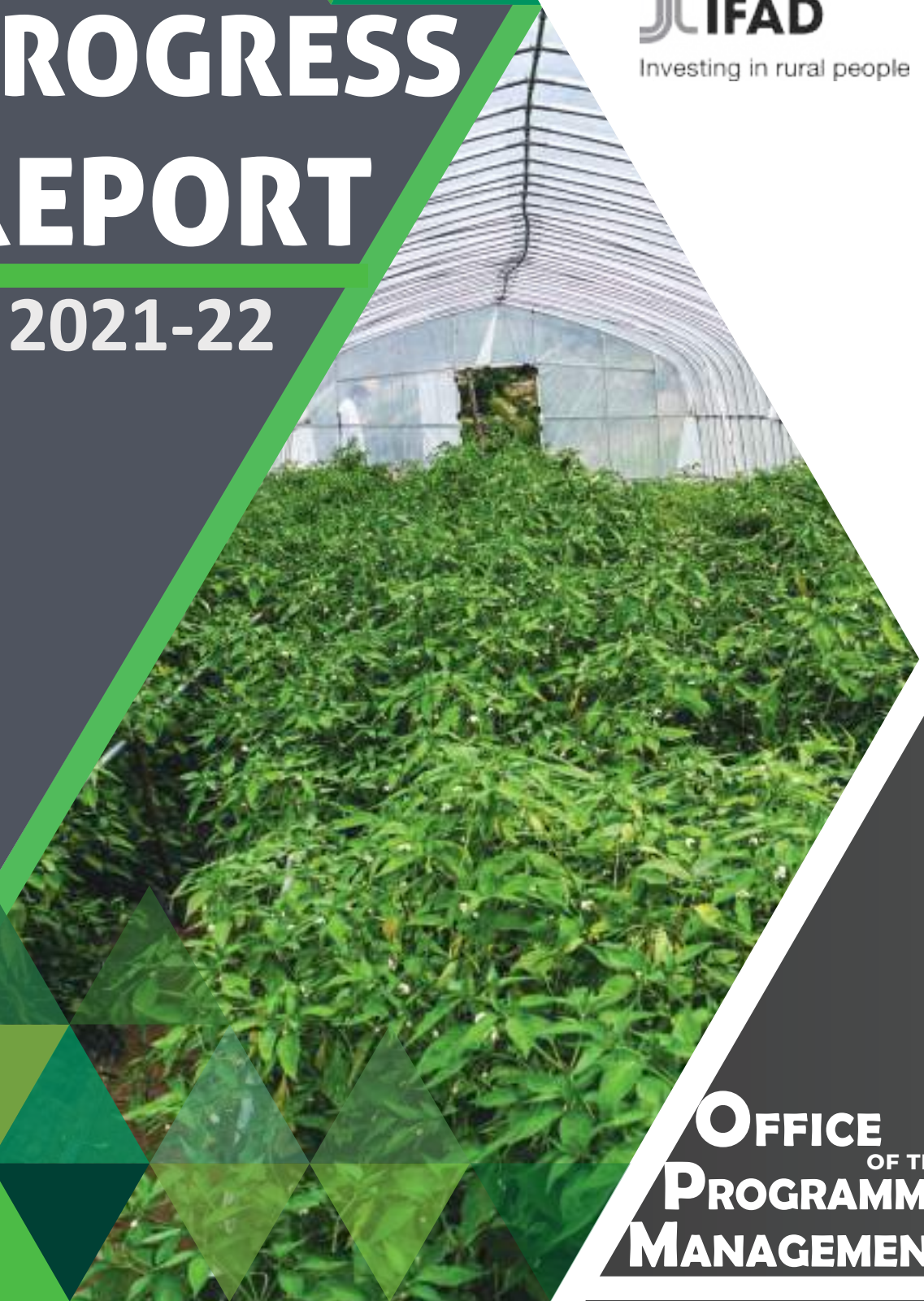
Annual Progress Report

FY 2021-22

IFAD
Investing in rural people



Office of the Programme Management

CARLEP

KINGDOM OF BHUTAN

COMMERCIAL AGRICULTURE AND RESILIENT LIVELIHOODS ENHANCEMENT PROGRAMME

IFAD Loan: 2000000627

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ANNUAL PROGRESS REPORT

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CURRENCY EQUIVALENTS

Currency Unit		Ngultrum (BTN) *
USD 1.00	=	BTN 65.00

**/ The Bhutan Ngultrum (BTN) is pegged with the India Rupees (INR)*

WEIGHTS AND MEASURES

International metric system, unless otherwise mentioned, and except for:

1 kilogram	=	1000 gm
1 kilometre	=	0.62 mile
1 metre	=	1.09 yards
1 square metre	=	10.76 square feet
1 acre	=	0.4047 hectares (ha)
1 hectare	=	2.47 acres
1 *Langdo*	=	1400 m^2

ABBREVIATIONS AND DEFINITIONS

ADAO	Assistant Dzongkhag Agriculture Officer
AFD	Administration and Finance Division
AMEPP	Agriculture, Marketing and Enterprise Promotion Programme
AOS	Annual Outcome Survey
APA	Annual Performance Agreement
ARDC	Agriculture Research and Development Centre
ASAP	Adaptation for Smallholder Agriculture Programme
AWPB	Annual Work Plan and Budget
BAIL	Bhutan Agro Industries Ltd.
B2B	Business to Business
BAFRA	Bhutan Agriculture and Food Regulatory Authority
BDBL	Bhutan Development Bank Limited
BTN	Bhutan Ngultrum
CAHW	Community Animal Health Worker
CARLEP	Commercial Agriculture & Resilient Livelihood Enhancement Programme

CEO	Chief Executive Officer
CM	Component Manager
CMU	Central Machinery Unit
CSV	Climate Smart Village
DAMC	Department of Agriculture Marketing and Cooperatives
DAO	Dzongkhag Agriculture Officer
DE	District Engineer
DoA	Department of Agriculture
DoL	Department of Livestock
DLO	Dzongkhag Livestock Officer
DNB	Department of National Budget
DPA	Department of Public Accounts
DPO	Dzongkhag Planning Officer
DT	Dzongkhag Tshogdue
ES	Extension Supervisor
FA	Financing Agreement
FCBL	Food Corporation of Bhutan Limited
FG	Farmers' Group
FY	Fiscal Year
GEO	Gewog Extension Officer
GNHC	Gross National Happiness Commission
GoI	Government of India
GT	Gewog Tshogdue
ICT	Information, Communication Technology
IFAD	International Fund for Agricultural Development
IFPP	Integrated Food Processing Plant
KIL	Koufuku International Limited
KM	Knowledge Management
LPG	Liquid Petroleum Gas
LUC	Land Use Certificate
M&E	Monitoring and Evaluation
MAGIP	Market Access and Growth Intensification Project
MCC	Milk Collection Center
MCS	Milk Collection Sheds
MIS	Marketing Information System
MGF	Matching Grant Facility
MoAF	Ministry of Agriculture and Forests
MoEA	Ministry of Economic Affairs
MoF	Ministry of Finance

