- The consolidated Dzongkhag sheet was by sector and each sector e-sends the consolidated sheet to Project Facilitation Office (FPO);
- The PM&E unit at PFO did the final overview and overall consolidation;
- The PM&E system designed and deployed integrated physical and financial information;
- Financial data fed through earlier BAS (Bhutan Accounting Solution) and later MYRB/PEMS (Multi-Year Rolling Budget / Public Expenditure Management System) generated reports;
- There was no automatic integration of information within these systems;
- Needed to match and manually punch the fiscal data against the fiscal values in the system.

6. However, as required under RGoB policy of integrating all project and programme activities from the 11th Five Year Plan (2013-2018), the M&E system of CARLEP will adopt PlaMS. The reporting through PlaMS would be supplemented with lessons learned from MAGIP and AMEPP such as developing separate reporting/data collection formats at the site activity or Gewog level together with case studies taken up during the monitoring visits. The M&E and KM units of CARLEP will have overall responsibilities for all activities relating to planning, M&E and KM of the project.

3. Planning, M&E and KM in CARLEP

3.1 Planning process in CARLEP

7. The Fiscal Year in Bhutan runs from July 1 till June 30. The **planning process** at CARLEP will have several layers, combining the strategic value chain planning conducted by FCBL and DAMC, with the participatory planning involving communities, tshogpas, Gups and extension agents. The mapping of high production areas, high market potential areas and product flows, constituting the value chain plans, will be matched up and translated into Gewog plans for production support and FCBL plan for marketing support. It is thus important that the planning process in CARLEP is value chain based and not solely geographically (gewog) based. An overarching area based development approach, beyond individual gewogs and dzongkhags, is required to develop selected value chains.

8. ***Planning at the Village & Gewog Level***. Gewog extension officers will lead or prepare the village level planning or activity-based planning in coordination with the village-level local institutions or groups such as the farmers' groups / dairy groups/vegetable groups / cooperatives or any other organised or recognised body. CARLEP Programme Management Office (PMO) will provide specific guidelines if required, or use existing one in terms of costing, phasing, etc. and activity reporting system (monthly or quarterly reporting) in coordination with the Dzongkhag sector officer. Dzongkhag sector officer will be responsible to ensure timely planning at the Gewog level and timely data collection / reporting once the planned activity is implemented. In the Gewog where CARLEP-funded activities are implemented, the Gewog Extension Officer will have responsibility for focused support to the participating communities along with M&E functions.

9. ***Planning at the Dzongkhag level*.** Dzongkhag will collate all the Gewog/village level plans brought up by Gewog each year. They will then forward the Dzongkhag level consolidated AWPB with prior approval of competent authority in the Dzongkhag as per existing system. The concerned Dzongkhag sector officers with active coordination with CARLEP PMO will be responsible to liaise with respective Gewogs for timely facilitation of Gewog level planning and also Gewog level M&E, mainly collection of data/information including documentation of good practices and successful case stories sector-wise. The Dzongkhag Planning Officer will input the Dzongkhag level data in the PLaMS and inform the CARLEP PMO (M&E Officer). Alternatively, the Dzongkhage level sector-wise report/data would be directly sent to PMO by respective sector officer.

10. ***Planning at the PMO level*.** The PMO will consolidate the planned activities of Dzongkhags and other entities (such as FCBL and other participating agencies/entities) in the form of its Annual Work Plan and Budget (AWPBs). PMO will add other programme management cost including budget for M&E and KM related activities. This task should be completed ideally by February each year in order to secure budget from the RGoB system. PMO will send the AWPB to IFAD along with the

procurement plan for review/no objection by May each year after approval by PSC (as is the practice in MAGIP). The approved AWPB would be used to review performance and progress of the programme. AWPB would be prepared in standard RO-AWPB (Result Oriented Annual Work Plan & Budget) prepared by IFAD.[159] However, a simplified model of AWPB is given in PIM/WP for reference. CARLEP will also have the choice to follow MAGIP's AWPB system which is developed on the basis of RGoB's guidelines. Subsequently, the M&E Unit of PMO will also plan to undertake other M&E related activities which are outlined in relevant sections below. These include planning to conduct M&E trainings, Result Impact Management System (RIMS), Annual Outcome Survey (AOS), Exit cum Post-Programme Sustainability, Knowledge Management Strategy and Action Plan, and Programme Completion Report.

3.2 M&E system in CARLEP

11. The M&E system in CARLEP would be guided primarily by the RGoB's PLaMS as required under existing policy. To the extent applicable, the ***programme outputs, outcomes*** and ***impact indicators*** would be dovetailed in the PLaMS (key programme output and outcome indicators are also given in respective Working Papers). The CARLEP PMO unit will dovetail these indicators in the PLaMS and share with the Planning Officers of the Dzongkhags. Data from village/gewog level activities (such as farmers groups, dairy groups, vegetable groups, etc.) would be collected on a monthly basis in a prescribed format and fed into the PLaMS on a monthly basis. At the end of each quarter, the aggregates of monthly results would be compiled into quarterly reports for review by the programme management and any other stakeholders. The PMO will produce consolidated annual/half-yearly reports on programme progress and results, and coordinate overall learning and knowledge management. The M&E unit at PMO will also undertake the Annual Outcome Survey (AOS) and Results Impact Management System (RIMS) as per IFAD's guidelines. CARLEP will develop additional M&E system particularly for meeting the requirements of Annual RIMS Reports. The basic M&E framework is a system for systematic collection, analysis and reporting of information/data at three different levels of programme implementation: (i) outputs; (ii) outcomes; and (iii) impact. An outline of CARLEP's M&E and learning plan is given in Annex I while the M&E matrix will be addressed at programme start-up[160].

12. **Output monitoring** will measure the progress of activities and achievement of outputs against annual targets in the AWPB for each programme component. AWPB outlines the inputs and activities to be undertaken and at the end of each month/quarter/year would be measured as outputs. Information on the progress of the annual work plan will be measured against indicators in the plan, such as number of group formed/supported, numbers of people trained, number of members in each group, etc. This can be linked to the financial expenditure on the concerned activities and reported as part of M&E activity. The type of output data to be collected and monitored will be carefully dovetailed with the programme logical framework indicators. Wherever applicable, data collected will be disaggregated by gender, particularly related to training and access to services (refer to RIMS 1st level results reporting requirement). Although output monitoring would appear to be a straightforward process, the experience of recent projects in Bhutan and elsewhere have highlighted the need to pay special attention to the details of how data is collected (formats used, frequency of data collection, etc.) and reported. The formats used by AMEPP and MAGIP would be revisited for adaptation in CARLEP as marketing data would largely come from the FCBL M&E system.

13. **Outcome monitoring** measures the immediate changes coming about as a result of programme interventions. The outcome indicators to be monitored are briefly outlined in the programme logical framework. The outcome indicators are dovetailed with RGoB's 11th Five Year Plan outcomes in the RNR sector. However, since it is not always easy for M&E staff in the programme to collect outcome data (such as number of HHs reporting reduced soil erosion, adoption of improved methods or increases in sales of commercial crops, etc.), the programme will conduct Annual Outcome Surveys (AOS) as per IFAD's guidelines, interviewing a sample of 200 to 400 farmers/households to gather data on indicators such as those listed above (more details in the programme log-frame). An AOS may also be carried out on a thematic basis in order to focus on a specific area of programme intervention, such as dairy or agriculture-based enterprises created as a result of programme intervention.

[159] This will be made available at the time of start-up workshop.
[160] At the time of Project Start-up, the M&E staffs of CARLEP PMO will carefully visit the M&E plan and M&E matrix and will revise as appropriate; the revised M&E Plan and M&E matrix could be inserted in the project PIM.

14. Related to outcome monitoring is **process monitoring**, involving monitoring the processes leading to outputs and outcomes. Progress monitoring in the functioning of community organisations such as farmers' groups and cooperatives will be particularly useful in CARLEP. Information on these may be gathered via Participatory M&E including focused group discussion as well as from the records maintained by each of these groups such as on their economic functioning, production activities, etc. In addition, the Programme will undertake specific studies related to women's economic empowerment, community RNR management and benefit of programme services for disadvantaged groups such as landless or women headed households.

15. **Impact evaluation** is the process to assess the contribution of CARLEP in achieving the overall goal of the programme. It will consist of baseline and end-of-programme surveys. This survey will be contracted to an external agency with specific expertise in such assessments and coordinated by the PMO M&E unit. Information to be collected will include the impact level indicators of IFAD's RIMS and include mandatory 'anchor indicators' relating to household assets, food security and child malnutrition (anthropometric data of children under five years of age). Other indicators of poverty will also be used, such as quality of housing and sanitation, access to safe drinking water, cultivation, asset ownership, etc. Data will also be collected to relate changes in all these indicators following participation in programme activities and delivery of programme outputs.

16. While designing the impact evaluation for CARLEP, lessons learned from AMEPP and MAGIP could be critical. Some impacts from AMEPP[161] were:

- Positive impacts in household income and assets with poorest and poor household reduced respectively from 36.9% and 28.0% in 2006 to 3.2% and 11.9% in 2012; similarly, rich or better off households increased from 12.7% in 2006 to 27.3% in 2012.
- Positive impacts on human and social capital and empowerment mainly driven by farm roads and improved mobility of people and enhanced access for social services including marketing.
- Positive impacts on food security and agricultural productivity, over 63% households reporting increased agricultural productivity mainly due to irrigation; child malnutrition improved significantly indicating food and nutritional security; acutely malnourished children reduced from 3.7% in 2006 to 0.9% in 2012; chronically malnourished children reduced from 50.2% in 2006 to 30.9% in 2012; and underweight children reduced from 20.1% in 2006 to 6.9% in 2012.
- Positive impact on environment mainly by stall feeding of cattle, soil and water conservation practices, and plantations carried out.
- Contributed to policy impacts in decentralization processes by way of demonstrating direct funding modalities to Dzongkhags.

3.3 Other M&E related tasks of PMO

A. Results and Impact Management System (RIMS)

17. RIMS[162] is a framework adopted by IFAD to measure and report results and impacts achieved by the programme. RIMS report is to be prepared by programme each year. RIMS looks at three levels of results:

a. ***First Level Results*** correspond to the programme activities and outputs. The results measure financial and physical progress, mostly quantitative and reported on an annual basis[163]. Many of these activities or output results will also correspond to the programme log-frame. Programme outputs are measured through simple quantitative indicators (example, "number of people trained in livestock production", usually reported by sex-disaggregated data). However, this output indicator does not provide information on whether the training succeeded well or was useful, such as whether the training has improved the livestock production practices, or whether livestock mortality has reduced by improved livestock management practices following the training, or how many more people have taken up livestock activity following the training. Such outcomes are reported in the second level results.

b. ***RIMS second level results*** correspond to programme outcomes, measure improved functioning or behavioural change, are more qualitative and normally take longer to realize. This level

[161] Project Performance Assessment of AMEPP by OIE, IFAD and AMEP PCR 2012.
[162] For details see "RIMS First and Second Level Results Handbook, IFAD, April 2014".
[163] RIMS Annual Report will be for a fiscal year, i.e. July to June (corresponding to AWPB) and reported latest by 31st March of the following year. The first RIMS Report would be after completion of the first full fiscal year or AWPB of Project implementation (project start-up workshop will provide necessary information on RIMS).

corresponds to either the output or objective level of the programme log-frame. Measuring outcomes means analysing changes in the behaviour and functioning of individuals, households, groups or institutions. The second level results in RIMS are in the form of assessment, looking at the extent to which a given programme activity has successfully led to specific outcome, which is the assessment of effectiveness. It also looks at the extent to which benefits are likely to be sustained after the programme ends, which is the assessment of sustainability. Various methods (such as studies, participatory approaches, questionnaire surveys, focus group discussions, etc.) can be used to measure changes from outputs to outcomes. Second Level Results are to be reported with ranking from mid-term onwards.

c. ***Third-level results*** correspond to programme impact, which measure combined effects of the first and second level results, are quantitative (e.g. households reporting increased assets) and are measured usually at three points during programme life (baseline or benchmark, mid-term[164] and completion or end-line). These refer to the goal and objective level of the programme log-frame. The third level RIMS results are the anchor indicators and relate to household assets, food security and child malnutrition (anthropometric data of children under five years of age) and will be compared with baseline data.

B. Baseline and end-line surveys

18. CARLEP will undertake baseline (at Programme Year One or PY 1) and end-line (Last Programme Year or PY 5) study. A table showing *RIMS indicators to be considered during the baseline and end-line study is given in PIM/WP.* End-line survey will correspond to Impact evaluation and will assess the contribution of CARLEP in achieving the overall goal of the programme. Results will compare with baseline data. Coordinated by the PMO M&E unit, this survey will be contracted to an external agency with expertise in such assessments and will include mandatory 'anchor indicators' relating to household assets, food security and child malnutrition (anthropometric data of children under five years of age). Other indicators of poverty will also be used, such as quality of housing and sanitation, access to safe drinking water, cultivation, asset ownership, etc. Data will also be collected to relate changes in all these indicators following participation in programme activities and delivery of programme outputs. IFPRI M&E grant for India and Bhutan will support the baseline survey in 2015. Along with baseline study, CARLEP will also undertake Climate Change Vulnerability Assessment by outsourcing the study to a suitable agency.

C. Annual Outcome Survey (AOS)

19. The AOS is a household survey undertaken annually by programme staff, covering a small, randomly selected sample of 200 households in programme areas (programme participants or beneficiaries) and 200 randomly selected households in non-programme areas (non-beneficiaries, to be used as a comparison group). IFAD has developed a standard methodology called RIMS, primarily intended to document end-of-programme impact. As such, it does not provide regular or timely information about results that can be used to take corrective action during programme implementation. The Annual Outcome Survey (AOS) is a tool to monitor how well a programme is doing through a systematic process of learning by doing. More specially, the AOS is intended to set out to identify positive and negative changes taking place at the household level, provide early evidence of programme success or failure, provide time performance information so that corrective actions may be taken as required and also assess targeting efficiency. That is why samples are taken both from programme as well as non-programme villages for comparison.

20. Annual Outcome Survey is conducted annually starting from the 2nd year of programme implementation. ***The Technical Guide for conducting Annual Outcome Survey[165] has been developed by IFAD, which would be provided to CARLEP at the time of start-up or as part of the PIM***. The HH survey will focus on quantitative data (e.g. the number of women participating in training, the % of HH adopting new farming technology, the % of female-headed HH that have increased profit, the number of HH taking loan to improve farming practices, etc.). These findings from HH survey are complemented by qualitative data that provide more in-depth explanations of why and how some outcomes were better achieved or not achieved. Such qualitative data are generated through focused group discussion, key informant interviews, etc. One of the key areas of attention in AOS is in developing questionnaires as appropriate to the programme. ***Reporting format for AOS is***

[164] Mid-term survey is now optional.
[165] See the Technical Guidelines: Conducting an Annual Outcome Survey, IFAD.

provided in PIM/WP on M&E. AOS has to be gender-sensitive and gender-specific information should be collected, such as women participating in or indirectly benefiting from programme activities (see below under Gender in M&E). A practical approach is to review programme log-frame having gender-sensitive indicators, gender issues being adequately reflected in the M&E plan, updating the HH survey tool to align with the revised log-frame and providing skills to enumerators and programme staff in quantitative and qualitative data collection methodologies especially to cover issues that matter differently to women and men.

D. Gender in M&E

21. Integrating gender dimension in M&E is imperative in all IFAD programmes. Integrating gender into M&E system helps to measure the extent to which a programme has addressed the different needs of women and men, and has made an impact on their lives and overall social and economic well-being. It also helps to improve programme performance during implementation, allows for mid-term course correction and makes it possible to derive lessons for future programmes. CARLEP will clearly identify the extent to which the programme has reached women and the degree to which they have benefited from programme activities and outputs. This involves gender disaggregation of data on programme activities and outputs to see if women have fully participated in group membership, group leadership, training and livelihoods activities. Further gender disaggregation is needed to see if women have benefited in terms of outcomes, such as increasing production, or impacts, such as increased income and assets. As some indicators are better measured on a household basis, these need to be disaggregated by gender of the household head. Special studies may also be undertaken on measures to reduce women's drudgery (especially provision of domestic water and fuelwood supply) and on other issues regarding women's welfare and empowerment (for example access to health services, and household decision making). Further details on gender-related monitoring are in the Appendix on Poverty, Gender and Targeting.

22. Some gender-sensitive monitoring indicators[166] in CARLEP AOS could be developed using the following indicators in the form of questionnaire:

Particulars	Questionnaire / issues to identify gender-sensitive indicators
1. Gender division of labour	- What is the gender division of labour or work burden at the household level? In other words, who is more responsible for working in the household, women or men? - When the programme got started, has the mam/male started sharing household work with the woman/female, or woman has to work more?
2. Gender differences in access and control over resources (e.g. income, employment, land, social services	- Who controls income in the household? Do the man and woman equally contribute in decision making on expenditure relating to household income? - Who participated in the programme training more, female or male? What have been the outcomes of training in applying the knowledge to household economics? - In whose name is the land under the household control? Do both man and woman equally contribute in deciding the types of crops to be grown in the household land? - What different kinds of social services do the man and woman receive or enjoy? What influences do these services have into the woman's health and ability to access information?
3. Gender differences in information and knowledge	- Are there gender difference in accessing the same information (about amount of information and how to access)? - Are there any differences in economic opportunities between man and woman due to different amount of information accessed?
4. Decision making patterns in the household and community	- Who in the household has the decision power? (compare with the contribution of man and woman in the total household income; whether person contributing the most in total income has the decision power). - The participation of female and male in activities of community (the voice and respectfulness opinions in community activities).
5. Women and men's attitude and self-confidence	- The difference between female and male about self-confidence in all different programme and community activities (on participation and responsibility).
6. Gender differences in vulnerability and coping strategy	- Differences in dealing problems and in adjusting to external shock.

[166] Modified from M&E Manual Guide for IFAD funded Projects in Vietnam and OPELIP M&E design.

4. Implementation Responsibilities of M&E

4.1 M&E staff in the PMO and general outline of key tasks

23. CARLEP will have a senior designated officer for Planning and M&E on deputation from RGoB. There will also be an Assistant M&E Officer (sourced from the open market on contractual basis). CARLEP will also have a Gender & Knowledge Management Officer. The M&E Officer (MEO) would be responsible for coordinating programme planning, such as consolidation of the AWPB; conducting, preparation and submission of programme reports (such as Annual/Half Yearly Progress Report, RIMS and AOS) and conducts of surveys (such as baseline and end-line surveys); and programme completion report (PCR). M&E Officer will input all the key indicators (outputs, outcomes and impacts) of CARLEP to be captured in the PLaMS of RGoB. The M&E Officer will be responsible for timely data collection and entry, data analysis and report writing. The M&E Officer will closely coordinate with programme Dzongkhags and other agencies of the RGoB such as FCBL participating in CARLEP for timely generation and collection of programme data/results for which the PMO will establish a system. The MEO will work closely with the Gender & KM Officer for issues relating to programme results documentation, preparation/consolidation of learning and preparation/dissemination of communication/learning materials (with Assistant M&E Officer). The MEO will coordinate all IFAD related compliance reporting and Implementation Support/Supervision Missions

4.2 Key M&E tasks during implementation phase

24. The PMO will address the following key M&E tasks during the different phases of the programme. These are indicative and can be revised during programme implementation to update the PIM.