MoHCA	Ministry of Home and Cultural Affairs
MoLHR	Ministry of Labour and Human Resources
MPU	Milk Processing Unit
MSP	Multi-Stakeholders' Platform
NCB	National Competitive Bidding
NEC	National Environment Commission
NGOs	Non-Governmental Organizations
NMC	National Mushroom Centre
NOP	National Organic Programme
NPD	National Programme Director
NPHC	National Post Harvest Centre
NPPC	National Plant Protection Centre
NPSC	National Programme Steering Committee
NSC	National Seed Centre
NSSC	National Soil Service Centre
O&M	Operation and Maintenance
OPM	Office of the Programme Management
PLC	Programme Letter of Credit
PPD	Policy and Planning Division
PPP	Public Private Partnership
PRR	Procurement Rules & Regulations
RAMC	Regional Agriculture Machinery Centre
RAMCO	Regional Agriculture Marketing and Cooperative Office
RGoB	Royal Government of Bhutan
RIMS	Results and Impact Management System
RNR-EC	Renewable Natural Resources Extension Centre
RLDC	Regional Livestock Development Centre
RMA	Royal Monetary Authority
SLM	Sustainable Land Management
SOE	Statement of Expenditure
TA	Technical Assistant
TMR	Total Mixed Ratio
WA	Withdrawal Application
WUA	Water Users' Association

MAP OF THE PROGRAMME AREAS

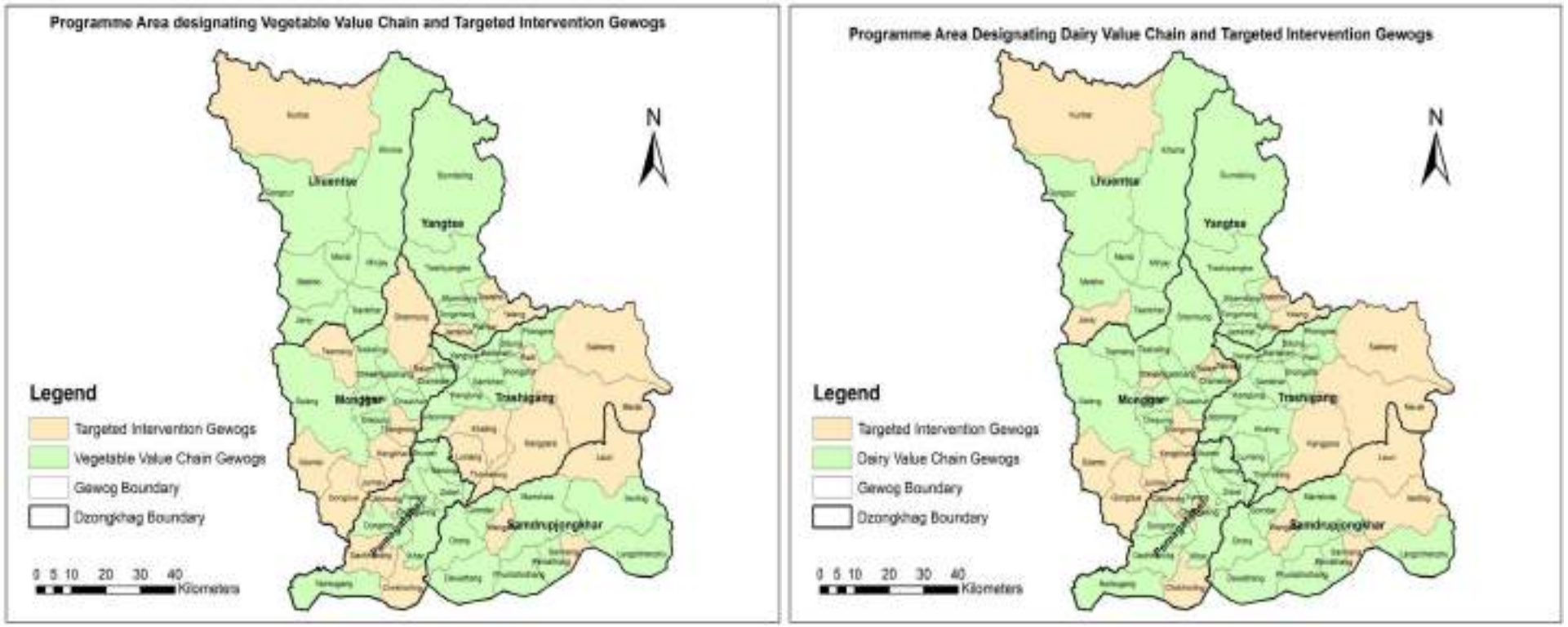


Figure 1. Map showing Programme areas

A. Programme Background

This is the seventh year Annual Progress Report for Commercial Agriculture and Resilient Livelihoods Enhancement Programme (CARLEP). It is the eighth agriculture and rural development programme financed by the International Fund for Agricultural Development (IFAD). The financing negotiation for CARLEP was held in July 2015 followed by IFAD Executive Board approval in September 2015 and the signing of the Financing Agreement by December 2015. The programme was launched on 11 December 2015 and will be completed – as a result of the approval of the Additional Financing (AF) - in December 2025.

The goal of the programme is to reduce poverty by sustainably increasing the income of smallholder producers by way of commercializing agriculture production. The overall development objective of the programme is to increase returns to smallholder farmers through climate-resilient production of crops and livestock in nationally organized value chains and marketing systems.

In order to achieve its goal and objective, the programme has 4 major components and eight sub-components with 27 broad activities. The three major components are i) market-led sustainable agricultural production; ii) value chain development & marketing; and iii) institutional support and policy development. The programme is expected to benefit 28,975 smallholder households (HHs), of which 7,115 HHs will directly benefit from vegetable and dairy value chains. Although CARLEP is extended till 2025 through the additional funding of IFAD-11, the overall goal and objectives remain unchanged except for some incorporations of entrepreneurship development through diverse agricultural activities.

The main implementing partners are six Eastern Dzongkhags & concerned Gewogs, Regional Agricultural Marketing Cooperatives and Office (RAMCO), Agriculture Research and Development Centre (ARDC) Wengkhar, Regional Livestock Development Centre (RLDC) Kanglung and Koufuku International Limited (KIL) Chenery, Trashigang.

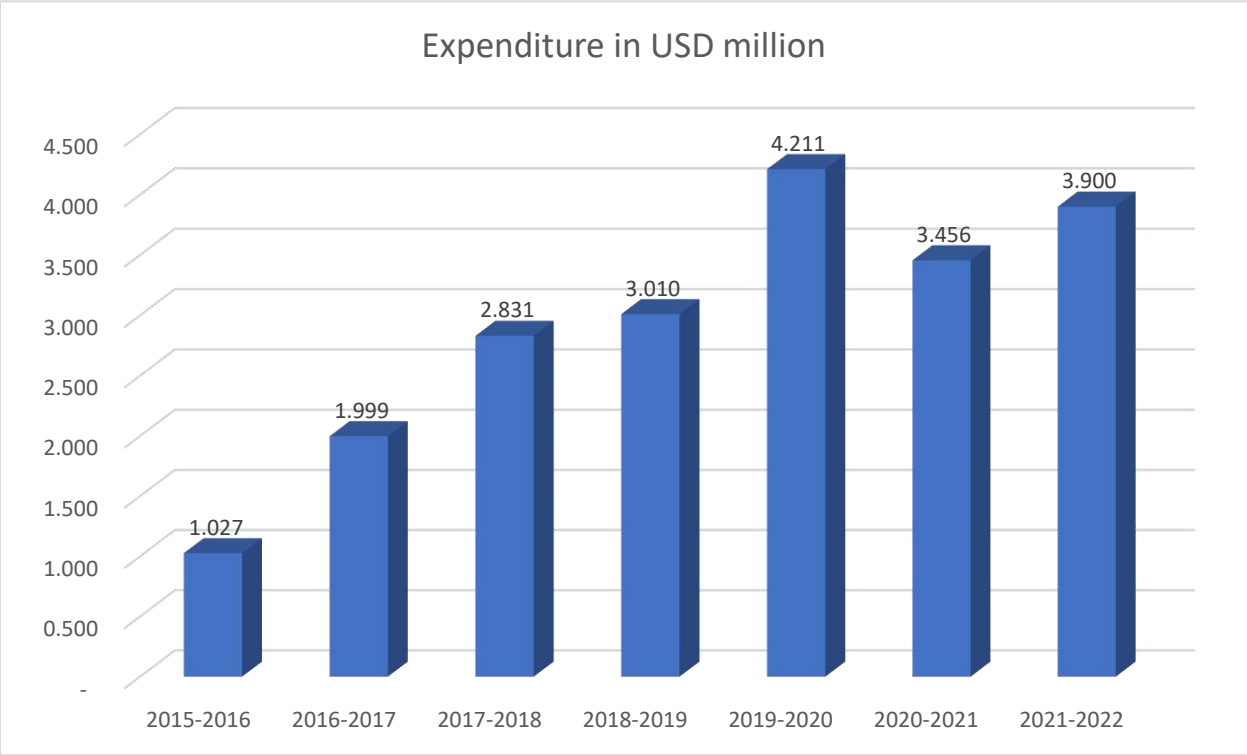
In line with the programme objective, the implementation of a two-pronged approach has been adopted – i) Commercial or value chain approach to be focused in those Gewogs and village with high production & market potential and ii) Targeted interventions in those far-flung Gewogs and villages having higher incidences of poverty.

The overall programme implementation is being coordinated by the Office of Programme Management (OPM) based at Wengkhar. The OPM is supported and guided by the

National Programme Steering Committee (NPSC) at the national level and Regional Programme Implementation Committee (RPIC) at the regional level.

The programme is also supported by one focal officer at the Policy and Planning Division (PPD) and one focal Program Officer at the Department of Macro Economic Affairs, Ministry of Finance in liaising with the RGoB and other external agencies at the national level.

The total programme cost of US$ 31.526 million, over seven years for 2015- 2023 in the initial appraisal document and agreement with RGoB and IFAD. After the mid tram review in 2018-2019 FY, IFAD have approved additional funding of USD11.281 million, thus the overall project outlay is cumulated to USD 42.846 million. The total expenditure from the 2015 to 2022 is to USD 20.435 million (Exchange @Nu.65/USD).



B. Changes in Programme Implementation Context and Design

There are no changes in programme Implementation and Context as well as Design

C. Progress and Performance by Components

Commercial Agriculture and Resilient Livelihoods Enhancement Programme has adopted a two-pronged approach as explicitly stated in the Project Design Report (PDR). The value chain approach is based on vegetable and dairy and targeted interventions for building farm resilience through the adoption of climate-smart approaches and enhancing on-farm diversity. Around 87% of the financial resources is invested in the component 1.

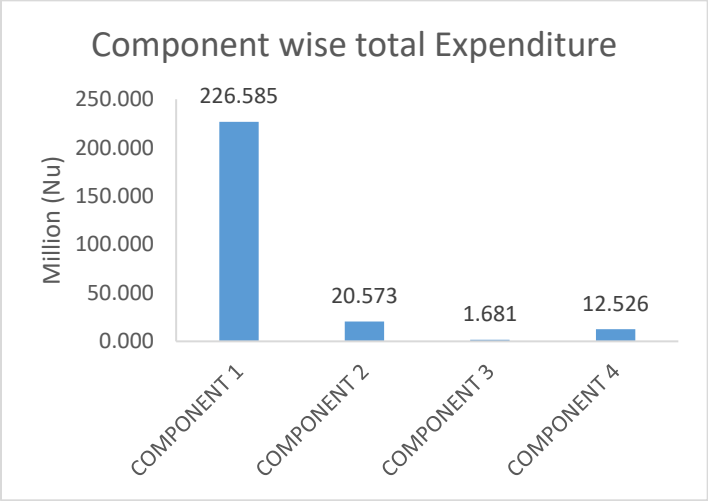


Figure 2: Component wise total expenditure

COMPONENT 1: MARKET-LED SUSTAINABLE AGRICULTURAL PRODUCTION

Output 1.1: Increased Production Resilience, Diversification and Innovation

1.1.1: Climate Smart Agriculture Production and Management

1.1.1.1: Support Formation of Multi-Purpose Cooperatives/Upgrading of Existing Farmer Groups

The farmer groups and cooperatives development are one of the important programs of the Regional Agricultural Marketing and Cooperatives Office. The FGs and Coops are entities which can address the problem of low scale production and build social cohesion in the community. In the east, where commercialization is challenging, the formation and development of farmer's groups and cooperatives is the only approach to achieve the economies of scale for marketing.

The up-gradation of progressive FGs into cooperatives indicates the transition of farming

from earlier subsistence to a semi-commercial or commercial farming. In this fiscal year, four dairy cooperatives were upgraded into cooperatives. The up-gradation was carried out after identifying potential FGs, reviewing of by- laws, business plan and management plan. Beside up-gradation of farmer groups, one multi-cooperative and 12 progressive farmer groups have been registered.

Table 1: Number of FGs registered and up-graded under each dzongkhag

Sl. No	Dzongkhag	No of FGs	Member			Remarks
			Male	Female	Total	
1	Mongar	9	27	123	150	New Registration
2	Pemagatshel	3	130	56	186	New Registration
3	Samdrup Jongkhar	3	76	111	187	Up-gradation
4	Trashigang	1	20	13	33	Up-gradation
5	Pemagatshel	1	34	35	69	Multi-purpose
Total		**17**	**287**	**338**	**625**	

1.1.1.2: Production Support - Seeds / Production Inputs for Farm Resilience and Diversification

Crop diversification through promotion of climate-resilient crops is being implemented in the programme areas to build climate resilience, thereby increase return to smallholder farmers. In this regard, various potential and stress-tolerant crops such as Heat Tolerant Maize, low water requiring indigenous crops such as upland paddy and mustard, and other climate-resilient crops such as quinoa, buckwheat, and legumes were promoted and intensified all across the programme areas during the financial year 2021-2022.