Key stages of programme cycle	**Key M&E tasks**[167]
Programme initiation (loan effectiveness) to programme start-up workshop (usually the PY 1)	• Recruitment of all M&E staffs; • Review the programme design/detail programme report in relation to M&E with key stakeholders; • Review the PIM in relation to the section on M&E and KM in particular; • Develop a detailed M&E plan and system including appreciation of programme M&E culture and practices that would emerged or required to be developed taking into consideration the various programme results chain; • Review the M&E matrix and revise to be included in the PIM in the context of the programme outputs, outcomes and impacts; • Review and development various M&E formats (data collection and reporting formats); • Undertake / facilitate completion of the baseline surveys[168]; • Develop programme reporting system (from Gewog to Dzongkhag; Dzongkhag to PMO; FCBL to PMO; etc.) • Prepare the knowledge management strategy in coordination with KM focal person and link it up with programme M&E. • Put in place necessary conditions and capacities for M&E to be implemented. • Integrate all key outputs, outcomes and impacts of CARLEP in the PLaMS of RGoB for monitoring.
Main implementation period	• Ensure all data and information needs for management and key stakeholders are regularly met; • Coordinate information gathering and analysis, as also data storage and data management; • Facilitate and support regular review meetings and processes with all implementers and stakeholders; • Prepare/facilitate the programme reviews/ review meetings (monthly/quarterly/half-yearly/yearly); • Coordinate/prepare for supervision missions; implementation support missions, etc. • Facilitate focused studies on emerging questions including documentation of good practices in collaboration with sector heads and KM focal person of the programme; • Facilitate dissemination / communication of programme results with various stakeholders;

[167] Should be read along with the overall KM tasks (as Manager M&E/MIS is also responsible for KM in OPELIP.
[168] This will be done with support from IFPRI which is implementing M&E grant from IFAD to support projects in India and Bhutan; the baseline survey is likely to be undertaken during the period February-March 2015.

	• Prepare/undertake and ensure timely submissions of various reports as per IFAD's norms and requirements including documentation of success case studies, half-yearly/annual progress report, Annual Outcome Survey, Annual RIMS Report, etc. • Prepare the KM strategy and action plan; integrate M&E and KM. • Coordinate in the early preparation of the draft Exit Strategy cum Post Programme Sustainability. • Consolidate supervision mission and implementation support mission feedback.
Mid-term	• Collate information for the mid-term review (MTR); • Coordinate for conduct of the MTR; • Facilitate internal review processes to prepare the external review processes. • Adjust the M&E system as required. • Revise the draft exit strategy and post-programme sustainability. • Organise programme workshop to review, share and disseminate changes proposed at MTR with all programme staffs and partners.
Phasing-out and completion	• Assess what worked well and what did not work well to dovetail in the programme exit strategy and post-programme sustainability document; disseminate and share through workshop and/or any other means with key stakeholders on post-programme arrangements. • Undertake end-line surveys. • Organise learning events with key stakeholders to assess programme impacts; identify lessons learned for next phase of the programme and/or other programmes to be designed in future. • Prepare the Programme Completion Report (PCR) as per IFAD's guidelines. • Facilitate and coordinate IFAD's PCR validation mission. • Organise closure workshop to share and disseminate lessons learned with all key stakeholders.

4.3 Annual M&E Activities Calendar in CARLEP

25. CARLEP will develop its annual M&E activities calendar.[169] The calendar outlines the key M&E activities and reporting requirements to be performed by the programme by which date or month. Based on this template, a detailed M&E activities calendar will eventually be developed by the PMO M&E unit through a consultative process in order to roll out a robust M&E system in the programme. An example of draft calendar of key activities is provided below (corresponding to fiscal year or an AWPB cycle).

Key activities	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*
Annual Progress Performance Review												
AWPB preparation and submission												
Annual Progress Report submission												
Half-yearly Progress Report												
Annual RIMS Report submission												
Annual Outcome Survey Report submission												
Quarterly Results Report Preparation												
Quarterly Review Meetings at PMO												
PSC / Coordination meeting												
Half yearly review meeting at Dzongkhag												
Data Collection for physical and financial progress												

[169] This will be revised as per actual operational activities of the project and inserted in the PIM.

5. Reporting and Communicating Programme Results

26. The M&E unit at PMO will develop common reporting formats to be used by all the Dzongkhags and participating agencies (such as FCBL and others) for providing monthly/quarterly/half-yearly/yearly data on different programme activities so that there is no discrepancy in the reporting of data on status of progress of programme activities. Experience from MAGIP on reporting formats could be drawn for this purpose. All data would be gender disaggregated and the analytical reports would be used to take timely corrective actions and learn from implementation experiences to further improve programme management effectiveness and efficiency. Monthly, quarterly and annual reports including reports from studies would be produced by the Programme. Reports to be sent to IFAD include Half-yearly, Annual Progress Report, RIMS Annual Report and AOS Reports.

27. Monthly Progress Reports (MPR) as required by the programme and/or management will be prepared from the programme PLaMS and the activity-based monthly reporting formats developed by CARLEP. Such report will contain component/sub-component wise physical and financial progress against quarterly or annual targets. This report will form the basis for monthly progress reviews.

28. Quarterly Progress Reports (QPR). Besides reporting physical and financial progress this report will contain information on challenges encountered in implementation and corrective actions and solutions to address constraints as well as programme participant's responses to programme initiated activities. QPR would also be useful for consolidating RIMS Annual Report each year to be carried out for a calendar year (1st January to 31st December). For this purpose, the indicators to be monitored/reported should be harmonized to the extent possible with programme log-frame and RIMS indicators (1st level results up to mid-term and 2nd level results after mid-term).

29. Half yearly Progress Report will be prepared from information compiled by the PMO on component/sub-component wise physical and financial progress, and loan category wise financial progress. The information will be generated *via* the programme PLaMS and quarterly progress reports. In its simplest form, the half-yearly progress report could be confined to reporting progress against the AWPB (to be submitted by end of January or early February).

30. Annual Progress Reports (APR) is compiled by PMO containing progress or achievements as per AWPB. In addition to reporting cumulative results along with annual progress of achievements, the APR could be dovetailed with case studies of successful interventions. The annual progress report is to be submitted every year by July-August. ***A suggested guideline for preparing Annual Progress Report is given in PIM/WP****.*

31. RIMS Annual Report. The key RIMS indicators corresponding to the programme components are included in the programme's Logical Framework and will be reported annually for the period July to June (corresponding to fiscal year or AWPB) by 31st March of following year. In the first year the programme information on RIMS first level indicators (list of indicators included in RIMS Handbook but only those relevant to the programme) associated with outputs would be reported. After mid-term review the report will include ratings of effectiveness and sustainability of 2nd level indicators, validated from the results of annual outcome surveys. ***A standard table with examples of 1st Level and 2nd Level Results or Indicators is given in PIM/WP****.* Additionally, CARLEP will have the advantage of experiences of MAGIP in preparing RIMS Annual Report.

32. Annual Outcome Survey (AOS) Report. Each year the programme will undertake AOS between January to March and report to IFAD by April. The first AOS will be done in the second year of programme implementation after completing a full first year of programme implementation. AOS in CARLEP will be for a calendar year (January to December).

33. Mid-Term Review Report (MTR). IFAD in cooperation with the RGoB would undertake a mid-term review during the PY 3 of the programme lifecycle to review programme achievements and implementation constraints including issues relating to loan administration and financial management. Any corrective measure would be addressed at MTR. A mutually agreed action plan will be prepared based on the MTR findings. IFAD may appoint, in consultation with the Government, an external agency to evaluate the impact of the programme if necessary.

34. Programme Completion Report (PCR). As the programme reaches completion point, the CARLEP PMO will prepare a draft Programme Completion Report based on IFAD's Guidelines for Programme Completion.[170] IFAD and the Government will then carry out a Programme Completion

[170] See IFAD's Guidelines for Project Completion.

Review based on the information in the Programme Completion Report and other data. This review is usually done during the intervening period of programme/loan closing date and programme/loan ending date.

35. Case studies on programme innovations and success stories.[171] CARLEP will undertake case studies of programme innovations and success stories on regular basis and report them through Annual Progress Report and the relevant Newsletters. The programme will also report them and communicate through its IFADAsia webpage managed by IFAD. Experiences from MAGIP can be useful on this matter. ***A case study guideline is given in PIM.***

6. Learning and Knowledge Management (KM) in CARLEP

36. ***Staffing*.** CARLEP will have a Gender & Knowledge Management Officer (GKMO). The GKMO will closely work with the M&E officers of the programme. It may be noted that every officer in PMO, Dzongkhag staffs participating in CARLEP and officers in different agencies/entities participating in CARLEP will also have responsibilities in KM particularly in documenting successful interventions and innovative case stories.

37. ***KM Strategy***. CARLEP will prepare a Knowledge Management Strategy building on IFAD's Knowledge Management Strategy guidelines and MAGIP's experiences in KM in the first year of programme implementation. The staffs will undergo training on KM. ***Framework for preparing the KM strategy and training* module *are given in PIM/WP.*** KM strategy will also include active engagement in policy development relating to resilient agriculture and dairy production and marketing support including strategies for strengthening market information systems and appropriate curriculum development for RNR training and education to include emerging issues such as value chains, climate-smart agriculture and adaptation technologies for smallholder farmers.

38. ***Learning system***. The programme learning system would comprise of various activities relating to M&E and KM functions. Some of these would include monthly, quarterly and annual review meetings; partners review meetings; capturing information on progress, lessons and finding solutions for implementation constraints. KM and lesson learning would be used as a tool for internal learning by programme stakeholders such as staff of various implementing agencies, participating village communities and farmers, both women and men. Participatory tools such as "most significant change", "story telling" and "participatory monitoring and evaluation" (PME) may be used at these meetings. CARLEP will also support in conducting/organising policy related multi-stakeholders forum/events/workshops towards RNR related policy deliberations and development, and also develop policy briefs through TAs.

39. ***Enhancing Use of Knowledge from M&E.*** One of the purposes of M&E activities in programmes are to contribute in strengthening the basis for managing results, foster learning and generating knowledge for the key stakeholders (including IFAD, Government and Communities). Generating knowledge and knowledge gained from M&E are at the core of all IFAD-funded programmes. IFAD and government will use and apply learning from M&E to improve the overall performance and quality of results of ongoing and future programmes and implementation strategies. CARLEP will use its M&E data and information for improved learning, enhancing accountability of the programme for learning, use the knowledge and learning from M&E for programme planning, implementation and improved monitoring, and document innovations and success stories so as to contribute in the overall local, regional, national and global knowledge pool in investing in rural people.

40. ***Knowledge Products, Dissemination and Communication.*** CARLEP will endeavour developing various knowledge products depending on the target audience and information needs. The knowledge products could be in the forms of publications, documented case stories, photo documentation, videos, charts, manuals, etc. The M&E unit of CARLEP PMO will take lead in knowledge products development and dissemination by involving all subject matter specialists in the programme including providing capacity training on knowledge management as appropriate. However, for meaningful learning and knowledge sharing, knowledge products should be of quality with clearly identified audience and purpose. The characteristics of good knowledge products[172] have the following elements:

[171] IFAD's Communication Division has brought out a guideline for preparing case studies in the field. This will be provided at the time of start-up workshop.
[172] Adopted from the "Handbook on Planning, Monitoring and Evaluating for Development Results", UNDP, 2009.

- Based on an assessment of needs and demand for the product among targeted users to ensure relevance, effectiveness, usefulness and value of the knowledge product.
- Designed for a specific audience, taking into consideration functional needs and technical levels.
- Relevant for decision-making needs.
- Knowledge products brought out timely.
- Written in clear and easily understandable language.
- Data is presented in a clear and coherent manner; all data and information being from programme M&E without any bias, both successful and failure cases.
- Knowledge products developed through participatory process and validated through quality assurance processes with relevant stakeholders or peer reviewed appropriately.
- The knowledge products should be easily accessible to the target audience through most effective and efficient means, and timely.
- Consistency in presentation of products to enhance visibility and learning.

41. ***Knowledge Sharing and Learning Culture****.* CARLEP will continuously endeavour to capture and disseminate lessons learned, successful case studies and good practices. The programme will adopt various knowledge sharing methods and tools including designing and facilitating knowledge events such as meetings and workshops at various level. Some of the -practical approaches and strategies to knowledge sharing and learning culture as also methods and tools would include:

- Building strong network by conducting periodic workshops/seminars/conferences on issues of development and thematic areas of contemporary relevance including multi-stakeholders' events that will contribute to strengthening agricultural institutions and policies for improved and resilient agriculture and RNR products marketing practices.
- Conduct monthly/quarterly/half-yearly/yearly review meetings.
- Developing skills and competencies of programme staffs to improve human resources in the areas of knowledge management.
- Tailoring knowledge management activities closely to the needs of programme staff and stakeholders.
- Adoption of specific knowledge sharing methodologies and tools[173] with capacity building components, such as video storytelling, speed sharing, chat show, world café, etc.
- Developing and actively using programme website, newsletter, etc. and contributing in the IFADAsia website.

[173] Details are available at "*Introducing Knowledge Sharing Methods and Tools : A Facilitator's Guide*" by Allison Hewlitt and Lucie Lamoureux. IDRC-IFAD, 2010.

Annex 1

CARLEP M&E (and learning) Plan

M&E Activities	Frequency	Tool	Responsibilities	Remarks
Village/Group Level activities planning	Annual	Standardised Record Keeping	Group / Committee Leaders (designated for the purpose)	To be facilitated by the concerned Gewog Extension Officer
Monthly Monitoring Reports (MMR) - Basic activity and expenditure reporting	Monthly	Data collection from standard documentation and recording in standard formats	Designated group/committee leaders to report to Gewog Extension Officer (GEO) and GEO to Dzongkhag	Once the reporting process stabilised, standard reporting formats to be developed.
Output and outcome Tracking	Quarterly /Semi Annual / Annual	Compilation of data from MMRs and standard documentation to derive volume of work output obtained and immediate outcome received	M&E Unit of PMO & key partners (eg FCBL)	M&E unit of PMO to lead and facilitate; standard documentation and validation through village visits; linked with the AWP&B for tracking delivery/performance.
Periodic Review and Learning Meeting/ Workshop	Monthly /Quarterly/ Semi-Annual/Annual as required	Consultative Meeting and Reviews	PMO, Dzongkhags, Programme Partners (eg. FCBL)	To be conducted at each institutional level to ensure periodic review of the progress made and resources utilised. These meetings would help in fine tuning the implementation challenges and provide lights on the key learning from the programme implementation.
Annual Outcome Survey Report	Annual	Questionnaire survey	PMO through outsourced agency	PMO to outsource to an external agency for data collection, tabulation, analysis and report writing. The standard questionnaire needs to be adopted with local specific customization. The survey to be conducted with both programme and control groups as per IFAD guidelines.
Annual Results & Impact Management System (RIMS) Reporting	Annual	Data compilation and validation	M&E Unit of PMO	M&E unit of PMO to lead and facilitate the collation process; import data from the bi annual outcome reporting system and correlate it with the concerned RIMS indicators. The RIMS report prepared to be validated through consultative meetings with the selected stakeholders, also during annual supervision mission.
RIMS+ Baseline and Endline Survey	At the start of the programme; at the close of the programme	Anthropometric and Questionnaire Survey	PMO through outsourced agency	PMO to outsource to an external agency for data collection, tabulation, analysis and report writing. RIMS standard questionnaire to be adopted with local specific customization. The survey to be conducted with both programme and control groups with 900 randomly selected programme beneficiaries. No comparison group will be selected.
Impact Assessment	Baseline and End line	Qualitative and Quantitative	PMO through an outsourced	PMO to outsource the assignment through an open bidding process to a

		Research	agency	suitable agency to design and implement the impact study for the baseline and end line. This survey will be a scientific survey to access the attribution of the programme interventions in achieving the intended and unintended impacts and how the programme objectives have been achieved. This would constitute both quantitative and qualitative research. The survey to be conducted with both programme and control groups with statistically robust sample.
Thematic and cross cutting studies (to be selected by the programme)	Need based	Social Research/ Participatory Research / Case studies by programme staff	PMO & FCBL	Based on the need of the programme and its implementation learning, the PMO & FCBL will host various thematic studies across various areas of programme interventions. These studies would reflect the programmes immediate impact on the communities and also guide to fine tune the programme interventions. This will include documentation of successful case stories and good practices.
Community led participatory monitoring (Social Audit)	Yearly	Participatory learning and action	Community institutions / groups / cooperatives with facilitation from Gewog / Dzongkhag / PMO / FCBL	This will help the communities to reflect on the outcomes and impact they perceived and upto what extent it was achieved. This would enable the communities in understanding the development process and their role towards it. A pictorial method of tracking progress will be encouraged for adoption. External resource agencies may be hired by the PMO for the purpose for capacity building of the gewog and Dzongkhag officers.
Community to Community Learning	As often as possible	Learning by seeing, listening, feeling, touching, etc.	Group / cooperative members visit successful interventions.	Learning by doing, learning by seeing, learning by listening from another community or group. This is most effective ways of learning for communities with lower literacy rate from rural communities.
Newsletters, Video documentation, websites, e-groups, policy briefs, etc.	Quarterly / Half yearly / Annual	Electronic tools, systematic documentation through research methodology, etc.	PMO, FCBL, Dzongkhags	Documented case studies published in MoAF website; IFAD Asia website; e-groups formed and exchange learning; video documentation of good practices for dissemination and learning; disseminate results by participation in workshops, seminars, conferences; policy briefs shared with key policy makers and stakeholders and other partners.

Appendix 7: Financial management & disbursement arrangements

A. IFAD and ASAP Trust Financing

1. IFAD will provide an IFAD Loan and an IFAD Grant while the ASAP Trust (administrated by IFAD) will provide an ASAP Grant to finance the implementing activities of the Programme in accordance with the terms and conditions specified in the Financing Agreement.

2. The IFAD Loan will be extended to the RGoB on blend terms and subject to interest on the principal amount outstanding at a fixed rate of 1.25 percent per annum, with a service charge of 0.75 percent per annum. The IFAD loan shall have a maturity period of 25 years, including a grace period of five years. The responsibility of repayment of principal, interest, service charge and foreign exchange risk rests with the RGoB.

I. Implementation Arrangements for CARLEP

a) **Lead programme agency**

3. The Ministry of Agriculture and Forests (MoAF) of the Borrower/Recipient, in its capacity as the Lead Programme Agency, shall have the overall responsibility for the implementation of CARLEP. The MoAF will provide general policy directions for the implementation of the Programme and coordinate with other relevant programme agencies such as FCBL. MoAF shall ensure stability of the staff appointed in the Programme. In particular, the Programme Director ad key finance staff. MoAF will cooperate with the MoF to ensure that programme funds are used for their intended purpose as specified in the Financing Agreement, and efficient flow of the financing to the programme accounts and of replenishments from the loan and grants of IFAD and ASAP Trust Fund.

b) **Programme Steering Committee (PSC)**

4. The Lead Programme Agency shall establish a Programme Steering Committee (PSC) chaired by the Secretary, MoAF. The composition of the PSC's membership shall include *inter alia* representatives from relevant line ministries and implementing agencies such as FCBL as appropriate.

c) **Implementation arrangements and implementing partners**

5. A Programme Coordination Unit (PCU) as the CARLEP Liaison Office at MoAF Thimphu will be responsible for smooth release of funds from designated account administered by DPA in MoF.