Market-driven crops like quinoa have been largely promoted in all programme areas primarily due to the establishment of a value chain with Food Corporation of Bhutan Limited as the main buyer. Quinoa cultivation has also been intensified due to its potential to boost income generation, enhance nutrition, and build climatic resilience, especially among farmers in the eastern regions. A total of 3123 HHs have benefited from the intensification and diversification of crops on 2551.5 acres of land.

Table 2: Crop promoted with the area coverage and HHs

Crop	Area (Acre)	HHs	Male	Female	Exp. BTN (Million)
Up-land paddy	244	407	168	230	1.223
Adzuki bean	133	245	85	160	0.201
Buckwheat	53	56	17	39	0.150

Mustard	100	65	16	49	0.068
Quinoa	909.5	377	162	215	0.178
Rajma bean	358	685	361	324	3.522
Spring maize	666	1088	479	609	2.258
Sweet buckwheat	88	200	80	120	0.217
Total	2551.5	3123	1368	1746	

Similarly, ARDC Wengkhar promoted different maize varieties for ensuring household food security and climate resilient. With the initiation of Hybrid maize in 2015 as a part of cropping system intensification, it has brought immense benefits to the farmers especially in rice fallow system. Hence, as a part of crop intensification program, a total of 1.480 MT of Pioneer Hybrid Maize (P3502), 1.2 MT of Improved Maize (Yangtsepa), and 50kg of Wengkhar Hybrid Maize-1 were supported to 308 households in the region covering more than 277 acres of land with an expected yield of 388.3 MT as shown in Table below. The maize intensification program was supported through the National maize program and CARLEP-IFAD Intensification Program support to ARDC Wengkhar.

Table 3: Detail of maize intensification

Gewog	Dzongkhag	HHs	Area (Acre)	Qty (kg)	Expected yield (MT)
Hybrid Maize Intensification					
Bartsham	Trashigang	12	6.67	80	9.33
Udzorong	Trashigang	22	19.67	236	27.53
Dremetse	Mongar	3	2.33	28	3.26
Ngatshang	Mongar	42	23	276	32.2
Chali	Mongar	36	27.67	332	38.73
Mongar	Mongar	39	41.33	496	57.86
Kurtoed	Lhuentse	9	2	24	2.8
On-station trial			0.66	8	0.9
Total (A)		**163**	**123.33**	**1480**	**172.61**
Improved Maize (Yangtsepa) intensification					
Saling	Mongar	41	36.67	440	51.33
Chaskhar	Mongar	37	32.5	390	45.5
Lumang	Trashigang	57	80.83	970	113.16
Total (B)		**135**	**150**	**1800**	**209.99**
Wengkhar Hybrid Maize-I intensification					
Tsakaling	Mongar	10	4.1	50	5.74
Total (C)		**10**	**4.1**	**50**	**5.74**

Grand Total (A+B+C)	**308**	**277.43**	**3330**	**388.3**

1.1.1.3: Processing & Value-Addition Equipment

Post-harvest losses are one of the main constraints and challenges in agricultural production in the programme areas. In FY2021-2022, the project supported improved storage facilities (curing shed) and 5 sets of post-harvest equipment for the post-harvest unit at Lingmethang for the benefits of six eastern districts. The equipment will be used for post-harvest training of farmers/ Entrepreneurs in the region. Two sets of Greenhouse (10*5m) with exhaust fan for the purpose of dying cardamom is supplied to the farmers of Maedtsho Gewog under Lhuentse Dzongkhag.

1.1.1.4: Mushroom Intensification

Mushroom is one of the low volume high-value commodities. It is also a highly nutritious and rich source of minerals and vitamins. Promotion and intensification of mushroom cultivation and its technical support in the east is solely mandated to ARDSC Khangma with the establishment of the Mushroom Spawn Production Unit. The unit provides services and technical support to individual households, groups, villages, schools and institutions and promotes the crop as an enterprise.

The Mushroom Spawn Production Unit, in addition to conducting research activities, produces Shiitake and Oyster mushroom spawns to support mushroom promotion in the east. This year, till mid-June, 16,057 bottles of spawns were produced as shown in table below.

Table 4: Types of mushroom spawn produced

Mushroom	Quantity of spawn produced
Oyster	6,632
Shiitake	9,425
Total	**16,057**

Besides producing spawn, Center also supplies spawn to the farmers and institution in the region who are into the mushroom business. Till mid-June, 6878 bottles of spawns were supplied to 102 households in four Dzongkhags and 15,072 bags of Oyster and 1,357 numbers of billets of Shiitake were inoculated as shown in table below.

Table 5: Number of mushroom spawns supplied and number of bags & billets inoculated

Dzongkhag	Oyster			Shiitake		
	No of HHs	No of spawns	No of bags	No of HHs	No of spawns	No of billets

Lhuentse	2	300	500			
Mongar	3	780	1780	6	415	**2024**
Trashigang	48	3713	7887	13	892	**4460**
Trashiyangtse	49	2085	4200	1	50	**250**
Total	**102**	**6878**	**14367**	**20**	**1357**	**6734**

1.1.2: Innovation Through Biogas and Permaculture

1.1.2.1: Establishment/strengthening of Climate Smart Villages (CSV)

1.1.2.1.1: Promotion of Homestead Nutrition Gardens in CSVs

In the climate-smart villages (CSVs) established by ARDC Wengkhar in the five dzongkhags, homestead nutrition garden has been established. Among various other interventions, the CSVs are also supported in vegetable cultivation as an integrated approach. Vegetable cultivation not only improves nutrition, but also provides farmers with an income. It also promotes a sense of self-sufficiency and will help reduce imports in the long run.

ARDC Wengkhar provided both technical assistance and inputs such as seeds and polytunnel plastic. A total of 29.71 acres of land belonging to 133 households were supported with eight different types of vegetable crops. Approximately 31.5 metric tons of vegetables were produced.

Table 6: Areas of crops cultivated and Dzongkhag wise production

Crops	Production Area (acre)				**Total** area (acre)	**Total production (kgs)**
	LH	MON	PG	TG		
Beans		0.04			0.04	**200**
Brinjal		0.04			0.04	**350**
Broccoli	1.1	2.5	0.9		4.5	**2582**
Bulb onion		4.3		0.9	5.2	**3851**
Cabbage	1.1	2.5	0.9		4.5	**5526**
Carrot	0.3				0.3	**239**
Cauliflower	0.9	4.3	1.3		6.5	**2363**
Chili		0.09			0.09	**476**
Mustard greens		8.3			8.3	**14000**
Radish		0.24			0.24	**1890**
Total	**3.4**	**22.31**	**3.1**	**0.9**	**29.71**	**31477**

1.1.2.1.2: Promotion of Organic Soil Improvement and Plant Protection Technologies in CSVs

Soil fertility improvement technologies like animal-based and plant-based liquid manure such as bokashi and plant protection solutions such as Jeevamrut were promoted with 140 beneficiary members of five Climate Smart Villages during this fiscal year. To promote and adopt the technology, the beneficiary members were supplied with plastic barrels and accessories. The beneficiaries were demonstrated and trained on bokashi and plant-based liquid manure and Jeevamrut preparation.