6. A Programme Implementation Unit (PMO) headed by the National Programme Director will be located in the programme area in the east at RDC in Mongar. Its structure will reflect programme components and requirements. It will operate under the authority of PSC. It will be responsible and accountable for the day-to- day management and implementation of the Programme. Experienced and competent staff with the capacity to manage and implement the IFAD funded programme will be designed from the MoAF. A Programme Implementation Manual (PIM) approved by the PSC and IFAD would guide programme execution. The PMO would report to the PSC. The PMO will have three key units: (a) M&E and KM unit headed by a Planning and M&E Officer assisted by an Assistant PME Officer, will be responsible for programme planning, monitoring, evaluation, gender and knowledge management; (b) Administration and Finance unit headed by a Finance Officer and assisted by a programme accountant will be responsible for financial management and administration of the Programme; and (c) Operational unit will be composite of agriculture production, marketing, value chain and enterprise development managers and the supporting staff. The unit will be responsible for the programme implementation and procurement.

7. The programme will be implemented in six eastern dzongkhags (Lhuentse, Trashiyangtse, Trashigang, Mongar, Pemagatshel and Samdrup Jongkhar), three central-south dzongkhags (Tsirang, Sarpang and Zhemgang) and one west-southern dzongkhag (Chhukha).

8. FCBL implementation office shall be established and composed of a CEO, a Marketing Advisor and Finance Officer for implementing activities under Component 2 of the Programme.

9. Partnerships: To enhance the efficiencies for RGoB and/or FCBL, complementarities have been currently identified and the relevant institutions/programme/programme management units will

cooperate to work together to reduce redundancies. While others may be identified once implementation commences, the Programme has already identified synergies with World Food Programme (WFP) and the World Bank.

II. Financial management risk assessment

Risks	Initial Risk Assessment	Proposed Mitigation	Residual Risk Rating
Inherent Risks	**Low**. The latest rate about Transparency International concerning Corruption Perception Index for Bhutan is 31/175 which suggested a low risk. The latest PEFA was conducted in the last half of 2009 and published in June, 2010.		Low
Control Risks			
Organization, Staffing	**Medium.** Financial staff with the LPA is experienced with IFI projects. Limited number of staff dealing with institutional and other donor projects implies increased workload on existing hands. There however, remain significant weaknesses in financial capacity at the local government level.	• Key financial and management staff shall be recruited on competitive basis. Recruitment of programme's core staff would be subject to PSC and IFAD approval. • Training to financial staff at level financial management staff compulsory before programme at programme start up. Repeated training to financial staff are carried out during the programme implementation period.	Medium/low
Budgeting	**Medium** • The adoption of a computerized Budgeting and Accounting System has brought about significant improvements in the financial management system.	• Close oversight by the district offices and PIU on the budgetary preparation progress will be required	Low
Fund Flow, Disbursements	**Medium** The procedure for fund releases is well established for the country as well as for the IFAD funded projects.. However, disbursement delay could arise due to weak cash flow planning, slow submission of disbursement requests from implementing agencies due to time consuming processing and underestimated budget for project activities.	• Disbursement arrangements will be simplified and processing timing at each level will be specified. Manual with clear instructions for disbursements requirements will be produced at programme start. • Close oversight by the district and PIU on the budgetary progress to avoid major shortfall of budgeting for programme activities.	Medium
Internal Controls	**Medium** Government policy lays out transactional control on all government (including donor funded	• controls and audits shall be in place to reduce irregularities and obtain recoveries.	Low

	projects) receipts and payments at all level. The transactional control framework is considered adequate and reflects best practice. However, there are concerns over weak compliance of the procedures in practice. Physical achievements have not been tracked against financial expenditure. FCBL still lack of experiences with IFI projects.	• Programme shall be subject to full internal controls in fiduciary performance. .	
Accounting Systems	**Medium** • In accordance with Government accounting system, all receipts and payments transactions of the Government have be accounted for in Ngultrums. Parallel records in other currencies may be maintained separately in required cases. • MoAF applyes National Standards on Accounting which is maintained on cash basis. • Accounting system for FCBL is maintained on accrual basis. • There is an overall lack of awareness of the need to be in compliance with internationally accepted standards.	• The fiscal year for accounting of financial transactions of the Programme will begin on 1st July every year and end 30th June next year. • Accounting requirements will be specified in the financial management manual to be developed at start of programme. Deployment of computerized accounting systems will be recommended for FCBL . The structure of the Chart of Accounts caters data to be captured by Programme components, activities, IFAD disbursement category for the Programme and Sources of funding. .	Low
Reporting, Monitoring	**High** • Following government practice in generating financial statements for projects. Details and specifics need to adapt to project specific requirement. • limited financial monitoring and oversight to project implementing agencies.	• Quality and timeliness of annual and semi-annual financial statements • improved budget and expenditure management systems are providing better information • It is practical for the RGoB's annual financial statements to adopt IPSAS standards, starting with the Cash Basis standard. • Financial staff to be trained to do financial monitoring and oversight on Implementing agencies. Specific reporting and monitoring requirements be included financial management manual as well the Programme Implementation Manual	Medium
Internal Audit	**High** MOF developed Internal Audit Charter with Internal Audit Standards and	The programme's internal controls shall be designed to ensure effectiveness and efficiency of operations, reliability of reporting and compliance through dynamic	Medium

	Code of Ethics for the Internal Audit Services in 2008. There are only internal auditors who are designated to MOAF. Due to limited human capacity, there has been no internal audit to IFAD funded project due to the lack of adequacy and appropriateness of the present financial management staff resourcing and systems.	processes. Roles and responsibilities will be aligned to Progromme objectives. This will include elements such as the control environment, risk assessment, communication and monitoring to ensure coherence with good governance and the mutual accountability framework. The programme implementation manual (PIM) including also the financial management manual will detail the control framework based on best practices Adequate and appropriate of the financial management staff, and system and training for internal Audit of the programme shall be in place. Audit TOR will include verifications at implementing entity level, including FCBL and districts. Also systems approach, analysis of risk areas and proposed mitigation measures	
External Audit	**High** The National Audit Office has the mandate to audit all foreign funded loan projects, following standard and specific donor requirements in line International Audit Standard and best practices. The most important steps for auditing have been taken to implement the Audit Act using the most up to date auditing standards provided by the International Organization of Supreme Audit Institutions (INTOSAI). training in the core competencies are undertaken for the national auditors.	• Specific requirement from IFAD to be communicated to external auditors to deliver adequate audit and reporting. • .	Medium
Overall FM Risk	**M**		L

H- High, M-Moderate, L-Low

III. Financial management assessment (see Working Paper for details)

a) Country context and inherent risk

10. Bhutan's fiduciary environment for utilising both internal and donor funds is considered broadly adequate. The Government has made progress in strengthening its Public Expenditures Management System (PEMS). It has demonstrated its commitment to continuing its PFM reforms by developing more efficient public Financial Management systems and ensuring transparency by strengthening state oversight institutions. The Corruption Perception Index of Bhutan published by Transparency International has improved from 5.7 in 2011 to 6.3 (ranking 31/175) as the 31st least corrupt country in

the world in 2013, which suggested a low risk. In 2009 a Public Expenditure and Financial Accountability (PEFA) assessment was undertaken in Bhutan showing good performance in the area of (i) Effectiveness of expenditure commitment controls; (ii) Audit reports are submitted to the Legislature (iii) The PFA provides for a well regulated and respected budget amendment system.

b) **Strengths and weaknesses of the financial management system**

11. From the Financial Management perspective, the main strength is that the MoAF Financial Control Directorate is technically well resourced in accounting and FM, and has experience with implementing donor-funded projects with satisfactory results.

12. Financial Management Assessment (FMA) of the LPA has been carried out and updated yearly in accordance with IFAD's Financial Management Guidelines, issued on 1 November 2012. The Programme FM-arrangements will follow the standards already applied in previous IFAD projects (AMEPP, MAGIP), which have been rated medium risk and have adequately complied with IFAD requirements including submission of audit reports.

13. A potential weakness is that the Component 2 under Programme will be the first IFAD investment to be managed by the FCBL; therefore training will have to be provided on IFAD requirements and procedures. However, WFP has supported Bhutan through FCB and has had very good and close working relationship with WFP for more than 30 years.

14. According to the Government Budgeting System, government agencies cannot spend more than what the National Assembly has appropriated. Thus, funds availability could be caused by budgeting shortfall. Although during the fiscal year, additional budget can be obtained through Mid-Year Review of the Budget or Interim Revisions of the Budget Process, close oversight by the district and PMO on the budgetary progress will be one important task of its management function. PMO and MoF shall be kept in close picture of any budgetary shortfall for resolution.

15. Staff capacity for internal audit unit at the MoAF may not be sufficient to adequately cover the Programme internal controls, given the national scope of the programme, and internal audit functions may require reinforcing.

c) **Proposed Financial Management implementation arrangements**

1. Organisation and staffing

16. A dedicated Programme Finance manager under PMO with the required qualifications and experience will be assigned from MoF, to work under the oversight of the Moaf. He or she will be supported by other accounts staff assigned for the Programme, as required. Accounts staff with appropriate profile will also be assigned by to perform accounting functions at the different district and implementation partner (such as FCBL) offices, supported by assistant accountants for appropriate segregation of tasks. All Programme accounts staff will report functionally to the Programme Finance manager.

2. Budgeting

17. MoAF as a Government ministry follows the budget preparation guidelines set in Budget Manual issued by MoF. The overall budget for the Programme will be outlined in the in the Financing Agreement, whereas the annual budgeting will be done in line with Government's existing budget framework and timetable (Budget calendar) as part of MoAF's regular budget submission. The budget line which IFAD and ASAP Trust funds contribute will be clearly identified and reported upon as part of MoAF budget allocations under a sub-budget category to ensure that the principle of **'aid on budget'** is observed.

18. The PMO will be required to prepare and submit to IFAD for approval its annual work plans and budget, including the procurement plans, in line with IFAD's requirements. The Financial Management assessment concludes that the budgeting arrangements at MoAF level are adequate.

19. The budget preparation process is, however, expected to pose challenges as it will be based on a bottom-up consolidation mechanism from multiple implementing entities. District and FCBL budgets will be submitted to the PMO for consolidation with its own budget. PMO will add the FCBL budget to its own budget since FCBL is not in the Government budget framework. Delays with this process could hamper the consolidation of Programme's budget in compliance with the Government and IFAD rules.

20. To mitigate this risk, close oversight by the district offices and PMO on the budget preparation progress will be required. PLG and MoF shall be kept in close picture of any budgetary shortfall for resolution. It is important to monitor the physical progress of the Programme is in compliance with the reports received from the programme managers and heads of agencies.

21. The Financial Management assessment concludes that the risk associated with budgeting processes is Medium, but the residual risk taking into consideration mitigating measures is Low.

3. *Accounting systems, policies and procedures*

4. The adoption of a computerized, budgeting and accounting system in ministries / government agencies (Public Expenditure Management System or PEMS) has brought about significant improvements in the financial management system.

5. Steps to bring the country into closer conformance with international standards for accounting and auditing have been identified by PEFA assessment. The most important steps for accounting were to report the Government's annual accounts using the formats of the Cash Basis International Public Sector Accounting Standard (IPSAS), improve the current budget and accounting computer systems to enable better monthly and annual reporting at entity and national level and to ensure that all public enterprises use International Financial Reporting Standards (IFRS) for their annual accounts.

6. Accounting and financial reporting for IFAD funding will follow existing National Accounting Standards on cash basis accounting in line with IPSAS and rely on existing systems, including the Chart of Account, internal approval processes and payment vouchers. The Chart of Accounts for FCBL will be synchronised with the chart of accounts for the programme in the PEMs to facilitate future data migration. The PMO at MoAF will be responsible for consolidating the accounts of the FCBL and the district offices with its own accounts.

7. Accounting system for FCBL is currently maintained on accrual basis. However, FCBL will submit financial report also on cash basis to PMO for report consolidation and advance payments justification.

8. The fiscal year for accounting of financial transactions of the Programme will begin on 1st July every year and end on 30th June next year.

9. At the District office level, the programme accounting functions will be performed by existing District accounts staff, under the close supervision of the District Financial Officer.

10. As part of implementation readiness, accounts staff at PMO, FCBL and district levels will be provided with in-depth training by IFAD and the MoAF Financial Staff at start-up on IFAD requirements and procedures and Financial Management best practice. They will also be required to complete the IFAD Financial Management e-certification course.

4. *Internal controls*

11. The government policy lays out transactional control on all government (including donor funded projects) receipts and payments at all levels. The transactional control framework is considered adequate and reflects the best practice. However, there are concerns over weak compliance of the procedures in practice. Physical achievements have not been tracked against financial expenditure. FCBL still lack of experience with IFI projects. The Programme's internal controls will rely on the Government established accounting and internal control guidelines as documented in the Financial Management Manual issued by MoF.

12. Internal controls will also be verified during the annual audit exercise and reported to IFAD in a Management Letter, in line with IFAD's audit guidelines.

5. Funds flow and disbursements (see Funds Flow Chart)

13. Programme costs over 7 years, including contingencies, taxes and duties, are estimated at US$ 30.357 million. A total of approximately US$ 19.250 million of IFAD funding is expected to be mobilized for the Programme for the first 7 years (2 cycles). The Programme will absorb the entire amount of US$ 8.25 million of the 2013-2015 PBAS allocation for Bhutan, as well as US$ 5 million ASAP funding for climate change adaptation activities. Subject to availability and implementation performance, additional financing of US$ 6 million will be earmarked from the 2016-2018 PBAS cycle.

In addition programme contributions are provided by beneficiaries to the extent of USD 0.659 million, by RGoB USD 5.645 million and by Food Corporation of Bhutan Ltd (FCBL) USD 4.802 million.

14. The proceeds of the financing will be used for eligible expenditures as defined in the Financing Agreement and in line with the disbursement allocations specified in the relevant section of the Financing Agreement.

15. **Start-up costs**. Withdrawals in respect of expenditures for start-up of the programme such as preparation of the PIM and installation of accounting software for FCBL and the training incurred after the entry into force of the Financing Agreement and before the satisfaction of the conditions precedent to withdrawal shall not exceed an aggregate amount of fifteen thousand Special Drawing Rights (SDR 15 000). Any unused balance of the start-up advance will be considered as part of the initial advance under the authorized allocation.

16. In accordance with Section 4.02 of the General Conditions, no withdrawal shall be made from the Loan and Grant Accounts until the first AWPB, including the 18 month procurement plan has been approved by IFAD. Furthermore, the following will be designated as additional general conditions precedent to withdrawal: (i) The PMO shall have been duly established and the respective key programme staff such as Programme Director and Financial Officer shall have been selected; (ii) The Borrower shall submit an official document confirming the availability of adequate counterpart funds for the first Programme Year; (iii) The authorized signatories shall have been submitted to IFAD; (iv) The draft Programme Implementation Manual shall have been endorsed by the PSC and is acceptable to IFAD; (v)The Designated Accounts shall have been duly opened in the case of advance payments to the Designated Accounts.

17. No withdrawals shall be made in respect of expenditures under Component II until (i) a draft Subsidiary Agreement with FCBL has been approved by the Fund; and (ii) computerized accounting system including the chart of accounts have been set up acceptable to IFAD by the Prefecture FCBL.

a) Statement of Expenditure (SOE)

18. The SOE thresholds that apply for Advances Replenishment and Reimbursements for all expenditures pertaining to all categories cited in Schedule 2 of the Financing Agreement will be up to USD 80 000. However, IFAD will reserve the right to request supporting documentation when required for inspection and verification.

19. Withdrawal applications for Advance Replenishments and Reimbursements higher than these SOE thresholds should be accompanied by copies of relevant accounting documents evidencing eligible expenditure (e.g. invoices, receipts, documentary evidence of completion of contracted goods and services).

b) Designated Accounts

20. In accordance with Section 4.04(d) of the General Conditions, the Borrower/Recipient is required to open three bank accounts (the Designated Accounts) denominated in United States Dollars (USD), to be opened and maintained in the Central Bank designated to receive IFAD Loan, IFAD Grant and ASAP Grant resources respectively, in advance, as soon as possible after entry into force of the Financing Agreement. In accordance with Section 3.1 of the LDH, the Designated Accounts will be administered following Imprest Account arrangements. Advances from this Financing must be segregated from other funds for the Programme.

21. Under Imprest arrangements, the maximum authorized allocation to the Designated Accounts will be USD 0.8 million, USD 200 000 and USD 0.8 million for the IFAD Loan, IFAD Grant and ASAP Grant, respectively. Upon fulfilment of conditions precedent to withdrawal and the Borrower's request, one or more advances may be withdrawn within this authorized allocation.

22. The Designated Account will be replenished on the basis of Withdrawal Applications prepared and submitted to IFAD by the PMO, signed by the authorised representatives of the Borrower, accompanied by the required supporting documentation. Detailed instructions for disbursements will be included in the LTB and IFAD Disbursement Handbook.

23. Withdrawal applications for Advance Withdrawal and Reimbursements may be submitted once ninety (90) days have lapsed from the submission of the previous withdrawal application. If, however, the requested withdrawal amount is at least thirty per cent (30 percent) of the advance payment in the

relevant Designated Accounts, a withdrawal application may be submitted even if ninety (90) days have not lapsed.

24. The Direct Payment procedure should preferably be used only for payments of more than USD 100 000 equivalent. Programme expenditures below this threshold should be paid from the Programme's Designated or operational Accounts.

25. Documentation evidencing the opening of the Designated Accounts, with details of the persons/titles authorized to operate these accounts, must reach IFAD before withdrawal from such accounts can begin.

c) Programme Accounts

26. In accordance with Section 7.02(b) of the General Conditions, Programme Accounts in BTN shall be opened and maintained by the PMO, FCBL, relevant District Programme Management Offices, respectively, in commercial banks acceptable to IFAD, to receive the proceed of the financing from the Designated Accounts. Separate Programme Accounts for counterpart funds shall be maintained for Programme implementation. The Programme Accounts will be administered following Revolving Fund modality. The PMO will ensure that funds received at each level are transferred without delay.

27. The first quarterly advance withdrawal under the Revolving Fund modality cannot exceed the reporting period of 3 months' forecast amount of IFAD financed expenditure approved in the Annual Work Plan and Budget (AWPB) for the relevant Programme Year. Further advances to the Programme Account will be made for the next reporting period based on the AWPB or expenditure forecasts provided that at least 75 percent of the immediately preceding advance and 100 percent of all prior advances have been fully justified.

6. Financial reporting arrangements

28. The PMO will be required to prepare and submit summary IFRs (Interim Financial Reports) semi-annually to IFAD no later than 45 days after the end of each reporting period. It is expected that the PMO, FCBL, relevant districts and implanting agencies will maintain adequate filing and archival system of all relevant original supporting documentation. In line with IFAD's requirements, documentation will be reviewed by Programme supervision missions and for audit purposes. The IFRs will be designed to provide relevant information to management, financiers and other stakeholders monitoring the programme's performance. The content and format of FRs will be specified in the PIM.

29. The PMO will consolidate its accounts with those of the relevant district offices, FCBL, programme implementing agencies and DAs and produce consolidated annual financial statements in line with IFAD's General Conditions and IFAD reporting requirements. The Financial statements will be submitted to IFAD within four months of the end of each fiscal year.

7. Internal audit

30. MoF has a functioning internal audit unit to ensure a sound control environment for transaction processing in MoAF. However, based on the assessment, due to workload it may have limited capacity available to cover the Programme activities funded by IFAD as part of its oversight functions.. Should it be ascertained that the internal audit arrangements provided by the Internal Audit Unit are insufficient, a private audit firm may be contracted as a complementary measure to perform a systems audit, in order to determine risk areas and propose mitigating measures.