Figure 3: Training on bokashi and plant-based liquid manure and Jeevamrut preparation.

1.1.2.2: Poultry for Farm Resilience

(Support to pro-poor/vulnerable households for building farm resilience and diversity)

Small-scale poultry farming support was provided to pro-poor and vulnerable households to build their farm resilience besides enhancing household nutrition and income. As shown in the graph, 95 households (36 male and 59 female) in the Programme Dzongkhags living in the remote villages received the support to establish poultry backyard farms.

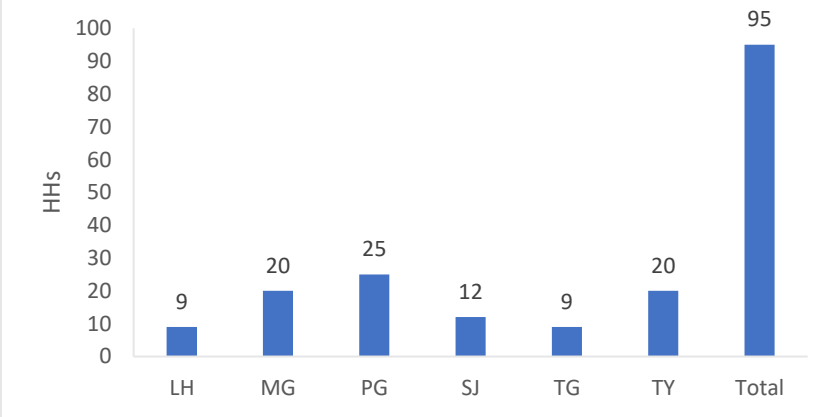


Figure 4: Production inputs support to vulnerable/pro-poor households for backyard poultry farming

1.1.2.2: Apiculture Units

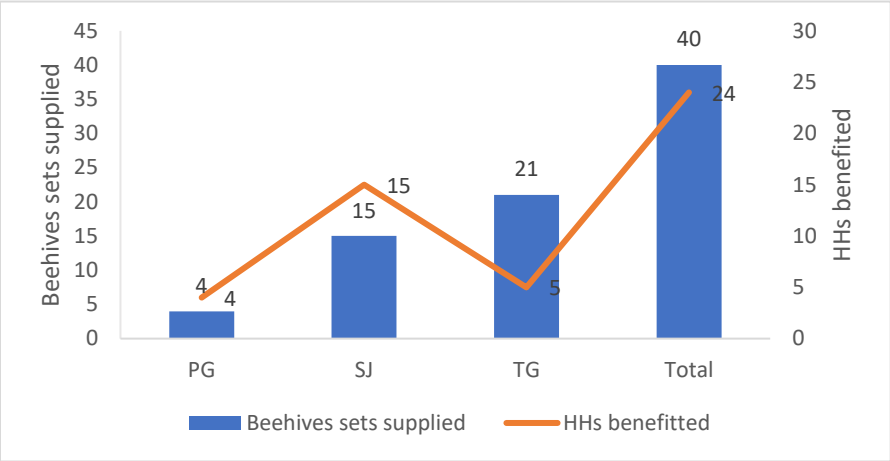


Figure 5: Apiculture promoted

CARLEP also promoted apiculture (*Apis Cerena)* in areas where indigenous crops are popularly grown. Apiculture not only helps enhance income of the farmers, but it also helps in pollination of agricultural crops besides ensuring conservation of local bees. A total of 40 bee hive sets were supplied to 24 households for honey production and to increase on-farm diversity.

1.1.2.3: Biogas Installation

Cconstruction of family-sized (4 m^3) biogas was facilitated through subsidy support in the form of biogas appliances equivalent to 50 % of the unit cost. Biogas technology not only ensured the production of clean energy for cooking but also enabled household sanitation and production of bio-slurry fertilizer which can be productively used in vegetable farming. It was reported that biogas has significantly minimized the purchase of commercial gas cylinders besides reduction in firewood consumption from the forests.

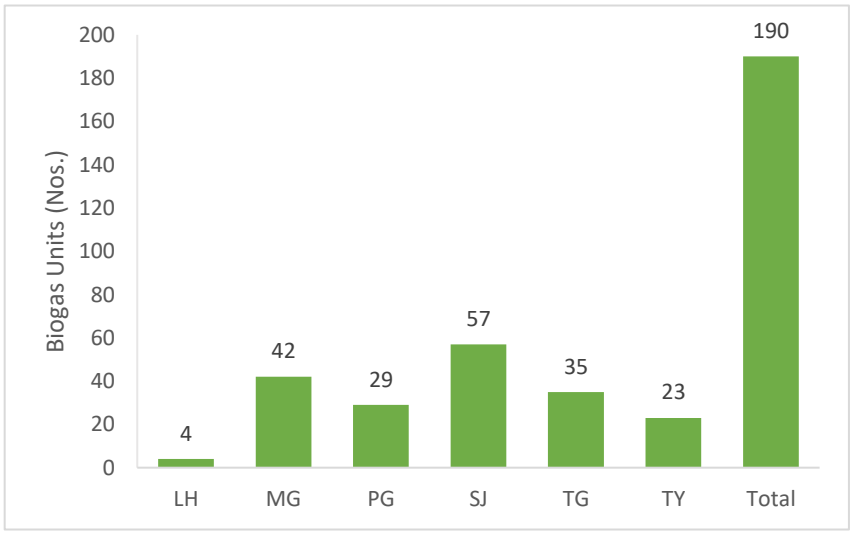


Figure 6: Biogas installed

During the FY 2021-2022, 190 households in the programme areas adopted biogas technology with subsidy support from CARLEP.

1.1.3: Increased Agriculture Outreach Services

1.1.3.1: Expansion of Lead Farmers

Implementing agencies have planned an expansion of 142 lead farmers for the fiscal year. The Dzongkhags reported that a total of 2283 farmers benefited from the expansion program, which was implemented along with millions fruit trees plantation program.
ARDC Wengkhar has supported the existing lead farmers through various activities to promote fruit cultivation and establish orchards as the new lead farmers could not be reached due to the pandemic COVID-19. ARDC visited the fields for verification and to carry out layout and plantation.

Intensification of fruit cultivation is one of the most important programs in the eastern part of the country, coordinated by ARDC Wengkhar. With financial support from CARLEP-IFAD, fruit cultivation is promoted to generate income as well as to ensure food security. Various support such as seedlings, and other inputs are being supported with a cost sharing mechanism and capacity building.
A total of 336 orchards with 12,882 fruits (1597 avocado, 1899 citrus, 512 dragon fruits, 4 grapes, 105 kiwi, 3769 mango, 2320 passion fruits, 46 peach, 1446 pear, 862 persimmon, 35 plum, and 287 walnut) were established in five Dzongkhags.