8. External audit

31. The National Audit Office has the mandate to audit all foreign funded loan programmes, following standard and specific donor requirements by the International Organization of Supreme Audit Institutions (INTOSAI). Absence of properly defined standards on accounting and auditing means that preparation of financial statements and conduct of audits, even for listed companies, are not uniform and generally incomplete. There is an overall lack of awareness of the need to be in compliance with internationally accepted standards. By default, the regulation of the audit profession is left to the Royal Audit Authority (RAA), which may not have the full capacity. Training on core competencies is still needed.

32. The consolidated financial statements including the use of the counterpart funds relating to the Programme will be audited by the Royal Audit Authority (RAA), which is constituted as an independent

body. The audit shall be carried out in compliance with international auditing standards and IFAD's Guidelines on Project Audits. Audit reports will be furnished to IFAD within six months of the end of the relevant fiscal year.

33. Following IFAD Guidelines on Project Audits, the auditors shall provide three (3) separate opinions on the financial statements, SOEs and DA. In particular, the Auditors shall review withdrawals from the DA and Programme Accounts at various levels on the basis of SOEs, and provide an independent opinion on whether such expenditures fully comply with expenditures eligible for IFAD disbursements. Auditors shall also review the efficiency of the flow of the funds, the Programme's compliance with the Financing Agreement and the delivery of counterpart financing. The management letter shall detail the shortcomings in the Programme's internal controls, procedures and practices, together with appropriate recommendations for improvement.

d) **Conclusion of the assessment**

34. Overall, the assessment concludes that the proposed Financial Management arrangements for the Programme to be managed by the PMO, FCBL and relevant district office under the oversight and guidance of MoAF satisfy IFAD's minimum requirements for a robust and sound financial management with a mitigated risk level assessed as low medium. The findings of the assessment are used to prepare this Appendix are summarized in the attachment to this Appendix.

e) **Supervision plan (FM)**

35. In light of the Medium residual Financial Management risk, in the first two years of implementation the supervision plan of the Programme will comprise at least two on-site visits that will involve *inter alia* visits to a representative sample of implementing entities. The supervision process will be complemented by desk review of progress and financial reports, the programme's annual financial statements, internal audit reports, and annual audits.

Appendix 8: Procurement

1. Country Level Procurement Framework

1. The legislative and regulatory framework for public procurement in Bhutan has undergone significant positive changes over the years. As per Section 104 of the Public Finance Act, 2007 Ministry of Finance, Royal Government of Bhutan has framed Procurement Rules and Regulations in 2009 which was updated in 2012 and revised in June 2014. The Procurement Rules and Regulations (PRR) thus framed apply to all Government agencies including Armed Forces except when the Government grants exemption from application of these rules in view of the basic security interests of the state or when the Government grants exemption to the application of these rules for execution of a programme funded by external assistance, and provides for adherence of some specific procurement procedure under the relevant financing agreement. Government Corporations wholly or partly owned by the Royal Government, may adopt separate rules and regulations for the management of their procurements, provided such rules are within the broad principles of RGOB Procurement Rules and Regulations and are approved by their respective Boards of Directors.

2. The PRR provide a clear and comprehensive basis for sound and efficient public procurement and offers the foundation for a national procurement system broadly in line with international good practice. In line with the requirements of the PRR, a set of Standard Bidding Documents (SBDs) for procurement of goods and works, and Standard Request for Proposals (SRFP) for consultancy services has been issued. The SBDs have a wide coverage and are largely modelled based on international standards, and as such constitute a significant step forward.

3. Ministry of Finance has established Public Procurement Policy Division to facilitate policy and professional development in the field of procurement. Though the PPPD has been established for the oversight of policy related to public procurement, it is still under the administrative control of Ministry of Finance and not an independent body.

4. The World Bank carried out an assessment of national procurement systems the findings of which are included as Annex in Bhutan Public Financial Management Accountability Assessment (June 2010). The main findings relevant to IFAD financing are summarised below:

(a) Procurement planning: The legal and regulatory framework in Bhutan presently does not include any requirement for preparation of procurement plans. In practice, procurement planning is often non-existent. In effect, procurement officers are often only informed about specific user needs, once these are imminent, resulting in delays and emergency procurements using non-preferred procurement methods.
(b) Procurement skills and competencies in procuring agencies: While most government ministries have dedicated procurement officers, procurements in smaller procuring agencies are carried out by ad hoc by staff in non-procurement job functions, which more often than not lack the knowledge to undertake the activity.
(c) Contract administration: Contract administration remains a major challenge. Specifically, supervision of civil works is mainly carried out by government supervisors and inspectors, who often have to manage several civil works supervisions simultaneously, with limited attention to detail as a consequence. At the same time, the thoroughness of quality control of goods varies, due to the fact that quality control is in practice carried out by officers of the procuring agency, which often lack the necessary skills.

5. The World Bank provided an Institutional Development Grant to strengthen the PPPD for creation of centre of excellence within the Government and also build the capacity of the PPPD staff. Through the Grant, the PPPD staff were widely exposed to public procurement developments and an e-procurement solution was developed and hosted in the PPPD website.

2. Key lessons on procurement in MAGIP

6. Under MAGIP, the procurement of goods, works and consultancy services were to follow IFAD Procurement Guidelines. However, in practice, MAGIP followed RGOB Procurement Rules and Regulations, consistent with IFAD Procurement Guidelines. The implementation was mainly through dzongkhags and other Government agencies like DAMC and RAMCO. Major procurement activities were construction/renovation of farm roads, water supply systems, vehicles and office equipment and

other goods. Goods were procured either as direct contracting (vehicles) or through rate contract quotations and local shopping. In the dzongkhags, the procurement of works and goods were carried out by the subject matter managers with the support of the accountant. As each of the dzongkhags has carried out procurement, most of the times, the price was not uniform for the same type of goods. As the dzongkhag staff has to manage different activities, close monitoring of civil works was an issue. There were gaps in consolidated contract management and timely reporting of physical achievements. There were no consultancy services procurement by the Dzongkhags and even at PCU there were very few consultancy service procurement. IFAD prior review thresholds were established for contracts valued above USD 50 000 equivalent for goods and equipment, USD 200 000 equivalent for works and USD 30 000 equivalent for consultancy services.

4. Procurement assessment of Food Corporation of Bhutan Ltd.

7. Food Corporation of Bhutan Ltd. (FCBL) through its Marketing Division will implement Component 2 of CARLEP in coordination with the PMO, CARLEP. The Food Corporation of Bhutan was established under a Royal Charter in 1974 and until 1992, it functioned as a government department. In early 1990s, FCBL was accorded functional and administrative autonomy. Subsequently, FCBL was registered under Companies Act, 2000. A procurement capacity assessment of FCBL was carried out during Design Completion. FCBL has its own Procurement Rules and Regulations, modelled on the RGOB PRR. The difference between the two is enhanced thresholds for different procurement methods and flexibility in direct contracting. The procurement is managed by the Human Resources and Administration Department and the Real Estates Department (for works). There are two levels of Tender Award Committees, Departmental Tender Award Committee and Management Level Tender Award Committee with different thresholds for approval of award. In addition, the decisions/recommendations of these committees are subject to the approval of CEO, FCBL. For each procurement there are three committees, Tender Opening Committee, Tender Evaluation Committee and Tender Award Committee. All the members of the Committees have to sign a declaration on conflict of interest. The code of ethics and values are covered under the Service Rules of the Company. A formal non-judicial mechanism dealing with the Complaints/protests exists in the form of a Committee headed by CEO and a Head of the Department. The assets and inventory are managed as per the accounting policy of the Corporation. The contract performance is monitored.

8. The major procurement actions done by FCBL, however, relate to goods procurement (rice, oil, consumer goods) and works (godowns, market yard, etc.). It has never done any consultancy procurement so far. Also FCBL does not have experience of implementing any activity with external assistance. When FCB was a government department, it had received UN funding in 1980s to construct godowns.

9. This poses both a challenge and an opportunity for FCBL. The challenge is, FCBL lack the exposure of implementing a programme with external assistance (loan and grant) with the continuous monitoring and review of performance through visits and Missions by the external agency. However, this would also be an opportunity for FCBL to strengthen its social mandate through development of strategy, business plans and capacity building of its staff on value chain development and market development.

5. Other initiatives in the Country

10. In Bhutan, Green Public Procurement initiative is being implemented with EU assistance. The programme aims to implement GPP practices in Bhutan, enabling the procurement cycle to be used as a driver for green growth. It seeks to (i) increase the positive environmental, social and economic multipliers of public consumption; (ii) provide an incentive for sustainable production among suppliers, particularly SMEs; and (iii) build demand-side and supply-side capacity to write and respond to GPP tenders. In CARLEP, climate resilient production systems and market development is one of the major goals. Though there are challenges in complying with the green procurement, the implementing agencies could contribute to the green initiative by adopting energy-efficient and rain-water saving technologies in the design and construction and renovation of marketing infrastructure and procuring environment friendly goods and equipment. CARLEP may also benefit from the capacity building activities of the GPP-Bhutan initiative.

6. Procurement arrangements under CARLEP

11. In line with the provisions of the General Conditions, procurement of goods, works and services financed by IFAD under Component 1 and 3 shall be carried out in accordance with the provisions of the Royal Government of Bhutan notified Procurement Rules and Regulations (revised June 2014) and under Component 2 shall be carried out in accordance with the provisions of FCBL Procurement Rules and Regulations, to the extent such are consistent with the IFAD Procurement Guidelines. Each procurement plan shall identify procedures that must be implemented by the PMO, CARLEP in order to ensure consistency with IFAD Project Procurement Guidelines and Procurement Handbook and as amended from time to time. Notwithstanding the processes contained in the national systems, for procurement under international competitive bidding shall follow the procedures of the World Bank set forth in its procurement guidelines. The programme procurement under CARLEP will use the Standard Bidding Documents and Contracts provided under the PRR for open competitive bidding.

12. The assessment of the RGOB PRR and FCBL PRR revealed that there are significant differences in the threshold limits between the two. It may not be advisable to adopt a common thresholds for either of the implementation partners. Hence it is recommended that each will follow their own PRR for the components they are responsible.

13. An officer from the PMO would be designated as Procurement Officer with additional responsibility. The procurement officer will be responsible for preparation of the consolidated Procurement Plan of CARLEP and coordinate the procurement actions at PMO and at Dzongkhag level. S/he will also provide support to Dzongkhag teams in compliance to PRR, contract management and record maintenance. S/he will report directly to the National Programme Director. The terms of reference for the position will be included in the Programme Implementation Manual. One of the essential qualification for this position could be completion of the Massive Open Online Course (MOOC).

14. In addition, IFAD will also organise procurement training for the CARLEP staff as part of the Start-up Workshop and in such frequency as may be required.

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

16. Procurement will be as per the Consolidated Procurement Plan submitted by PMO, CARLEP and approved by IFAD. PMO, CARLEP will submit a 18-month Procurement Plan immediately after the programme enters into force and in the subsequent programme years submit an annual 12 month Procurement Plan. A draft indicative 18 month procurement plan is included in the Annex for guidance, which may further be revised by PMO, as appropriate and necessary.

17. As provided in appendix I, paragraph 1 of IFAD's Procurement Guidelines, IFAD review of and no objection to the consolidated procurement plan is compulsory and the 18 month procurement plans submitted by the Recipient must include as a minimum:

a) A brief description of each procurement activity to be undertaken during the period and name of the implementing agency responsible for the procurement.
b) The estimate value of each procurement activity;
c) The method of procurement to be adopted for each procurement activity and;
d) The method of review IFAD will undertake for each procurement activity indicating either post review or prior review.

18. Any changes and amendments to the procurement plan shall be subject to IFAD's No Objection

7. Procurement Methods and Thresholds

19. The procurement thresholds for goods, works and consultancy services will be as per the RGOB Procurement Rules and Regulations (Clause 4.1.1) and FCBL Procurement Rules and Regulations (Clause 5.2.1) and as per subsequent amendments.

20. **Consultancy and Services**. Consulting service will include programme management technical assistance, implementation support technical assistance for different components, conducting studies, mobilisation/establishment of community groups, technical training and strengthening of community groups, and monitoring and evaluation. Services would be provided by consulting firms and individual consultants.

i) Each contract for the selection of consultancy services estimated to cost USD 30,000 equivalent or above, shall be selected following any one of the selection methods listed below:

- Quality and Cost Based Selection
- Fixed Budget Selection
- Least Cost Selection

ii) Each contract for the selection of consultancy services estimated to cost below USD 30,000 equivalent, shall be selected following any one of the selection methods listed below:

- Quality and Cost Based Selection
- Fixed Budget Selection
- Least Cost Selection
- Selection Based on Consultants Qualification
- Single Source Selection

21. **Selection of individual consultants**. Individual consultants are selected on the basis of their qualifications for the assignment of at least three candidates among those who have expressed interest in the assignment or have been approached directly by PMO or Implementing Agencies. Individuals employed by the PMO and Implementing agencies shall meet all relevant qualifications and shall be fully capable of carrying out the assignment. Capability is judged on the basis of academic background, experience and, as appropriate, knowledge of the local conditions, such as local language, culture, administrative system, and government organization.

22. Consultancy Services and Individuals consultants may be selected on a sole-source basis with due justification in exceptional cases such as: (a) tasks that are a continuation of previous work that the consultant has carried out and for which the consultant was selected competitively; (b) assignments lasting less than six months; (c) emergency situations resulting from natural disasters; and (d) when the individual consultant or consulting firm is the only consultant qualified for the assignment.

8. Review of Procurement Decisions by IFAD

23. IFAD will undertake to review the provisions for the procurement of good, works and services to ensure that the procurement process is carried out in conformity with its Procurement Guidelines. For the purposes of IFAD's Procurement Guidelines, the following procurement decisions shall be subject to prior review by the Fund for the award of any contract for goods, equipment, materials, works, consultancy and services under FARM.

i) Procurement of goods, materials and works

- Prequalification documents and shortlist when prequalification is undertaken;
- Bid Documents for goods, materials and works;
- Evaluation Report and Recommendation for Award; and
- Contract and amendments.

ii) Procurement of consultancy services and services

- Prequalification documents and shortlist when prequalification is undertaken;
- Request for Proposal;
- Technical evaluation report;
- Combined (technical and financial) evaluation report and the recommendation for award; and
- Contract and amendments.

24. Prior or Post Review. Except as IFAD may otherwise agree, the prior or post which applies to various procurement of good, works and consultant recruitments shall be defined as follows:

Procurement Method	Type of Review Prior or Post	Comments
Procurement of Goods and Works		
ICB Works and Goods	Prior	All Contracts
NCB Works	Prior	Except procurement valued below USD 200,000
NCB Goods	Prior	Except procurement valued below USD 50,000
Shopping for works (quotations)	Post	
Shopping for goods (quotations)	Post	
Direct Works	Prior	Except procurement valued below USD 2,000
Direct Goods	Prior	Except procurement valued below USD 2,000
Recruitment of Consulting Firms		
Quality and Cost-Based Selection (QCBS)	Prior	Except procurement valued below USD 30,000
Fixed Budged Selection (FBS)	Prior	Except procurement valued below USD 30,000
Least Cost Selection (LCS)	Prior	Except procurement valued below USD 30,000
Selection Based of Consultants Qualification	Prior	Except procurement valued below USD 30,000
Sole Source Selection (SSS)	Prior	All contracts
Recruitment of Individual Consultants		
Individual Consultants	Prior	Except procurement valued below USD 20,000

25. IFAD may establish its prior review requirement for procurement below the above thresholds during its review and approval of the Procurement Plan.

26. **Contract Management** All contracts for procurement of goods, works and consultancy services, with or without IFAD prior review, should be listed in the Register of Contracts with the dates of approval. The Register of Contracts will facilitate in effective contract management including review of the performance of the suppliers and the consultancy firms. The contract monitoring form thus maintained will be submitted to IFAD in such frequency indicated in the Letter to the Borrower.

27. **Assets Management** All assets (goods/works) procured through either IFAD Loan or Grant will be properly tagged and identified. In case of works, the location and site specifications will also be included. All assets procured under programme funds will be physically verified at least on an annual basis by constituting a committee. The disposal of the assets should be promptly recorded. At the end of the programme, the assets will be transferred/disposed on the directions of the Ministry of Agriculture and Forestry.

First 18 Month Procurement Plan for CARLEP

18 month procurement plan for Component 1

	Unit	2015	2016	Total	Cost (US$ '000)	Base Cost 2015	Base Cost 2016	Base Cost Total	Summary Divisions Component	Summary Divisions Expenditure Account	Other Accounts Disb. Acct.	Other Accounts Fin. Rule	Other Accounts Proc. Acct.	Proc. Method	IFAD Post or Prior F	Notes
I. Investment Costs																
A. Output 1.1: Increased Production Resilience, Diversification and Innovation																
2. Innovation through permaculture and biogas																
a. Phase 1																
Farm level rainwater harvesting infrastucture	unit	-	12	12	0,2	-	2.4	2.4	COMP1	WORKS_EA	WORKS_DA	ASAP (100%)	WORKS_PA	Limited Enquiry (Shopping)	Post Review	
Seed and seedlings	unit	-	12	12	0,2	-	2.4	2.4	COMP1	GOODS_SERV_EA	GOODS_SERV_DA	ASAP (100%)	GOODS_SERV_PA	Limited Enquiry (Shopping)	Post Review	
Tools for permaculture	unit	-	12	12	0,1	-	1.2	1.2	COMP1	EQUPMT_MAT_EA	EQUPMT_MAT_DA	ASAP (100%)	EQUPMT_MAT_PA	Limited Enquiry (Shopping)	Post Review	
Biogas digester	unit	-	12	12	0,5	-	6.0	6.0	COMP1	GOODS_SERV_EA	GOODS_SERV_DA	ASAP (100%)	GOODS_SERV_PA	Limited Enquiry (Shopping)	Post Review	
TA biogas	unit	-	1	1	6	-	6.0	6.0	COMP1	CONSULT_EA	CONSULT_DA	ASAP (100%)	CONSULT_PA	SIC	Post Review	
3. Innovation through ICTs																
Hand-held tablets, software and soil test kits	unit	-	100	100	0,3	-	30.0	30.0	COMP1	EQUPMT_MAT_EA	EQUPMT_MAT_DA	IFAD_GRANT (100%)	EQUPMT_MAT_PA	Limited Enquiry (Shopping) / Direct Procurement	Prior Review	1
Training on tablet-based soil monitoring technology	lps	-	2	2	7	-	14.0	14.0	COMP1	TRAINING_EA	TRAINING_DA	IFAD_GRANT (100%)	TRAINING_PA	SIC	Post Review	
4. Increased outreach of extension services																
a. Strengthening and expansion of the lead farmer model																
Development of training material and field manuals	lps	1	-	1	4	4.0	-	4.0	COMP1	CONSULT_EA	CONSULT_DA	ASAP (100%)	CONSULT_PA	SIC	Post Review	
b. Demonstration inputs and equipment for lead farmers																
Production inputs	lps	1	1	2	9,875	9.9	9.9	19.8	COMP1	GOODS_SERV_EA	GOODS_SERV_DA	IFAD_LOAN1 (100%)	GOODS_SERV_PA	Limited Enquiry (Shopping)	Post Review	
Poly-tunnels	unit	-	5	5	0,7	-	3.5	3.5	COMP1	EQUPMT_MAT_EA	EQUPMT_MAT_DA	IFAD_LOAN1 (100%)	EQUPMT_MAT_PA	Limited Enquiry (Shopping)	Post Review	
b. Irrigation infrastructure																
Renovation of irrigation infrastructure	acre	-	284	284	0,764	-	217.0	217.0	COMP1	WORKS_EA	WORKS_DA	IFAD_LOAN1 (100%)	WORKS_PA	Open Tender / Limited Tender (NCB)	Prior Review	2
Pilot irrigation schemes	acre	-	25	25	3,262	-	81.6	81.6	COMP1	WORKS_EA	WORKS_DA	IFAD_LOAN1 (100%)	WORKS_PA	Open Tender / Limited Tender (NCB)	Post Review	
7. Technical assistance (C1)																
National TA	pers-month	3	3	6	2,5	7.5	7.5	15.0	COMP1	CONSULT_EA	CONSULT_DA	ASAP (100%)	CONSULT_PA	SIC	Post Review	3
S 1. Development of training and extension material	lps	1	1	2	20	20.0	20.0	40.0	COMP1	CONSULT_EA	CONSULT_DA	ASAP (100%)	CONSULT_PA	SIC		
B. 2. Capacity development of vegetable production groups																
3. Vegetable seed research and production																
Developing packages of practice (extension material)	lps	1	-	1	8	8.0	-	8.0	COMP1	CONSULT_EA	CONSULT_DA	ASAP (100%)	CONSULT_PA	SIC	Post Review	
Equipment and input support vegetable seed growers	set	-	30	30	0,672	-	20.2	20.2	COMP1	GOODS_SERV_EA	GOODS_SERV_DA	BEN (16%); IFAD_LOAN1 (84%)	GOODS_SERV_PA	Limited Enquiry (Shopping)	Post Review	
Seed processing units vegetable seed farm NSC	unit	-	1	1	55	-	55.0	55.0	COMP1	EQUPMT_MAT_EA	EQUPMT_MAT_DA	IFAD_LOAN1 (100%)	EQUPMT_MAT_PA	Limited Enquiry (Shopping)	Post Review	
Glasshouse construction vegetable seed farms NSC	unit	-	2	2	6	-	12.0	12.0	COMP1	WORKS_EA	WORKS_DA	IFAD_LOAN1 (100%)	WORKS_PA	Limited Enquiry (Shopping)	Post Review	
4. Provision of vegetable production inputs																
Provision of resilient vegetable seeds	lps	1	1	2	25	25.0	25.0	50.0	COMP1	GOODS_SERV_EA	GOODS_SERV_DA	IFAD_LOAN1 (100%)	GOODS_SERV_PA	Limited Enquiry (Shopping)	Post Review	
Water efficient irrigation /i	lps	-	200	200	0,3	-	60.0	60.0	COMP1	EQUPMT_MAT_EA	EQUPMT_MAT_DA	IFAD_LOAN1 (100%)	EQUPMT_MAT_PA	Open Tender / Limited Tender (NCB)/Limited Tender (Shopping)	Prior Review	1
Water efficient irrigation (PBAS2)	lps	-	-	-	0,3	-	-	-	COMP1	EQUPMT_MAT_EA	EQUPMT_MAT_DA	IFAD_LOAN2 (100%)	EQUPMT_MAT_PA	Limited Enquiry (Shopping)	Post Review	
Small post-harvest equipments	lps	-	70	70	2	-	140.0	140.0	COMP1	EQUPMT_MAT_EA	EQUPMT_MAT_DA	IFAD_LOAN1 (80%); BEN (20%)	EQUPMT_MAT_PA	Open Tender / Limited Tender (NCB)/Limited Tender (Shopping)	Prior Review	1
S 1. Development of training and extension material	lps	1	1	2	20	20.0	20.0	40.0	COMP1	CONSULT_EA	CONSULT_DA	IFAD_GRANT (100%)	CONSULT_PA	SIC		
3. Improved service outreach through CAHWs and lead farmers																
a. CAHW model																
CAHW model development and packaging	lps	-	1	1	15	-	15.0	15.0	COMP1	CONSULT_EA	CONSULT_DA	ASAP (100%)	CONSULT_PA	SIC	Post Review	
4. Support to fodder and feed production																
Perenial fodder in fallow and marginal land /k	lps	-	77	77	0,11	-	8.5	8.5	COMP1	GOODS_SERV_EA	GOODS_SERV_DA	IFAD_LOAN1 (100%)	GOODS_SERV_PA	Procedure to be defined in PIM	Post Review	
Winter fodder crop demonstration and seed supply	group	5	20	25	0,25	1.3	5.0	6.3	COMP1	GOODS_SERV_EA	GOODS_SERV_DA	IFAD_LOAN1 (100%)	GOODS_SERV_PA	Procedure to be defined in PIM	Post Review	
Chopping machine (for dairy groups) /l	unit	-	6	6	2	-	12.0	12.0	COMP1	EQUPMT_MAT_EA	EQUPMT_MAT_DA	IFAD_LOAN1 (80%); BEN (20%)	EQUPMT_MAT_PA	Limited Enquiry (Shopping)	Post Review	
5. Provision of dairy production inputs																
Milk cans	lps	-	1	1	8,5	-	8.5	8.5	COMP1	EQUPMT_MAT_EA	EQUPMT_MAT_DA	IFAD_LOAN1 (100%)	EQUPMT_MAT_PA	Limited Enquiry (Shopping)	Post Review	
Cross-breed cattle /n	head	-	200	200	0,483	-	96.6	96.6	COMP1	GOODS_SERV_EA	GOODS_SERV_DA	IFAD_LOAN1 (30%); BEN (10%)	GOODS_SERV_PA	Limited Enquiry (Shopping)	Post Review	
Shed construction	unit	-	200	200	0,125	-	25.0	25.0	COMP1	WORKS_EA	WORKS_DA	IFAD_LOAN1 (90%); BEN (10%)	WORKS_PA	Limited Enquiry (Shopping)	Post Review	
Equipment dairy production groups /o	set	-	6	6	2	-	12.0	12.0	COMP1	EQUPMT_MAT_EA	EQUPMT_MAT_DA	IFAD_LOAN1 (100%)	EQUPMT_MAT_PA	Limited Enquiry (Shopping)	Post Review	
Refridgerators for schools	unit	-	25	25	1	-	25.0	25.0	COMP1	EQUPMT_MAT_EA	EQUPMT_MAT_DA	IFAD_LOAN1 (100%)	EQUPMT_MAT_PA	Limited Enquiry (Shopping)	Post Review	

Notes
1). Project to clearly identify and define procurement packages and values in a revised PP
2). Prior Review is limited to the 1st Open Tender or Limited Tender in each Dzongkhag
3). SIC = Selection of Individual consultant: Combine work of consultant to develop traning and extention materials

18 month procurement plan for Component 2

	Unit	2015	2016	Total	Unit Cost (US$ '000)	Base Cost 2015	Base Cost 2016	Base Cost Total	Summary Divisions: Component	Summary Divisions: Expenditure Account	Other Accounts: Disb. Acct.	Other Accounts: Fin. Rule	Other Accounts: Proc. Acct.	Other Accounts: Proc. Method	IFAD Post or Prior F	Notes
I. Investment Costs																
A. Output 2.1: Resilient Vegetable and Dairy Value Chains developed																
1. Strengthening of FCBL for value chain development																
Design of organizational strategy, business plan and capacity development plan	lps	1	-	1	50	50.0	-	50.0	COMP2	CONSULT_EA	CONSULT_DA	IFAD_LOAN1 (100%)	CONSULT_PA	Open Tender (NCB)/QCBS		
2. Vegetable value-chain design and business plan	lps	1	1	2	30	30.0	30.0	60.0	COMP2	CONSULT_EA	CONSULT_DA	IFAD_LOAN1 (100%)	CONSULT_PA	Open Tender (NCB)/QCBS	Prior Review	1
3. Dairy value-chain design and business plan	lps	1	1	2	30	30.0	30.0	60.0	COMP2	CONSULT_EA	CONSULT_DA	IFAD_LOAN1 (100%)	CONSULT_PA	Open Tender (NCB)/QCBS		
5. Technical assistance (C2)																
National/External TA	lps	12	12	24	7,5	90.0	90.0	540.0	COMP2	CONSULT_EA	CONSULT_DA	ASAP (100%)	CONSULT_PA	SIC	Prior Review	2
B. Output 2.2: Agricultural Commercialization and Enterprise Development strengthened																
1. Support to agriculture enterprise development																
a. Support to marketing groups																
Strengthening of existing marketing and cooperative capacity development packages	lps	-	1	1	10	-	10.0	10.0	COMP2	CONSULT_EA	CONSULT_DA	GOVT	CONSULT_PA	SIC	Post Review	
Development of training material for dairy processing /a	lps	-	1	1	10	-	10.0	10.0	COMP2	CONSULT_EA	CONSULT_DA	IFAD_LOAN1 (100%)	CONSULT_PA	SIC	Post Review	
b. Training of marketing groups																
Social inclusion fund	lps					-	50.0	50.0	COMP2	FU	FU_DA	IFAD_GRANT (100%)	CONSULT_PA	Procedure to be defined in PIM	Post Review	
c. Support to entrepreneurs																
Development of training packages for agriculture entrepreneurs	lps	-	1	1	10	-	10.0	10.0	COMP2	CONSULT_EA	CONSULT_DA	IFAD_LOAN1 (100%)	CONSULT_PA	SIC	Post Review	
Entrepreneur identification and engagement process	lps	-	1	1	10	-	10.0	10.0	COMP2	CONSULT_EA	CONSULT_DA	IFAD_GRANT (100%)	CONSULT_PA	SIC	Post Review	
2. Multi-stakeholder platforms and network development																
a. Multi-stakeholder platforms and network development	lps	-	1	1	8	-	8.0	8.0	COMP2	CONSULT_EA	CONSULT_DA	IFAD_LOAN1 (100%)	CONSULT_PA	SIC	Post Review	
C. Output 2.3: Community-driven Market Infrastructure developed																
1. Planning and design																
Business plan-based planning of market infrastructure /b	lps	-	1	1	30	-	30.0	30.0	COMP2	CONSULT_EA	CONSULT_DA	IFAD_LOAN1 (100%)	CONSULT_PA	SIC	Post Review	
Development of business plans for 3 windows shops	lps	-	1	1	10	-	10.0	10.0	COMP2	CONSULT_EA	CONSULT_DA	IFAD_GRANT (100%)	CONSULT_PA	SIC	Post Review	
2. Vegetable value-chain post-harvest and market infrastructure and equipment																
Value-chain equipments /c	lps	-	1	1	40	-	40.0	40.0	COMP2	EQUPMT_MAT_EA	EQUPMT_MAT_DA	IFAD_LOAN1 (100%)	EQUPMT_MAT_PA	Limited Tender (NCB) / Limited Enquiry (Shopping)	Post Review	3
Value-chain infrastructure /e	lps	-	1	1	40	-	40.0	40.0	COMP2	WORKS_EA	WORKS_DA	IFAD_LOAN1 (100%)	WORKS_PA	Limited Tender (NCB) / Limited Enquiry (Shopping)	Post Review	3
3. Dairy value-chain post-harvest and market infrastructure and equipment																
Construction of milk collection sheds	unit	-	10	10	1,8	-	18.0	18.0	COMP2	WORKS_EA	WORKS_DA	IFAD_LOAN1 (100%)	WORKS_PA	Limited Enquiry (Shopping)		
Equipment of milk collection sheds	unit	-	10	10	0,065	-	0.7	0.7	COMP2	EQUPMT_MAT_EA	EQUPMT_MAT_DA	IFAD_LOAN1 (100%)	EQUPMT_MAT_PA	Limited Enquiry (Shopping)		
Construction of milk collection centers with chilling facilities	unit	-	8	8	12	-	96.0	96.0	COMP2	WORKS_EA	WORKS_DA	IFAD_LOAN1 (100%)	WORKS_PA	Limited Enquiry (Shopping)		
Milk chillers	unit	-	8	8	7,5	-	60.0	60.0	COMP2	EQUPMT_MAT_EA	EQUPMT_MAT_DA	IFAD_LOAN1 (100%)	EQUPMT_MAT_PA	Limited Tender (NCB)		
Milk quality test equipment	unit	-	8	8	0,145	-	1.2	1.2	COMP2	EQUPMT_MAT_EA	EQUPMT_MAT_DA	IFAD_LOAN1 (100%)	EQUPMT_MAT_PA	Limited Tender (NCB)	Prior Review	4
Milk analyzer	unit	-	8	8	0,82	-	6.6	6.6	COMP2	EQUPMT_MAT_EA	EQUPMT_MAT_DA	IFAD_LOAN1 (100%)	EQUPMT_MAT_PA	Limited Tender (NCB)		
Milk chilling van	unit	-	2	2	22	-	44.0	44.0	COMP2	EQUPMT_MAT_EA	EQUPMT_MAT_DA	IFAD_LOAN1 (100%)	EQUPMT_MAT_PA	Limited Tender (NCB)	Prior Review	

1). Procurement of the consultancy service (TA) should be doen through a siggle tender process
2). SIC = Selection of Individual consultant. CV and TOR subject to Prior Review
3). Project to clearly identify and define procurement packages and values in a revised PP
4). Milk Chillers, Milk quality Test Equipment and Milk Analyzer to be procured in a single tender package

18 month procurement plan for Component 3

	Unit	2015	2016	Total	Unit Cost (US$ '000)	Base Cost 2015	Base Cost 2016	Base Cost Total	Summary Divisions: Component	Summary Divisions: Expenditure Account	Other Accounts: Disb. Acct.	Other Accounts: Fin. Rule	Other Accounts: Proc. Acct.	Other Accounts: Proc. Method	IFAD Post or Prior F	Notes
I. Investment Costs																
A. Output 3.1: Strengthened value chain and marketing knowledge and communication																
1. Strengthening of the DAMC market information system																
Strengthening of the DAMC market information system	lps	-	1	1	15	-	15.0	15.0	COMP3	CONSULT_EA	CONSULT_DA	IFAD_LOAN1 (100%)	CONSULT_PA	SIC	Prior Review	1
B. Output 3.2: Climate change resilience and value chain development lessons mainstreamed in agricultural policies and sector strategies																
3. Development of a regulatory framework for PPP	lps	-	1.5	2	10	-	15.0	15.0	COMP3	CONSULT_EA	CONSULT_DA	IFAD_GRANT (100%)	CONSULT_PA	SIC	Prior Review	1
4. Technical assistance (C3)																
Natiopnal/International TA	pers-month	2	2	4	12,5	25.0	25.0	50.0	COMP3	CONSULT_EA	CONSULT_DA	ASAP (100%)	CONSULT_PA	SIC	Prior Review	1

1). SIC = Selection of Individual consultant. CV and TOR subject to Prior Review

18 month procurement plan for Component 4

	Unit	2015	2016	Total	Unit Cost (US$ '000)	Base Cost 2015	Base Cost 2016	Base Cost Total	Summary Divisions Component	Expenditure Account	Other Accounts Fin. Rule	Proc. Acct.	Proc. Method	IFAD Post or Prior F	Notes
I. Investment Costs															
A. Project Management Unit															
1. Material and equipment															
Vehicles	unit	2	-	2	30	60.0	-	60.0	COMP4	VEHICLE_EA	IFAD_GRANT (100%)	VEHICLE_PA	Open Tender (NCB)	Prior Review	
Laptops	unit	12	-	12	1	12.0	-	12.0	COMP4	EQUPMT_MAT_EA	IFAD_LOAN1 (100%)	EQUPMT_MAT_PA	Open Tender (NCB)		
Printer	unit	5	-	5	0,6	3.0	-	3.0	COMP4	EQUPMT_MAT_EA	IFAD_LOAN1 (100%)	EQUPMT_MAT_PA	Open Tender (NCB)	Prior Review	1
Scanner	unit	2	-	2	0,6	1.2	-	1.2	COMP4	EQUPMT_MAT_EA	IFAD_LOAN1 (100%)	EQUPMT_MAT_PA	Open Tender (NCB)		
Photocopier heavy duty	unit	2	-	2	2,3	4.6	-	4.6	COMP4	EQUPMT_MAT_EA	IFAD_LOAN1 (100%)	EQUPMT_MAT_PA	Open Tender (NCB)		
Office equipment	set	5	-	5	1,7	8.5	-	8.5	COMP4	EQUPMT_MAT_EA	IFAD_LOAN1 (100%)	EQUPMT_MAT_PA	Limited Tender (NCB)	Post Review	
C. Monitoring and evaluation				-											
Annual outcome surveys	study	-	1	1	10	-	10.0	10.0	COMP4	CONSULT_EA	IFAD_LOAN1 (100%)	CONSULT_PA	SIC	Prior Review	2
D. Knowledge management				-											
Printing and publications	lps	0.5	1	1.5	4	2.0	4.0	6.0	COMP4	GOODS_SERV_EA	IFAD_LOAN1 (100%)	GOODS_SERV_PA	Limited Enquiry (Shopping)	Post Review	

Notes

1). Laptops, Printers, Scanner and Photocopier should be procured in a single tender package
2). SIC = Selection of Individual consultant. CV and TOR subject to Prior Review

Appendix 9: Programme cost & financing

Main assumptions

1. **Programme duration and location.** The Programme duration is seven (7) years starting in 2016. As the Programme yearly calendar is June to June, the Costab includes eight years (6 months of implementation in 2016 and 6 months in 2022). The Programme will be implemented in the six eastern Dzongkhags.

2. **Prices and costs**. Costs have been inputted in US dollars in the COSTAB software. Prices and costs were provided by the MAGIP team as well as the various departments of the Ministry of Agriculture and Forests during the design missions and triangulated based on the data collected during field visits.

3. **Contingencies**. Physical contingencies of 10 percent have been applied for works and of 5 percent for equipment, materials, goods and vehicles. Price contingencies were applied to most of the expenditures.

4. **Inflation**. Inflation has registered many variations from 2009, fluctuating between 5.5 percent for the lower up to 13.5 percent in 2012, mainly driven by food prices. The increase in consumer price is due to various factors including consumption growth and new Government taxes (5 percent additional tax introduced in 2014 on fuel). The Asian Development Bank forecasts an inflation of 10.2 percent for 2014 and 8.5 percent in 2015. This last projection was applied over the 5 years of the Programme. Due to the trade links with India (main trade partner providing 90 percent of the Bhutanese food imports), the Indian macroeconomic indicators have a strong influence on Bhutan indicators. Inflation in India is estimated by ADB to 6 percent for 2013/14 and 5.8 percent is projected for 2015. Foreign inflation over the Programme period has thus been estimated to 5.8 percent. Those projections will have to be revised during the Mid-Term Review mission.

Table 1: Inflation rates (local and foreign)

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Local inflation[1]	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%
Foreign inflation[2]	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%

[1] Source: 2009-13 Royal Monetary Authority; 2014-15 forecasts ADB

[2] Source: 2009-13 Reserve Bank of India; 2014-15 forecasts ADB

5. **Exchange rate**. The exchange rate as of July 2014 has been used to convert from USD dollars to BTN (BTN 55/USD). The foreign exchange share was included for most of the goods, material and equipment imported to Bhutan. Similarly to the inflation, the projected exchange rate will be adjusted during the Mid-Term Review mission.

6. **Taxes and duties**. Taxes of 10 percent have been applied to civil works, equipment, material, vehicles, goods and operating costs and 5 percent for trainings. No taxes were included for consultancies and workshops.