Table 7: Number of orchards established and seedlings supported

Dzongkhag	Type of orchards/Lead farmer	No of orchards	No of seedlings
Lhuentse	Lead farmer	13	489
	Mixed fruits	17	519
	Subtropical fruits	10	500
	Contract farming	10	940
Mongar	Lead farmer	12	430
	Mixed fruits	68	1592
	Subtropical fruits	10	500
	Contract farming	6	1373
Pemagatshel	Lead farmer	5	355
	Mixed fruits	66	1437
	Subtropical fruits	10	500
Trashigang	Lead farmer	9	360
	Mixed fruits	21	730

	Subtropical fruits	10	500
Trashiyangtse	Lead farmer	9	407
	Mixed fruits	50	1750
	Subtropical fruits	10	500
Total		**336**	**12,882**

1.2: Vegetable Production Intensified and Expanded

Under the sub-output vegetable production intensified and expanded, some of the activities are protected agriculture, efficient irrigation system, provision of resilient vegetables seeds, rain water harvesting and fruit promotion.

1.2.1: Inputs for Vegetable and Fruit Tree Production

Production inputs such as protected agriculture (prefabricated greenhouses) and drip and sprinkler sets are supported in all programme areas. Protected agriculture (greenhouses) is supported in areas where farmer groups and individual entrepreneurs focus on intensifying vegetable production and are linked to schools and hospital feeding programmes. A total of 329 greenhouse sets were distributed to 326 households, with a cost sharing ratio of 80:20% (20% beneficiary contribution). In addition, 624 drip and sprinkler were supported, which were installed together with the greenhouses and in the open vegetable production areas. A total of 5309 farmers (Male - 2462, Female - 2847) with cultivated area of 1086 acres of land are engaged in vegetable cultivation in six eastern dzongkhags.

Table 8: Inputs support for vegetable production

Agency	**No. of PA sets**		**No. of efficient irrigation system**		**Vegetable production**	
	No. of PA set	Total HH	No. of sets	Total HH	Area (Ac)	Total HH
Lhuentse	70	70	102	102	50	490
Mongar	44	44	320	320	220	490
Trashiyangtse	50	50	0	0	99	1899
Trashigang	61	59	152	81	248	1306
Pemagatshel	24	24	0	0	119	178
Samdrup Jongkhar	80	79	50	50	350	946
Total	**329**	**326**	**624**	**553**	**1086**	**5309**

Pemagatshel Dzongkhag distributed 66000 numbers pineapple seedlings to farmers of Khar, Zobel and Nanong Gewog that are market inked to Bhutan Agro Industry Limited

(BAIL), Lingmethang. Trashiyangtse Dzongkhag distributed pear and walnut under Ramjar and Khamdang Gewog covering 5 acres. Similarly, Samdrup Jongkhar Dzongkhag promoted 10 acres of Avocado and 7 acres of cardamom plantation.

1.2.3: Support to Centres (ARDC,NSC,etc)

1.2.3.1: Support to Centres -ARDC

1.2.3.1.1: Performance of Paddy under Drip Irrigation Systems – Climate Resilient Technology Generation

Conventionally, rice is being grown under continuous standing water in all phenological stages except towards maturity. The conventional method of rice production is

Figure 7: Drip irrigation for paddy

challenging in today's scenario due to water scarcity. Moreover, the available amount of water for irrigation is becoming increasingly scarce due to decreasing resources, declining water quality, increasing competition among multiple water users and environmental factors. Though the continuous flooding helps ensure sufficient water and control weeds, it leads to wastage of water and causes environmental issues, reduces nutrient use efficiency, destruction of soil aggregates and cut off the oxygen supply from the atmosphere resulting in the anaerobic fermentation of soil organic matter thus reduces the yields.

Hence, the study on assessment of paddy under mulching with drip, without mulching with drip and traditional method under flooded condition was conducted in collaboration with support service unit and financial support from CARLEP as the initial trial of growing rice under automated drip irrigation system. The information and experience gained from this trial will be used for designing the proper production experiment in the next financial year.

1.2.3.1.2: Study on New Method of Mushroom Substrates Sterilization

Substrates on which mushroom are grown should be sterilized to avoid infections by molds and other infectious fungus. The current method of sterilization using drums is found to be tedious and not energy efficient as it requires fuel wood, which calls for improvement. Hence, Agriculture Research Development-Subcenter (ARD-SC) Khangma has studied a simple method of sterilization through improvisation of existing method.

In this method, a metallic drum used for sterilization in the existing method is connected to other drums (barrels) through pipes so that steam generated in the first drum is harvested into the other drums connected along-side. The principle behind this new method is to increase the space for substrates through parallel connection to bypass excess steam and put to use as shown in figure.

In this study, sterilization of sawdust was carried out. The results are encouraging except that the connecting drums need to be replaced by metallic ones. In addition to being effective in sterilization, it was also observed that it requires less fuel wood making it more energy efficient.

Figure 8: Sterilization drum connected parallel from the steam source

Output 1.3: Dairy Production Intensified and Expanded

1.3.1: Dairy and Production Inputs

1.3.1.1: Supply of Improved Cattle Breed

Increasing milk supply base is made possible through subsidised support to purchase of quality dairy cows and improving the genetics through breed upgradation. Dairy cows and Heifer importations was initiated pre-COVID-19 pandemic as a fast-track mechanism to increase the smallholder dairy herds thereby enhancing milk production. Post COVID-19, internal sourcing of dairy animals was carried out by the Dzongkhags whereby CARLEP supported 30 % of the cost, while the beneficiaries contribute for 70 % of the cost.

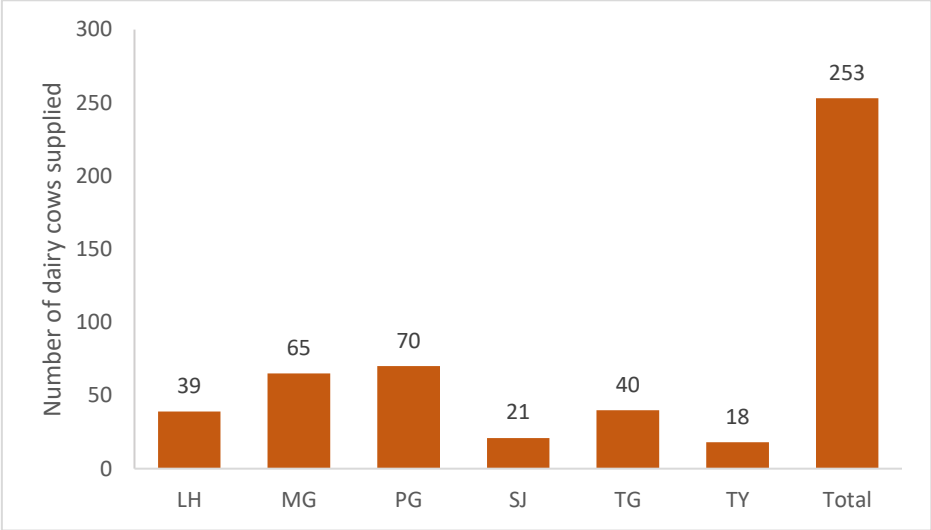


Figure 9: Dairy cows supplied on subsidy

The figure shows Dzongkhag wise number of dairy cows supplied through 30 % CARLEP subsidy benefiting 220 households *(M=131; FM=89)*.

1.3.1.2: Support Improved Cattle Shed Construction

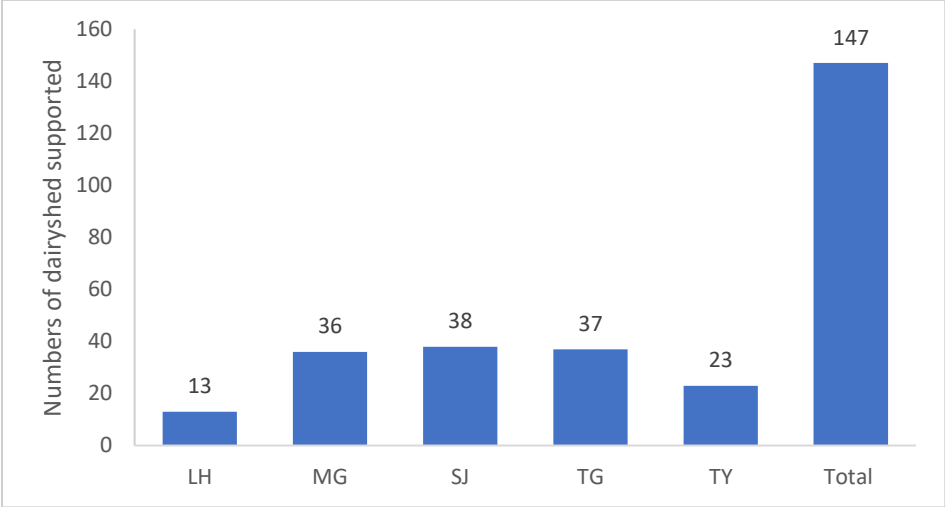


Figure 10: Support to dairy shed construction

The CARLEP continues to support dairy farmers in construction of hygienic cow sheds not only to promote stall feeding and reduce overgrazing in the forests but also to facilitate clean milk production and proper management of cow dung- for use in biogas production. During this FY 2021-2022, CARLEP facilitated construction of 147 hygienic cow sheds through subsidy provision.

1.3.2: Capacity Development in Dairy Production

1.3.2.1: Training on Dairy Management and Clean Milk Production

Dairy intensification in the programme areas is aimed towards bringing smallholders to the mainstream dairy value chain loop. However, the process is hindered due to lack of farmers' skills and knowledge in dairy management and clean milk production. Despite the fact that most dairy farmers have good quality dairy cows, average milk yield is significantly low due to poor management and inadequate feeding management. In order to solve these challenges, CARLEP supported the Programme Dzongkhags in providing farmers with capacity development. Accordingly, Trashiyangtse Dzongkhag reported to have trained 243 and 246 dairy farmers on dairy management and clean milk production, respectively. Training on clean milk production was prioritized and imparted to those dairy groups who started supplying milk to the dairy plant based at Chenari, Trashigang. Similarly, dairy management training was focused in the newly formed groups to capacitate themselves in terms of dairy husbandry, record keeping, clean milk production, building social capital and business aspects.

1.3.3: Dairy Breed Enhancement

1.3.3.1: Breed Intensification through CHBPP

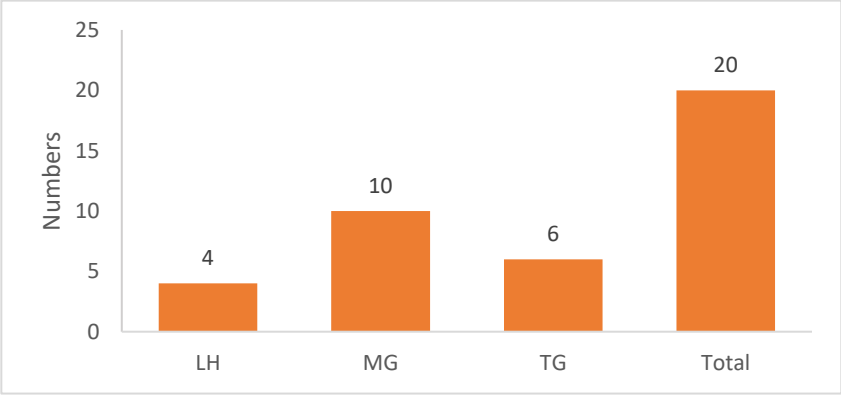


Figure 11: Breeding bulls supplied

Under dairy breed enhancement program, breeding bulls were supplied in areas inaccessible to Artificial Insemination (AI) for breed upgradation and improvement, thereby enhancing productivity. A total of 20 Jersey breeding bulls have been supported to the dzongkhags benefiting 20 dairy groups comprising of 420 members.

CARLEP also supported RLDC in expansion of "Contract Heifer and Bull Production Program" (CHBPP) covering 9 sites whereby 1284 dairy cattle have been identified and ear tagged. In addition, CARLEP also supported RLDC in procurement of AI equipment for increasing AI outreach as part of breed improvement intervention.

Table 9: AI equipment supported

Items	Units	Quantity
Universal AI sheath	Packets	800
Manual semen straw cutter	Nos.	20
LN2 container	Nos.	8
Water boiler	Nos.	18

1.3.4: Improved Livestock Service Outreach

1.3.4.1: Establishment of LN2 plant

With expansion of CHBPP areas and AI Centers in the region, the demand for Liquid Nitrogen (LN_2) to preserve semen has been increasing over the years. With only a LN_2 plant at RLDC, Khangma encountering frequent breakdown, there is a challenge in LN_2 production and meeting demand of the AI Centers. To enhance service delivery and cater to AI Centers uninterruptedly, the construction of plant building was initiated in October 2020 with project timeline of 365 days. Although the construction was supposed to be completed by April 2022 as per project terms and conditions, the time extension for completion was approved until end of August 2022 as per the notification from the Ministry of Finance asking to review on-going construction projects that were affected by COVID-19 pandemic and accordingly provide time extension for completion. Currently, the work progress is almost 95% and the Contractor is expected to handover by 1st week of August 2022.

1.3.5: Support to Feed and Fodder Production

1.3.5.1: Promotion of Improved Fodder, Pasture, Legumes and Leguminous Trees

Pasture development in fallow and marginal land is being facilitated through the supply of improved pasture seeds. Sub-tropical (Ruzi, molasses and stylo) and temperate (Grass mixture which includes Italian Rye grass, tall fescue, Cocksfoot, white clover) pasture seeds were supplied to the dairy groups. The amount of pasture seeds supplied versus area of improved pasture developed during 2021-2022 FY is indicated in the figure 12.