Programme costs

7. **Total Programme cost**. The total Programme cost is estimated to USD 31.5 million over a period of seven years, including contingencies. The total base costs are USD 24.2 million and physical and price contingencies account for USD 1.8 million and USD 5.5 million, respectively (8% and 23% of total base costs). Investment costs are estimated at USD 19.0 million (79% of total cost) while recurrent costs are estimated at USD 5.0 million (21% of total cost). The budget will be revised during the Mid Term review when the 2nd PBAS will kick in.

Table 2: Programme cost summary by component (in USD'000 and BTN million)

Kingdom of Bhutan
Comprehensive Market Focused Agriculture and Rural Livelihood Enhancement Project
Components Project Cost Summary

	(Local Million)			(US$ '000)			% Foreign Exchange	% Total Base Costs
	Local	Foreign	Total	Local	Foreign	Total		
1. Market-led agricultural production	575.1	109.7	684.9	10 457.2	1 994.8	12 452.1	16	52
2. Value chain development and marketing	492.0	37.0	529.0	8 945.8	672.6	9 618.4	7	40
3. Institutional Support and Policy Development	19.0	2.9	21.9	345.4	53.0	398.5	13	2
4. Project management, coordination and M&E	81.0	11.8	92.8	1 472.8	214.9	1 687.7	13	7
Total BASELINE COSTS	1 167.2	161.4	1 328.6	21 221.3	2 935.3	24 156.7	12	100
Physical Contingencies	84.5	17.7	102.2	1 536.8	321.1	1 857.9	17	8
Price Contingencies	255.9	48.8	304.7	4 653.5	886.7	5 540.2	16	23
Total PROJECT COSTS	1 507.6	227.9	1 735.5	27 411.6	4 143.2	31 554.7	13	131

8. **Programme cost by expenditure account**. The expenditure accounts related to "equipment and materials", "works" and "trainings" are the most important with 15 percent, 19 percent and 26 percent of the total base costs respectively. Expenditures related to "goods, services and inputs" and "consultancies" represent 7 and (percent of the base costs. The expenditure account "consultancies" includes studies and technical assistance both national and international. The account "workshops" and "vehicle" are marginal. "Salaries and allowances" and "operating costs" represents 17 percent and 5 percent of the costs but it includes FCBL's own recurrent costs. Most of the training and consultancies expenditures are financed through the IFAD and ASAP grants as well as the Government's budget. Trainings only accounts for 6 percent of the loans.

Table 3: Expenditure account by source of financing (in USD'000)

Kingdom of Bhutan
Comprehensive Market Focused Agriculture and Rural Livelihood Enhancement Project
Expenditure Accounts by Financiers
(US$ '000)

	The Government		IFAD loan1		IFAD loan2		IFAD grant		ASAP grant		Beneficiaries		FCBL		Total			Local (Excl.	Duties &
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	For. Exch.	Taxes)	Taxes
I. Investment Costs																			
A. Works	580.2	10.0	2 952.1	50.9	2 046.0	35.3	-	-	185.2	3.2	38.6	0.7	-	-	5 802.1	18.4	995.7	4 226.2	580.2
B. Equipment and materials	675.1	10.0	2 298.5	34.0	2 587.6	38.3	204.4	3.0	90.2	1.3	432.7	6.4	462.3	6.8	6 750.7	21.4	1 765.8	4 309.9	675.1
C. Vehicles	7.3	10.0	-	-	-	-	65.8	90.0	-	-	-	-	-	-	73.1	0.2	57.7	8.1	7.3
D. Goods, services and inputs	1 241.7	34.8	826.4	23.2	727.3	20.4	47.1	1.3	533.4	15.0	187.5	5.3	-	-	3 563.4	11.3	927.3	2 279.7	356.3
E. Consultancies	13.2	0.5	761.4	28.7	206.8	7.8	260.3	9.8	1 413.9	53.2	-	-	-	-	2 655.6	8.4	225.6	2 430.0	-
F. Workshops	0.0	-	192.6	37.1	190.5	36.7	120.7	23.3	14.9	2.9	-	-	-	-	518.5	1.6	43.4	475.2	-
G. Trainings	2 238.5	34.7	969.9	15.0	238.3	3.7	215.9	3.3	2 785.0	43.2	-	-	-	-	6 447.6	20.4	-	6 125.3	322.4
H. Fund	-	-	272.7	83.3	-	-	54.5	16.7	-	-	-	-	-	-	327.3	1.0	-	327.3	-
Total Investment Costs	4 756.0	18.2	8 273.4	31.7	5 996.6	22.9	968.7	3.7	5 022.6	19.2	658.8	2.5	462.3	1.8	26 138.4	82.8	4 015.5	20 181.6	1 941.3
II. Recurrent Costs																			
A. Operating costs	446.7	29.0	-	-	-	-	-	-	-	-	-	-	1 091.1	71.0	1 537.8	4.9	127.6	1 256.4	153.8
B. Salaries and allow ances	535.8	13.8	-	-	-	-	93.7	2.4	-	-	-	-	3 249.0	83.8	3 878.5	12.3	-	3 878.5	-
Total Recurrent Costs	982.5	18.1	-	-	-	-	93.7	1.7	-	-	-	-	4 340.1	80.1	5 416.3	17.2	127.6	5 134.9	153.8
Total PROJECT COSTS	5 738.5	18.2	8 273.4	26.2	5 996.6	19.0	1 062.4	3.4	5 022.6	15.9	658.8	2.1	4 802.4	15.2	31 554.7	100.0	4 143.2	25 316.5	2 095.1

Financing plan

9. **Programme cost by financier**. The Programme will be financed by: (i) two IFAD loans corresponding to the 1st PBAS of USD 8.25 million (26.2 percent of total Programme costs) and the 2nd PBAS, subject to availability of financing and approval by IFAD's Executive Board, that will kick in in 2019 of around USD6.0 million (19.0 percent of total costs); (ii) an IFAD grant of USD 1.05 million (3.3 percent of total costs); (iii) an ASAP grant of USD 5 million (15.8 percent of total costs); (iv) the contribution of beneficiaries estimated to around USD 0.6 million (2.1 percent of total costs); (v) the contribution of the Government of Bhutan corresponding around USD 5.7 million (18.3 percent of total costs); and (vi) the co-financing of the FCBL representing USD 4.8 million mainly through recurrent costs (15.2 percent of total costs). The Government will finance most of the recurrent costs, taxes and duties as well as recycling training as part of the mandate of the Ministry of Agriculture and Forestry.

Table 4: Financing plan (in USD'000)

Kingdom of Bhutan
Comprehensive Market Focused Agriculture and Rural Livelihood Enhancement Project
Components by Financiers
(US$ '000)

	The Government		IFAD loan1		IFAD loan2		IFAD grant		ASAP grant		Beneficiaries		FCBL		Total			Local (Excl.	Duties &
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	For. Exch.	Taxes)	Taxes
1. Market-led agricultural production	4 196.0	24.2	4 808.7	27.7	4 268.6	24.6	399.8	2.3	3 024.6	17.4	658.8	3.8	-	-	17 356.7	55.0	2 898.7	13 004.1	1 453.8
2. Value chain development and marketing	598.5	5.2	3 150.1	27.2	1 662.3	14.3	173.9	1.5	1 729.1	14.9	-	-	4 281.0	36.9	11 594.9	36.7	900.2	10 168.6	526.1
3. Institutional Support and Policy Development	13.6	2.6	144.0	27.4	65.7	12.5	34.0	6.5	268.9	51.1	-	-	-	-	526.1	1.7	68.9	443.6	13.6
4. Project management, coordination and M&E	930.3	44.8	170.6	8.2	-	-	454.7	21.9	-	-	-	-	521.5	25.1	2 077.1	6.6	275.3	1 700.2	101.6
Total PROJECT COSTS	5 738.5	18.2	8 273.4	26.2	5 996.6	19.0	1 062.4	3.4	5 022.6	15.9	658.8	2.1	4 802.4	15.2	31 554.7	100.0	4 143.2	25 316.5	2 095.1

10. **Programme cost by component**. The Programme cost is divided as follows: (i) 54.9 percent for the Component 1 (USD 17.3 million); (ii) 36.7 percent for the Component 2 (USD 11.6 million); and (iii) 1.7 percent for the Component 3 (USD 0.52 million). The Programme management and monitoring represents 6.7 percent of the total costs (USD 2.1 million).

11. **Programme cost by beneficiary**. Based on the number of targeted households representing around 28,975 HH and 144,875 persons, the Programme cost per beneficiary household is USD 1087.1 or USD 217.4 per person.

Appendix 10: Economic and Financial Analysis

BHUTAN - Commercial Agriculture and Resilient Livelihoods Enhancement Programme (CARLEP)

FINANCIAL ANALYSIS		PRODUCTION				PROCESSING		OTHER	
		Farm modles'net incremental benefits (in '000 of local currency)				Processing and activity models'net incremental benefits (in '000 of local currency)		Enterprise and marketing models'net incremental benefits (in '000 of local currency)	
		Veg 1	Maiz	Paddy	Livestock	Chilling center	Yogurt processing	Marketing	Honey production
	PY1	-133	-377	-311	-198	-2,601	-775	-600	-2,119
	PY2	45	71	165	65	-594	119	160	204
	PY3	54	88	179	80	1,422	1,013	160	329
	PY4	84	138	229	126	1,422	1,013	160	454
	PY5	84	138	229	133	1,422	1,013	160	578
	PY6	84	138	229	133	1,422	1,013	160	578
	PY7	84	138	229	133	1,422	1,013	160	578
	PY8	84	138	229	133	1,422	1,013	160	578
	PY9	84	138	229	133	1,422	1,013	160	578
	PY10	84	138	229	133	1,422	1,013	160	578
	PY11	84	138	229	133	1,422	1,013	160	578
	PY12	84	138	229	133	1,422	1,013	160	578
	PY13	84	138	229	133	1,422	1,013	160	578
	PY14	84	138	229	133	1,422	1,013	160	578
	PY15	84	138	229	133	1,422	1,013	160	578
	PY16	84	138	229	133	1,422	1,013	160	578
	PY17	84	138	229	133	1,422	1,013	160	578
	PY18	84	138	229	133	1,422	1,013	160	578
	PY19	84	138	229	133	1,422	1,013	160	578
	PY20	84	138	229	133	1,422	1,013	160	578
NPV (Local curr.)		227	230	724	358	1,948	309	292	304
NPV (USD)		4.1	4.2	13.2	6.5	35.41	5.6	5.3	5.5
FIRR (@10%)		47%	26%	61%	48%	31%	79%	22%	15%

BENEFICIARIES, ADOPTION RATES AND PHASING

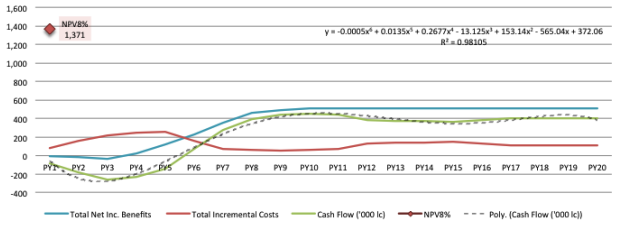
	PY1	PY2	PY3	PY4	PY5	PY6	PY7	Total	Adoption rates
									72%
Vegetable 1	89	179	575	575	575	417	89	2,499	
Adjusted (adoption rate)	*58*	*116*	*374*	*374*	*374*	*271*	*58*	*1,624*	*65%*
Vegetable 2	75	120	438	433	413	320	75	1,875	
Adjusted (adoption rate)	*49*	*78*	*285*	*282*	*269*	*208*	*49*	*1,219*	*65%*
Paddy intens	0	27	41	45	63	27	0	203	
Adjusted (adoption rate)	*0*	*14*	*20*	*23*	*32*	*14*	*0*	*101*	*50%*
Maize intensi	16	32	102	102	102	74	16	441	
Adjusted (adoption rate)	*8*	*16*	*51*	*51*	*51*	*37*	*8*	*221*	*50%*
Commerciali:	0	3	5	5	7	3	0	23	
Adjusted (adoption rate)	*0*	*2*	*4*	*4*	*6*	*2*	*0*	*18*	*80%*
Livestock	27	45	108	108	108	45	9	644	
Adjusted (adoption rate)	*19*	*32*	*76*	*76*	*76*	*32*	*6*	*450*	*70%*
Biogas	0	12	0	200	200	200	200	812	*100%*
Enterprise honey	0	5	19	24	24	24	24	119	
Adjusted (adoption rate)	*0*	*4*	*16*	*20*	*20*	*20*	*20*	*101*	*85%*
Enterprise disc	0	2	8	10	10	10	10	51	
Adjusted (adoption rate)	*0*	*2*	*7*	*9*	*9*	*9*	*9*	*43*	*85%*
Chilling	0	0	8	8	8	0	0	24	
Pocessing 1				1		1		2	
Processing 2				1		1		2	
								6,694	

SENSITIVITY ANALYSIS

	Δ%	Link with the risk matrix	NPV @8% (USD M)
Base scenario			25
Project benefits	-10%	Combination of risks affecting output prices, yields and adoption rates	15
Project benefits	-20%		6
Project costs	10%	Increase of construction material prices	18
Project costs	20%		10
1 year lag in ben.		Risks affecting adoption rates and low implementation capacity	13
2 years lag in ben.			1
Output prices	-10%	Low management & negotiating capacity of farmers groups	13
Output prices	-20%		1
Input prices	10%	Market price fluctuations	22
Input prices	20%		18
Adoption rates	-10%	Extension service outreach is limited, low uptake of good practices, vaccination uptake is low, epidemic diseases	12
Adoption rates	-20%		2
Yields	-10%		4

MAIN ASSUMPTIONS & SHADOW PRICES

Official Exchange rate (OER)	55	Discount rate	12%
Shadow Exchange rate (SER)	52.4	Social Discount rate	8%
Standard Conversion Factor	0.95	Output conversion afctor	1.23
Labour Conversion factor	0.9	Input Conversion factor	0.95



ECONOMIC ANALYSIS

	NET INCREMENTAL BENEFITS					NET INCREMENTAL COSTS				
	Total **Vegetables** Net Incremental Benefits ('000 lc)	Total **Dary** Net Incremental Benefits ('000 lc)	Total **Commercializat ion** Net Incremental Benefits ('000 lc)	Total **Vegetables** Net Incremental Benefits ('000 lc)	***Total Net Inc. Benefits***	Economic Investment Costs ('000 lc)	Economic recurrent Costs ('000 lc)	Economic O&M Costs ('000 lc)	***Total Incremental Costs***	**Cash Flow ('000 lc)**
PY1	-5	2	-2	0	-6	62	18	0	*80*	**-86**
PY2	-6	5	-8	-8	*-16*	131	32	0	*164*	**-180**
PY3	-21	25	-14	-29	*-39*	180	40	0	*220*	**-259**
PY4	6	44	2	-26	*26*	207	43	0	*250*	**-225**
PY5	38	69	18	-9	*117*	210	45	0	*255*	**-138**
PY6	89	76	52	16	*233*	155	0	2	*156*	**76**
PY7	143	81	83	45	*351*	68	0	5	*73*	**278**
PY8	169	84	93	114	*459*	14	40	9	*63*	**397**
PY9	180	82	96	133	*491*	0	40	14	*54*	**437**
PY10	183	81	96	146	*506*	0	40	20	*59*	**447**
PY11	183	81	96	152	*512*	10	40	23	*73*	**439**
PY12	183	81	96	152	*512*	21	86	23	*130*	**382**
PY13	183	81	96	152	*512*	30	86	23	*139*	**373**
PY14	183	81	96	152	*512*	34	86	23	*143*	**369**
PY15	183	81	96	152	*512*	36	86	23	*145*	**367**
PY16	183	81	96	152	*512*	20	86	23	*129*	**383**
PY17	183	81	96	152	*512*	0	86	23	*109*	**403**
PY18	183	81	96	152	*512*	0	86	23	*109*	**403**
PY19	183	81	96	152	*512*	0	86	23	*109*	**403**
PY20	183	81	96	152	*512*	0	86	23	*109*	**403**

NPV@ 8 % ('000 LC)	**1,371**
NPV@ 8 % ('000 USD)	**25**
EIRR	**23%**

PROJECT COSTS AND INDICATORS FOR LOGFRAME

TOTAL PROJECT COSTS	**31.5M / Base 24 M**	2M PMU
Beneficiaries (direct & indirect)	**60.000 people**	7000 HH
Cost per beneficiary	**525 USD x person**	**Adoption rates** **72%**

Components			Outcomes and Indicators	
Cost	17.3 M	Resilient Agricultural	Increased in produced Bio vegetables and **quality**	Increased farm gate price from **15%**
Cost	11.6 M	Intensification	Increased quantity and quality products	Yield & production btw **15 % and 44%** increase
Cost	0.5 M	Policy dialogue	Create business environment	Setting up of **200** agro-processing enterprises

I. Benefits and beneficiaries

Benefits

1. **Direct benefits.** At micro level, the main benefit of the Programme would be an *increase in farmers' income* due to production intensification, farmers' group empowerment and improved access to market opportunities. The per capita annual income from primary production in rural areas was estimated to BTN 27,926 or around USD 1.39 in 2012[174]. In 2012, 12.6 percent of the population was living on less than USD 2 a day[175]. The intensification of the production in a sustainable way, pulled by better marketing opportunities, will enable the farmers to generate more income by increasing the productivity of the land (higher cropping intensity, higher yields), the labour (higher return on family labour) and the water (higher efficiency of water use). All the farm models analysed in the financial analysis shows yearly returns per acre between BTN 145,534 (3 acres of vegetables and maize) and BTN 369,182 (5 acres of paddy and vegetables).

2. At macro level the Programme would contribute to the national food self-sufficiency and thus significantly *reduce the weight of food imports on the current account*. In 2012 the domestic supply after deduction of quantities exported represented 77 percent of the national food requirements. Bhutan has imported more than 32,520 tons of major food commodities in 2011, representing around USD 55.6 million, for a deficit of the trade balance of USD 33 million. The domestic supply covers around 68 percent of the cereal consumption, 80 percent of the vegetable consumption, 98 percent of the fruit consumption and 88 percent of the milk consumption[176]. At dzongkhag level, 4 of the 6 Eastern dzongkhag were in situation of cereal deficit in 2011 for a total deficit of 7,232 MT representing 8 percent of the total national deficit (Mongar, Pemagatshel, S/Jongkhar, Trashigang). The Programme is based on a value-chain approach where the strengthening of the marketing (component 2) would work as a pulling factor to increase the production which would also be supported through sustainable intensification (component 1).

3. **Indirect benefits.** The value chain approach of the Programme will contribute to *rural employment* with new job opportunities especially for the youth in rural area. These opportunities would not necessarily been in the production sector as such but rather in the service sector along the value-chains from processing and packaging to transportation, machinery hiring, etc. The focus on sustainable intensification of the Programme lays the emphasis on the environmental sustainability. The promotion of climate smart and sustainable production techniques in the area of soil fertility management (intercropping, rotation, relay cropping, strip cropping, etc.), water management and resilient seed promotion will thus have substantial *environmental benefits*. Last but not least, the intensification and diversification of the agricultural and livestock production might also have benefits in terms of *household nutrition* through a more diversified diet from their own production and/or access to additional food products through the additional incomes.

4. **Benefits included in the EFA.** The EFA includes all benefits related to agricultural and livestock production as well as dairy processing and marketing. The analysis is based on representative and conservative models intended not to overestimate the benefits. They are based on data collected during the first design mission and validated during field visits in appraisal.

Beneficiaries

5. The EFA includes the beneficiaries listed below. Conservative numbers have been taken and double counting was rigorously checked.

- vegetable farmers in lowlands and highlands belonging to both existing and new production groups: production will be intensified with sustainable practices, efficient water use and improved seeds (vegetable models 1 and 2);
- vegetable farmers also cultivating maize in highlands: same outcomes as previous with additional investments in erosion control techniques and water collection and conservation techniques (maize intensification model);

[174] Bhutan RNR Statistics 2012, RNR Statistical Coordination Section, PPD, March 2013
[175] World Bank database
[176] Bhutan RNR Statistics 2012, RNR Statistical Coordination Section, PPD, March 2013

- dairy farmers highlands belonging to both existing and new production groups and also cultivating vegetables (livestock model); including a model that envisages the installation of Biogas digesters (in 800 farms).
- paddy farmers also cultivating winter vegetables: production will be intensified as for the vegetable farmers with additional investments in erosion control techniques and water collection and conservation techniques (paddy intensification model);
- paddy farmers which will also be involved in the marketing (commercialization and marketing model);
- 170 agricultural enterprises; and
- 24 chilling facilities and 4 dairy processing units.

II. Main assumptions

6. **Data**. The data used for the EFA have been collected during the first design mission in July 2014 and the final design mission in November 2014. The sources of data include: (i) agricultural and livestock statistics published by the MoAF in 2013; (ii) staff from the various departments of the MoAF; (iii) interviews during field visits; and (iv) technical reports and studies from development partners and academics.

7. **Prices**. Market prices in Bhutan do not always reflect the economic prices due to subsidies and other distortions in-country or in India, especially traded products. For example, agricultural inputs benefits from subsidies for transportation and distribution to local markets through the Government's entities. India is also granting subsidies for certain products such as gas or applies subsidies to Indian product reaching Bhutan (fuel, etc.). Two conversion factors were calculated based on import parity (chemical fertilizers – DAP and rock phosphate) and export parity (orange/citrus). Details are available in the attached Excel sheets. The import parity based conversion factor [SCF 0.95] was applied to all chemical inputs as well as the vegetable hybrid seeds which are imported in the country. The export parity price based conversion factor [SCF 1.23] was only applied to the products traded outside the local markets (key vegetables traded with India and grains). The financial prices for the dairy value chain are not diverging substantially from economic prices as the products are mainly for local markets.

8. **WOP and WP**. The analysis is based on incremental benefits corresponding to the difference between a "without Programme" situation and a "with Programme" situation. The assumptions related to both situations are detailed for each model. Conservative hypothesis have been adopted in order not to overestimate the Programme's benefits.

9. **Labour**. The labour cost has been dramatically increasing in the recent years in Bhutan, largely due to high rural-urban migration triggering off labour shortage in the rural areas. The cost of labour ranges from BTN 250 to 500 per day plus 3 to 4 meals. In the Eastern region, the average cost has been estimated to BTN 325 all included. The unemployment rate in Bhutan was estimated to 2.1 percent in 2012 (World Bank database). A conversion of 0.9 has been applied for the economic analysis.

10. **Access to credit**. Due to the constrained access to credit in the country, the programme will finance substantial investments in infrastructure and equipment. In the financial analysis, a credit analysis was conducted for each model based on the interest rate offered by the two local financing institutions (BOIC [4%] and BDBL [12%]) under the same repayment conditions (18 months grace, repayment in 5y).

11. **Auto-consumption**. In each production model the auto-consumption at household level has been valued. It represents the share of the production used for the household's food requirements, for the livestock feed or to renew the seeds for the next agricultural campaign (in the "without Programme" situation most of the farmers use they own seeds).

III. Financial analysis

Crop production benefits

12. **Models.** Several vegetables models of one acre each have been analysed, corresponding to the vegetable with the most potential in terms of farmers' income and market opportunities

(demand)[177]. Household's auto-consumption has been estimated. The Programme intervention would have the following effects at farm level: (i) increase in yields due to improved production, soil fertility, water and pest management techniques, irrigation technologies and high yielding seeds; (ii) second crop in winter through better water management; and (iii) decrease in post-harvest losses due to improved storage (maize and potato) and the improvement of handling techniques and packaging (vegetables). Based on the crop models and relevant cropping patterns, 5 farm models were analyzed (see above).

13. **Financial analysis.** All crop and farm models are profitable with positive net present values. The farm model with the highest net benefit after labour is the paddy intensification model, followed by the maize intensification model. They all show net benefits higher than the rural poverty line of BTN 40,150 and returns on labor are also higher than the rural wage of USD 325 per day.

Table 5: Summary of financial budgets, crop models (in BTN, financial prices)

	Yields (kg/acre)			**Net income after labor** (BTN/acre)			**NPV** (BTN)	**IRR**
	WOP	*WP*[1]	*Increm.*	*WOP*	*WP*[1]	*Increm.*		
Irrigated paddy 1	1,325	1,723	30%	24,462	36,117	48%	55,229	183%
Irrigated paddy 2	1,195	1,490	25%	28,212	29,686	5%	-63,163	-28%
Maize summer	1,350	1,760	30%	11,049	20,784	88%	994	10%
Maize w inter	1,100	1,450	32%	4,549	20,784	357%	1,997	11%
Chilli	780	1,014	30%	9,710	14,389	48%	36,536	37%
Cabbage	2,100	2,860	36%	15,492	33,786	118%	54,263	48%
Beans	1,560	1,872	20%	13,082	22,110	69%	10,114	18%
Potato	2,866	3,753	31%	27,162	42,985	58%	23,325	19%
Radish	2,890	3,800	31%	13,250	29,370	122%	65,346	76%
Onion	1,800	2,160	20%	36,466	46,387	27%	29,672	38%
Tomato	2,200	2,640	20%	26,845	32,380	21%	709	11%

[1]WP at full development

Table 6: Summary of financial budgets, farm models (in BTN, financial prices)

Farm budgets	**Yields** (kg/acre)			**Net benefit after labour**		**Net benefit before labour**		**Return on family labor** (BTN/pers-day)		**Tot production Costs**			**NPV**	**IRR**
	WOP	*WP*[1]	*Increm.*	*WOP*	*WP*[1]	*WOP*	*WP*[1]	*WOP*	*WP*[1]	*Investments*	*Inputs*	*Hired Labour*	*Before fin.*	*Before fin.*
Veg 1	3 111	7 393	138%	30 809	114 430	69 436	191 991	259	479	113 046	50 722	21 905	226 893	47%
Veg 2	1 195	1 490	25%	20 212	90 219	50 592	145 534	216	530	77 657	40 134	18 460	191 738	51%
Maize intensification	1 350	1 760	30%	29 800	167 555	68 427	344 696	251	572	282 419	95 748	38 870	230 359	26%
Paddy intensification	780	1 014	30%	17 052	245 661	43 816	369 182	207	646	310 721	68 397	28 039	723 541	61%
Livestock	1 114	3 065	175%	-82 300	27 821	100 903	209 472	-169	60	135 994	98 929	25 350	357 855	48%
Livestock (bio)	1 114	3 065	175%	-82 300	33 801	100 903	215 452	-169	94	136 474	98 949	25 350	391 054	52%

[1]WP at full development

[2] Returns to labor calculated on payments to members

Dairy production and processing benefits

14. **Models.** A dairy cattle model has been analyzed based on dairy production combined with crop production (2.5 acres or maize and 0.5 acres of vegetables). The "with programme" situation is characterized by intercropping of maize with potatoes and 2 improved breeds with shelter for manure and urine collection (used as crop inputs), fed with supplementary feed and enhanced health and breeding services. Models were also developed for milk chilling centers and dairy processing (yogurt and datshi).

15. **Financial analysis**. The model is financially profitable, even when including the costs of artificial insemination and vaccination provided for free by the Government and when removing the potential profit associated with the sale of the male calves. Return on labour is high despite the time

[177] Brief report on vegetable marketing under vegetable value-chain programme in the East (VVCP-E), DAMC and SNV, 2014
Production potential of off season vegetables in Eastern Bhutan, Institute of Management Studies for SNV, 2011

spent to get the milk to the collection point every day. The chilling centers are profitable after 2 years and the yogurt processing after 1 year whereas the butter and datshi processing is not profitable. This is line with the comments from the field and thus the idea of such processing model was dropped (profitability only at large scale due to the small margin per unit). The internal rate of return for the chilling centers and the yogurt processing are estimated to 31 percent and 79 percent respectively.

Table 7: Summary of financial budgets, farm models (in BTN, financial prices)

	NPV (BTN'000)	IRR
Chilling center	2,526	31%
Yogurt processing	755	79%
Cheese and butter process	-1,347	16%

Table 8: producer's financial needs

Production Models	Y1	Y2	Y3-20	Financing scheme	NPV after financing	Interest	Loan Conditionality
Veg 1	(380)	255 697	411 034	BOIC	3 619 777	4%	18 month grace. Repayment in 5y (20% own; 80% loan)
Veg 2	11 371	130 413	180 330	BOIC	1 608 562	4%	18 month grace. Repayment in 5y (20% own; 80% loan)
Maize intensification	(67 416)	332 839	545 023	BDBL (Loan >)	5 104 351	12%	18 month grace. Repayment in 5y (10% own; 40% grant, 50% loan)
Paddy intensification	(55 781)	403 991	653 933	BDBL (Loan >)	6 110 834	12%	18 month grace. Repayment in 5y (10% own; 40% grant, 50% loan)
Livestock	86 654	233 306	335 283	BDBL (Loan >)	-	12%	18 month grace. Repayment in 5y (10% own; 40% grant, 50% loan)

16. Finally, two models of small rural enterprises have been developed for honey production and a unit of assembly and sales of disc TV in rural areas.

Economic analysis

17. The economic analysis is based on a 20-year period with a constant exchange rate of BTN 55/USD and the following hypothesis presented below.

18. **Economic prices**. The financial prices of market-oriented agricultural products and chemical inputs have been converted to economic prices using the two standard conversion factors mentioned. A shadow wage rate factor of 0.9 was used to determined economic labour costs, and a shadow conversion factor based on the calculations of the social exchange rate (SER) was estimated at 0.99.

19. **Economic benefits**. The economic benefits of each model have been aggregated based on: (i) the number of direct beneficiaries for each model aligned with the phasing of investments in the COSTAB (no indirect beneficiaries and verification of no double counting); (ii) adoption rates (crop and livestock models) and survival rates (rural enterprise models) based on the past experiences; and (iii) the phasing of net incremental benefits over 20 years for each model.

Table 8: Phasing of beneficiaries included in the EFA

Summary for EFA / model	PY1	PY2	PY3	PY4	PY5	PY6	PY7	Total	Average 72%	
Vegetable 1	89	179	575	575	575	417	89	2 499		
Adjusted (adoption rate)	*58*	*116*	*374*	*374*	*374*	*271*	*58*	*1 624*	*65%*	*adoption rate*
Vegetable 2	75	120	438	433	413	320	75	1 875		
Adjusted (adoption rate)	*49*	*78*	*285*	*282*	*269*	*208*	*49*	*1 219*	*65%*	*adoption rate*
Paddy intensification	0	27	41	45	63	27	0	203		
Adjusted (adoption rate)	*0*	*14*	*20*	*23*	*32*	*14*	*0*	*101*	*50%*	*adoption rate*
Maize intensification	16	32	102	102	102	74	16	441		
Adjusted (adoption rate)	*8*	*16*	*51*	*51*	*51*	*37*	*8*	*221*	*50%*	*adoption rate*
Commercialization &	0	3	5	5	7	3	0	23		

marketing										
Adjusted (adoption rate)	*0*	*2*	*4*	*4*	*6*	*2*	*0*	*18*	*80%*	*adoption rate*
Livestock	27	45	108	108	108	45	9	644		
Adjusted (adoption rate)	*19*	*32*	*76*	*76*	*76*	*32*	*6*	*450*	*70%*	*adoption rate*
Biogas	*0*	*12*	*0*	*200*	*200*	*200*	*200*	*812*	*100%*	*adoption rate*
Enterprise honey	0	5	19	24	24	24	24	119		
Adjusted (adoption rate)	*0*	*4*	*16*	*20*	*20*	*20*	*20*	*101*	*85%*	*survival rate*
Enterprise disc	0	2	8	10	10	10	10	51		
Adjusted (adoption rate)	*0*	*2*	*7*	*9*	*9*	*9*	*9*	*43*	*85%*	*survival rate*
Chilling	0	0	8	8	8	0	0	24		
Pocessing 1				1		1		2		
Processing 2				1		1		2		

20. **Economic costs**. The Programme economic costs have been calculated with the COSTAB software to remove price contingencies, taxes and duties. The operation and maintenance costs of the marketing and irrigation infrastructure is included as well as the recurrent costs associated with the FCB marketing activities. The costs covered by the Programme have been extracted from the models included for the benefits to avoid double counting (improved seeds, efficient irrigation equipment, post-harvest equipment, improved cattle, shed construction, dairy production equipment).

21. **NPV and IRR.** The Programme is profitable with an estimated net present value of USD 24.9 million and an internal rate of return of 23% at a social discount rate of 8%.Table 9: Summary of economic analysis (in BTN M, economic prices)

	PY1	*PY2*	*PY3*	*PY4*	*PY5*	*PY6*	*PY7*	*PY8*	*PY9*	*PY10-20*
Programme incremental benefits (BTN M)										
Vegetable value chain:	*-5*	*-6*	*-21*	*6*	*38*	*89*	*143*	*169*	*180*	*183*
Model 1 (3 acres adjusted to 1.5)	-3	-4	-13	5	25	55	87	101	107	108
Model 2 (5 acres adjusted to 3)	-2	-2	-9	1	14	33	56	68	74	75
Dairy value chain	*2*	*5*	*25*	*44*	*69*	*76*	*81*	*84*	*82*	*81*
Model livestock	2	5	14	23	33	39	41	40	38	38
Model livestock and Biogas	-	0	0	0	1	2	4	5	5	5
Model chilling	-	-	12	23	35	35	35	35	35	35
Model processing2 (yogurt)	-	-	-	-0	1	1	2	3	3	3
Model processing1 (datshi)	-	-	-	-2	-1	-1	0	1	1	1
Commercialization Models	*-2*	*-8*	*-14*	*2*	*18*	*52*	*83*	*93*	*96*	*96*
Model maize intensification	-2	-3	-11	-1	10	28	48	56	59	59
Model paddy intensification	-	-3	-1	3	8	22	30	32	33	33
Model commercialization	-	-1	-1	-1	-1	2	4	4	4	4
Enterprise development	-	*-8*	*-29*	*-26*	*-9*	*16*	*45*	*114*	*133*	*146*
Model honey production	-	-8	-29	-26	-8	16	45	114	133	145
Model disc TV	-	-0	-0	-0	-0	-0	0	0	0	0
Total programme benefits	**-6**	**-16**	**-39**	**26**	**117**	**233**	**351**	**459**	**491**	**506**
Programme costs (BTN M)										
Total programme costs	80	164	220	250	255	156	73	63	54	59
Total programme NIB (BTN M)	-86	-180	-259	-225	-138	76	278	397	437	447

NPV @8% (BTN M)	**1 371**	24.9	USD M
IRR	**23%**		

22. **Sensitivity analysis.** A sensitivity analysis was conducted to assess the variation of the EIRR and the NPV according to various scenarios in link with the risk analysis of the programme. The scenarios include lower programme benefits and higher programme costs, 1 or 2-year lag in benefits,

higher prices for chemical inputs, lower output prices and lower yields. The Programme would remain profitable in all the scenarios except in the one with 2-year lag in benefits. In line with programme approach, a change in chemical prices does not yield substantial losses (low inputs sustainable practices for crop production) whereas a change in output price would generate a significantly lower NPV and IRR (market-based approach).

Table 10: Summary of sensitivity analysis

	∆%	Link with the risk matrix	IRR (%)	NPV (USD M)
Base scenario			23%	24.9
Programme benefits	-10%	Combination of risks affecting output prices, yields and adoption rates	20%	15.0
Programme benefits	-20%		16%	5.5
Programme costs	10%	Increase of construction material prices	20%	17.8
Programme costs	20%		17%	10.2
1 year lag in benefits		Combination of risks affecting output prices, yields and adoption rates	19%	12.6
2 years lag in benefits			14%	1.4
Output prices	-10%	Market price fluctuations, low management capacity of marketing groups & coop, lack of negotiating capacities	19%	13.0
Output prices	-20%		14%	0.7
Input prices	-10%		22%	21.5
Input prices	-20%		20%	17.8
Adoption rates	-10%	Extension service outreach is limited,low uptake of climate smart practices, agriculture research uptake is low, inadequate production of seeds, natural calamities, epidemic diseases	19%	11.9
Adoption rates	-20%		16%	2.0
Yields	-10%		16%	3.8

Appendix 11: Draft Programme Implementation Manual (PIM)

1. Programme Implementation Manual is a fundamental document for step by step implementation and management of the Programme. It is essentially 'how to do' section of the PDR, containing detailed instructions, processes and information on how to implement various components and activities of the programme, monitoring and evaluation systems, reporting requirements during the life cycle of the Programme. The importance of the PIM is recognized in the Financing Agreement and submission and approval of the PIM would be a condition for disbursement. It promotes good practice management, administration, internal controls and a standardized approach to various tasks.

2. The CARLEP Implementation Manual will be developed as part of the programme inception phase. It will capture all implementation and financial management aspects of the CARLEP as reflected in the PDR and Appendices. It will also draw from relevant sections of the Working Papers and the implementation manuals developed for MAGIP. The Implementation Manual structure and text will thus largely draw from the RDR, while detailing implementation aspects.

3. It is to be appreciated that PIM is a '**living document**' and should be updated regularly on the basis of learning of programme implementation (with due concurrence by the NPSC and IFAD). The PIM will serve as one-stop reference point on the programme implementation and reporting compliances. It outlines the roles and responsibilities for all processes and transactions, and includes references to other key documents or contains them as attachments (Financing Agreement, Letter to the Borrower and Disbursement Handbook, Procurement Guidelines and Handbook, Audit Guidelines, etc.). Below some key elements of the Implementation Manual are presented. Broadly, the different sections of the PIM may have the following suggested chapters and contents.

(The draft PIM will be prepared after Loan Negotiation by the CARLEP programme team as soon as the PMO is established; PIM is best prepared through a workshop mode).

Cover Page (Programme title, etc.; paste photograph/s relevant to Bhutan/CARLEP)

TABLE OF CONTENTS

Currency Equivalent

Weights and Measures

Fiscal Year

Abbreviations and Acronyms

Map of the programme areas

Chapter 1: Introduction and background (1 page)

Describe the purpose and objectives of PIM, mention who will use this PIM, indicate the advantages of developing and using PIM, list documents referred in developing the PIM and also include the Programme Team which worked on the document and date of preparation. Do acknowledge the support and cooperation received from senior staff and IFAD. Please state that the ***PIM is a dynamic document and it should be updated as when required by the PMO staff through the experiences of programme implementation.***

Chapter 2: Programme Summary (3-5 pages)

Largely drawing from the PDR including the executive summary, this section may include the followings:

- *Brief description of the background to the programme (refer Programme Design Report), outline key factors for the success of the programme such critical staff, fund flow, procurement, community participation, TA, etc,*
- *Describe the programme area, target groups and programme goal and objectives;*

- *Outline the programme components and activities; their phasing and financing plan; outline the risks and mitigation measures including brief touch on the expected environmental impact of the programme;*
- *Indicate expected programme output and outcome; outline brief exit strategy cum sustainability of the programme;*
- *Include a matrix to show brief role/responsibilities of PMO, local community/farmers groups, different service providers, TAs, etc.*
- *Attach the Programme Logframe at the end of Chapter;*

Chapter 3: Programme Cost Estimates (to be extracted from WP)

- *Insert Tables showing the programme cost estimates by component and year including for Gender, M&E, Knowledge Management, etc.*
- *Insert key SUMMARY cost tables as reference*
- *Add commentary notes on unit costs used and scope for flexibility during implementation;*
- *Attach Cost Tables containing both physical and financial units.*

Chapter 4: Organisation and Management

Drawing largely from relevant Appendix of the PDR including WP (such as Appendix 5), this section may include the followings:

- *Brief description of PMO structures, programme coordination arrangements, programme steering committees, and their roles and functions; coordination arrangements at Dzongkhags and gewog levels, their duties and responsibilities;*
- *Arrangements for implementation of programme interventions, various technical and marketing agencies (such as FCBL, DAMC/RAMCO, RDC, RLDC, etc) responsible for the implementation of various programme components and subcomponents, etc.*
- *Develop and provide a matrix to include programme intervention, coverage, implementation responsibility, procurement, timeline and schedule of implementation etc*
- *Briefly indicate PMO staff responsibilities or TORs and recruitment of staff and procedures for recruitment. Provide an outline of duties and responsibilities of individual staff and also indicate the need for gender balance in staff structure etc.*

Chapter 5: Engagement of RGoB Technical Agencies and TAs

- *Identify/outline key agencies to be engaged/involved in CARLEP with their TORs/ roles and responsibilities; engagement modalities including Model contract or MOU with reporting system, etc.*
- *Outline key areas of TA needs, ToRs, timeline and modalities for securing service providers (individual experts and/or organisation) using IFAD's / RGoB procurement procedures (please read with the next chapter on Procurement).*

Chapter 6: Procurement Procedures

- *Describe general conditions of procurement and methods of procurement under IFAD procurement Regulations;*
- *Describe the procurement procedures under IFAD procurement and as applicable to CARLEP;*
- *Describe approval authorities; review mechanisms: prior and ex-post review; review of pre-qualification bidders; describe the procurement committees at different level and thresholds for approvals at different level; prepare 18-month procurement plan and attach it at the end of the chapter; Use one of the existing templates used by MAGIP or template provided by IFAD.*

Chapter 7: Finance Management (also refer LTB with relevant WP/appendix)

- *Provide a brief introduction regarding purpose of this section.*
- *One paragraph on programme costs and financing arrangements;*
- *Describe in brief the flow of fund mechanism;*
- *Describe type of accounts: designated account, programme account, etc and their operations;*
- *Describe the disbursement procedures and withdrawals (to be obtained from the Letter to the Borrower and its attachments)*
- *Include checklist for sending withdrawal applications;*
- *Describe audit procedures and arrangements in place for conducting effective audit for each year and also describe arrangement for internal audit and its procedures;*
- *Identify annual audit statements and indicate how these statements are prepared and forwarded to IFAD and other entities; indicate how programme completion report will be carried out and required financial statements.*
- *Indicate a list of registers and records to be maintained at PMO such as contract record, individual contract monitoring form etc*
- *Fiduciary Aspects Capacity Assessment Tool*
- *Terms of Reference for auditors, etc.*

Chapter 8: Programme components and implementation arrangements

- *Prepare a matrix of components/activities with key agencies involved, responsibilities and implementation modalities/arrangements. Examples:*
  - *DoA in the implementation of diversified agriculture including vegetable production and agricultural innovation (e-Agriculture) and biogas;*
  - *DoL in the implementation of livestock (piggery and poultry) including dairy development with feeds and fodder;*
  - *FCBL in value chain and marketing development and management of farm shops; management of social inclusion fund.*
  - *DAMC in market infrastructures development including formation/strengthening of farmers groups; management of market-led production support fund;*
  - *RDC (Wengkhar) in agriculture lead farmers development;*
  - *RLDC in livestock lead farmers development including CAHW;*
  - *Farmers Groups – production / marketing groups – roles and responsibilities and modalities for engagement with farmers groups;*
- *Outline key M&E indicators wherever applicable with reporting mechanism.*

Chapter 9: Monitoring and Evaluation and Knowledge Management including Gender Mainstreaming (to be extracted from Appendix 6 and relevant WP of Detail Design Report)

- *Purpose and objectives of this chapter*

Section 1: Planning, Monitoring and Evaluation

- *Programme M&E framework including modalities for integrating with RGoB PLaMS*
- *Indicators for output monitoring;*
- *Indicators for outcome monitoring;*
- *Indicators for impact evaluation;*
- *Impact assessment indicators and anchor indicators, which have also been included at the impact level of Logical Framework.*
- *Specific studies required and their cost estimates*
- *Baseline surveys*
- *Annual Outcome Surveys: Key aspects*
- *TOR for impact survey*
- *Annual RIMS reporting Table*

- *Reporting and communication: Annual Report / Annual Progress Report*
- *Relevant formats for data collection/monitoring from fields*

Section 2: Knowledge Management

- *Knowledge management and communication strategy*
- *Proposed key activities and implementation modalities*
- *Budget*

Section 3: Gender Mainstreaming

- *Gender and social inclusion strategy*
- *Gender and social inclusion action plan and implementation modalities*
- *Reporting of results and budget*

Chapter 10: Guidelines for preparing Annual Work Plan and Budget

- *Purpose and objective of this section*
- *General introduction on the preparation of AWP&B*
- *All annual plans can be prepared based on the concept of result-oriented approach. This can be effectively done using both Cost Tables and Programme Logframe.*
- ***Key Tools for the preparation of AWP&B are**: programme Logframe, detailed costables, AWP&B template, financing plan, financing rules in the procurement methods, Finance Agreement, last programme progress report)*

KEY ANNEXES in the PIM could be the following:

1. Programme Logframe, updated
2. Criteria for selection and identification of programme interventions Matrix
3. Cost Tables by components with financing rules
4. TOR for PMO staff
5. Programme Organisation Charts
6. An 18-month Procurement Plan
7. AWPB for the first Programme Year
8. Sample Chart of Accounts
9. Designated Account reconciliation statement
10. Checklist for Withdrawal Application
11. Sample financial statement
12. Sample Fixed Asset register
13. Sample form for Record of Contracts
14. Sample form for tracking contracts
15. Staff and farmers groups/community training programme/Calendar
16. Indicators for output, outcome and impact monitoring
17. RIMS Indicators
18. Template for AWPB
19. Template for Annual Progress Report
20. Template for Annual Outcome Survey Report
21. Gender and social inclusion strategy
22. Knowledge Management strategy
23. Key M&E formats
24. Key compliance chart with dates for submission (eg. Dates for submission of AWPB, Audit Report, RIMS, AOS etc.)
25. List of NPSC, DPSC, important contact numbers/address, etc.

Appendix 12: Compliance with IFAD policies

1. This appendix describes how CARLEP is aligned with the relevant IFAD strategies, procedures and policies. These include: (i) Programme Design, Targeting and Sustainability Policies; (ii) Operational Policies; and (ii) Innovation and Knowledge Management Policies. It briefly describes how the Programme complies with each, and provides references to relevant programme interventions.

Programme Design, Targeting and Sustainability Policies

IFAD's Strategic Framework 2011-2015

2. The goal of IFAD's Strategic Framework 2011-2015 is that poor rural women and men in developing countries are enabled to improve their food security, raise their incomes and strengthen their resilience. This goal is underpinned by five strategic objectives:

- 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;
- Access for poor rural women and men to services to reduce poverty raise incomes and build resilience in a changing environment;
- Poor rural women and men and their organizations able to manage profitable, sustainable and resilient farm and non-farm enterprises or take advantage of decent work opportunities;
- Poor rural women and men and their organizations able to influence 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.

3. CARLEP fits perfectly within this overall Strategic Framework. The programme's goal is to sustainably increase smallholder producers' incomes and reduce poverty through commercialization of agricultural production and increased resilience of programme households. Its development objective is increased returns to smallholder farmers through climate resilient production of crops and livestock in nationally organized value chains and marketing systems. The programme intends to work with local communities and enhance their capacities and resilience to economic and climate shocks. The programme's components are: (i) Increased Resilience of Community-based Agricultural Production; (ii) Increased smallholder income from Crop and Livestock Value Chains; and (iii) Strengthened Agricultural Institutions and Policies for Improved and Resilient Agricultural and Marketing Practices. Implementation of these components will contribute to each of the five strategic objectives of IFAD's Strategic Framework.

Climate Change Strategy

4. The goal of IFAD's climate change strategy is to maximize IFAD's impact on rural poverty in a changing climate. The design of this programme will contribute to achieving this goal and the amount of climate finance mobilized for the CARLEP from IFAD-ASAP is a clear demonstration that the programme's overall concept and approach is one well aligned with climate concerns in Bhutan. Projected climate change impacts in Bhutan undermine current water distribution infrastructure and communities' abilities and rights to access water for household and agricultural requirements. Springs and small streams are the main water sources for the rural part of the country. Agriculture in Bhutan is characterized by isolated smallholders and slope farming, where the depletion of land resources in the form of erosion, landslides and other forms of land degradation is high which threatens the sustainability of agriculture as well as rural development in general. Climate change is projected to have a significant negative impact on the efforts to reduce poverty and improve food security for the rural population. All planned activities in CARLEP address these issues through their focus on the key concerns of water, land, infrastructure, income diversification and agricultural production.

Environment and Natural Resource Management Policy

5. The goal of IFAD's ENRM policy is: to enable poor rural people to escape from and remain out of poverty through more-productive and resilient livelihoods and ecosystems. The purpose is to integrate the sustainable management of natural assets across the activities of IFAD and its partners.

The ten core principles of the ENRM policy and the extent to which they are addressed by the CARLEP is illustrated below.

Core Principles of IFAD ENRM Policy	CARLEP Response
1. Scaled-up investment in multiple-benefit approaches for sustainable agricultural intensification	1. All planned activities within CARLEP provide multiple benefits in terms of improved climate resilience, increased incomes, sustainable land management, crop-livestock integration and reduced risk.
2. Recognition and greater awareness of the economic, social and cultural value of natural assets	2. The NRM to be addressed especially at farm, community and local governance levels, for which not only technical capacities need to be strengthened, but also the network of local (state and non-state) institutions and organizations. This bottom-up approach to promoting value of natural assets is a key area for CARLEP.
3. 'Climate-smart' approaches to rural development	3. The programme design and targeting is driven by the outcomes of studies on climate risk in Bhutan to ensure climate risks and opportunities are considered. The programme will also benefit from a vulnerability assessment to guide implementation.
4. Greater attention to risk and resilience in order to manage environment- and natural-resource related-shocks	4. Increased climate resilience is a key part of the CARLEP goal ensuring that it will be a focus of throughout implementation.
5. Engagement in value chains to drive green growth	5. This programme is primarily focused on value chain development. This is addressed by the programme through the development of Resilient Vegetable and Dairy Value Chains.
6. Improved governance of natural assets for poor rural people by strengthening land tenure and community-led empowerment	6. The programme will support the establishment of effective user groups for natural assets exploited by the target groups, as well as strengthening the outreach of support services to farmers and farmer groups
7. Livelihood diversification to reduce vulnerability and build resilience for sustainable natural resource management	7. The programme supports income diversification as an explicit part of its strategy to reduce vulnerability and build resilience.
8. Equality and empowerment for women and indigenous peoples in managing natural resources	8. Women will be included as main beneficiaries including in decision making regarding natural resource management.
9. Increased access by poor rural communities to environment and climate finance	9. Through the programme, the targeted poor rural communities will benefit from environment and climate finance (ASAP)
10. Environmental commitment through changing its own behavior	10. N/A

Environment Category

6. CARLEP is essentially a programme designed around reducing to vulnerability of target populations. The activities focus on sustainable management of natural assets and promoting community-based RNR management for increased agricultural production, reduced vulnerability and decreased poverty.

7. However, any potential impacts will be assessed and quantified during programme implementation. The PMO will be responsible for ensuring that the requirements of the environmental legislation of Bhutan are adhered to in order to avoid negative impacts, and, when and if necessary, introduce appropriate mitigation measures. On this basis, it is proposed to classify the programme under Category B.

Gender Policy

8. The IFAD strategy for gender mainstreaming and women's empowerment focuses on a three-pronged strategy: (i) expand women's economic empowerment through access to and control over key assets; (ii) strengthen women's decision-making role in community affairs and representation in

local institutions; and (iii) improve the knowledge and well-being of women and ease women's workloads by facilitating women's access to basic rural services and infrastructures.

9. Gender mainstreaming in CARLEP will be essentially guided by IFAD's *Gender Equality and Women's Empowerment Policy 2012*. Gender issues and concerns will be addressed in a cross cutting manner across all components and sub-components and also in the programme management. The programme will adopt a Knowledge management centric approach to bring about a more comprehensive learning to guide the programme implementation. The Gender Equality and Women's Empowerment Policy will be central to the attainment of the goal of IFAD's strategic Framework (2011-2015), viz. enabling poor rural women and men to improve their food security and nutrition, raise their incomes and strengthen their resilience.

10. Moreover, CARLEP will develop the Gender Strategy and Action Plan for the programme. The experiences of MAGIP can be drawn in preparing the strategy and action plan. CARLEP's proposed approaches to gender targeting have been described in Appendix 2.

Targeting Policy

11. In order to ensure programme benefits reach IFAD's target group - rural people living in poverty and food insecurity – target groups have been defined, a targeting strategy developed and means of operationalizing that strategy integrated into the Programme design and implementation modalities. The programme will benefit from a detailed baseline study to ensure refined targeting within the selected programme areas.

12. The approaches primarily follow IFAD's targeting strategy which includes geographic targeting, poverty targeting, self-targeting and others. CARLEP will work intensively with rural poor households for agriculture and livestock production intensification in dzongkhags having continued high poverty rate. Within these dzongkhags, poorest Gewogs (or sub-districts) but with access to roads, farm inputs and other services would be targeted first for agricultural production intensification subsequently spreading to other Gewogs or areas. However, support to market development and marketing network would target the entire country as produce from the Eastern Region ought to be sold to the entire country for which market infrastructures will be supported in strategic locations outside the six Eastern Dzongkhags. The poor and poorest households particularly the women and youth would be the primary target group categories though better off households would also be included in a case to case basis in order to produce scale of economy as also many of the better off households could also be vulnerable due to geographic isolation or remoteness, limited access to agricultural inputs such as seeds, credits, farm machineries, post-harvest facilities, etc. Targeting checklist in CARLEP design is given at Annex 2 of Appendix 2.

Operation Policies

Preventing Fraud and Corruption

13. Anticorruption measures will include (a) undertake necessary measures to create and sustain a corruption-free environment for activities under the Programme; (b) institute, maintain and ensure compliance with internal procedures and controls for activities under the Programme, following international best practice standards for the purpose of preventing corruption, money laundering activities, and the financing of terrorists, and shall require all relevant ministries and agencies to refrain from engaging in any such activities; (c) comply with requirements of IFAD's Policy on Preventing Fraud and Corruption in Its Activities and Operations (2005, as amended to date); (d) ensure that the Good Governance Framework is implemented in a timely manner. The Borrower shall also ensure that: (i) it is actively engaged to allow potential Programme beneficiaries and other stakeholders to channel and address any complaints they may have on the implementation of the Programme; and (ii) after conducting any necessary investigation, the Borrower shall immediately report to the Fund any malfeasance or maladministration occurred under the Programme. A good governance framework will be provided in the final design report.

Procurement Guidelines

14. Procurement procedures are detailed in the Main Report and in Appendix 8. They are in line with IFAD Procurement Guidelines. The programme will be subject to annual audits and review of procurement procedures and documentation will be a core focus of all supervision missions.

Supervision and Implementation Support Policy

15. In line with IFAD policy and criteria for selection of supervision approaches, CARLEP will be directly supervised by IFAD. This will ensure implementation support with focus on: (i) providing direct support to the Programme management in terms of continuous guidance for maintain the Programme on the right track for the achievement of the Programme objectives; (ii) adapting Programme interventions to changes which may be dictated by exogenous factors of natural, political or financial nature; (iii) resolving problems of technical nature pertaining to Programme operations; and (iv) providing knowledge-based support about best practices and success stories, from other interventions in Bhutan, in the region or elsewhere.

Innovation and Knowledge Management Policies

Innovation

16. One of the outputs of the programme is around innovation, mainly in strengthening production resilience of smallholders through improvement of (i) agricultural management practices at farm-, land- and soil level, (ii) water harvesting practices/technology, and irrigation technology, including upgrading irrigation schemes to meet resilience standards; and (iii) support to resilient seed production at farm-level and development of an organization strategy and business plan for the National Seed Centre for the production of resilient seeds. Technical innovations are primarily focused on the programme's approach to mainstreaming the promotion of climate resilience in design and implementation through undertaking the vulnerability assessment as an integral part of the baseline study.

Knowledge Management

17. The Programme intends to promote: (i) in-country knowledge networking through periodic seminars/workshops; (ii) regional networks including those supported by IFAD grants, as well as knowledge generated through IFAD programmes in neighboring countries. The IFAD country team will contribute to in-house knowledge sharing and networking.

Appendix 13: Contents of the Programme Life File

Inception phase

1. Project Concept Note submitted by RGoB in MoAF to IFAD (June 2013)
2. Bhutan new project concept note - CPMT in country meeting record (November 2013)
3. Concept Note refined by IFAD and endorsed by OSC (October 2013)
4. CARLEP in-country CPMT meeting minutes (April 2014)
5. Project design report by Task Force of RGoB at Wengkhar Writeshop (June 2014)
6. CARLEP IFAD CPMT meeting minutes on concept note (July 2014)

Formulation phase

7. CARLEP Design Mission aide memoire (August 2014)
8. CARLEP Design Mission wrap-up meeting minutes (August 2014)
9. CARLEP IFAD CPMT meeting minutes on Design Report (October 2014)

Appraisal phase

10. CARLEP appraisal mission aide memoire (November 2014)
11. CARLEP appraisal mission wrap-up meeting minutes (November 2014)
12. CARLEP IFAD CPMT meeting minutes on appraisal document (February 2015)
13. IFAD-Bhutan delegation meeting minutes on CARLEP PDR (February 2015)
14. CARLEP-ASAP appraisal wrap-up meeting minutes (April 2015)

List of Working Papers (WP) of Design Completion Mission (CARLEP and ASAP)

WP – 1: Agriculture
WP – 2: Livestock
WP – 3: Vegetable and Dairy Value Chains
WP – 4: Marketing of Agricultural Products
WP – 5: Institutional Capacity and Capacity Building
WP – 6: Climate Change Impacts and Vulnerability
WP – 7: Business and Enterprise Development
WP – 8: Poverty, Gender and Targeting
WP – 9: Financial Management and Risks
WP – 10: Economic and Financial Management
WP – 11: Programme Cost and Financing
WP – 12: Permaculture and Biogas
WP – 13: Programme Management, Institutional Aspects and Implementation Arrangements
WP – 14: Monitoring & Evaluation and Knowledge Management
WP – 15: Lead Farmers Model
WP – 16: Guidelines for Community Animal Health Workers