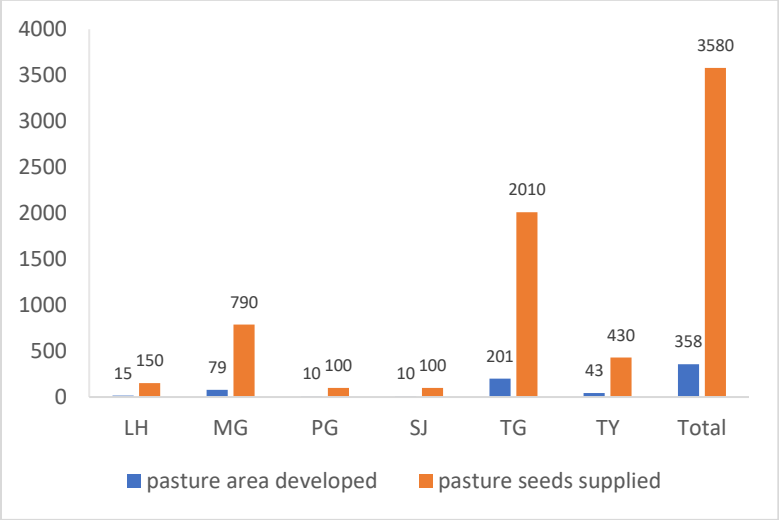


Figure 12: Improved pasture developed

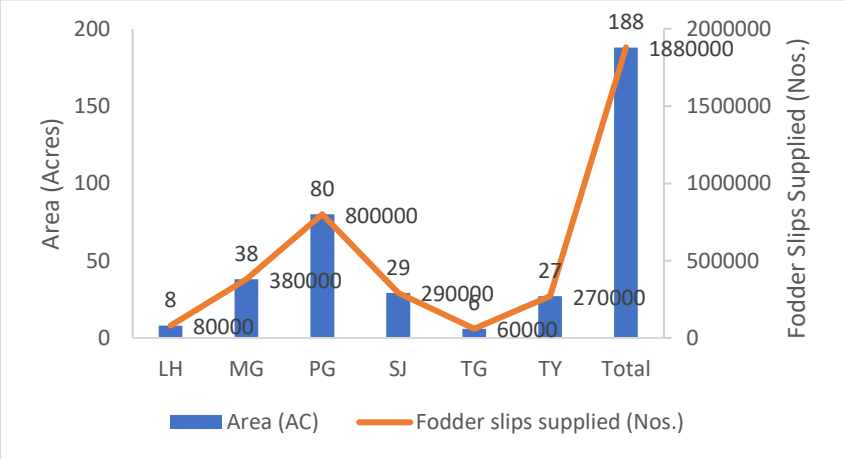


Figure 13: Fodder slips propagation

Napier and *Guatemala* grass have become one of the major sources of forage for cattle in the eastern region. Until recently, *Pakchong* variety has been introduced for propagation in the farmers field as it has higher nutritive value besides higher biomass. During the FY 2021-2022, 188 acres of fodder cuttings were propagated in fallow and marginal land by supplying 1880000 number of cuttings as shown in the figure above.

1.3.5.2: Crop Residue Enrichment

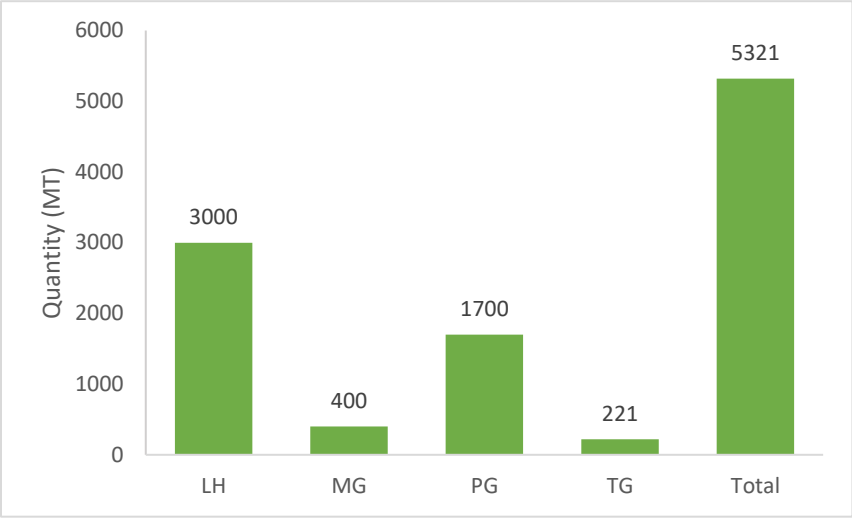


Figure 14: Quantity of fodder conserved

Fodder conservation such as silage making and maize stover/paddy straw treatment were carried out by dairy farmer groups mainly to enhance winter fodder base while at the same time maintaining optimum milk yield. With CARLEP supporting fodder conservation inputs, a total of 5321 MT of fodder were reported to have conserved for feeding dairy animals during lean season (winter) when the fodder resource is scarce. Dzongkhag wise amount of fodder conserved is as shown in figure 14.

1.3.5.3: Winter Fodder Demonstration & Seed Supply

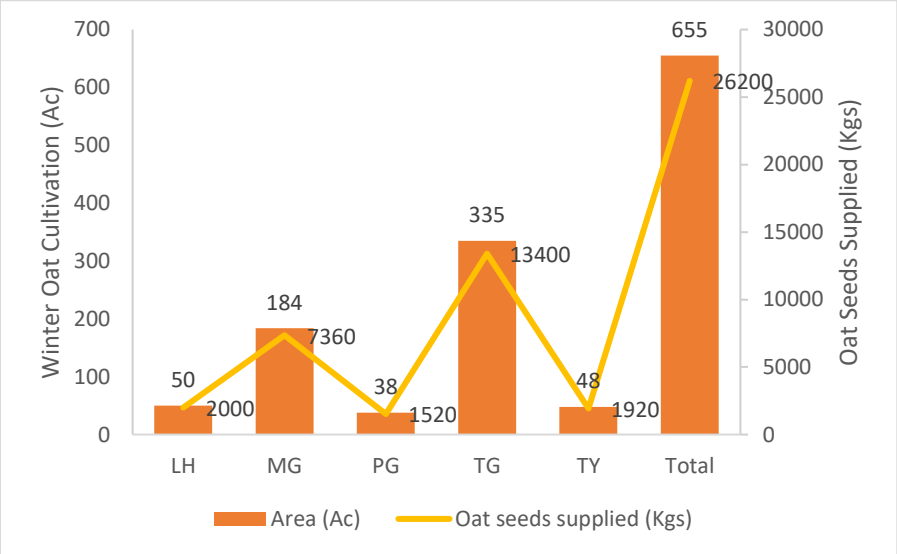


Figure 15: Winter oat cultivation

Oat cultivation during winter, after agriculture crop harvest, has helped marginal farmers to utilize agriculture land effectively for winter fodder production. Naked oat is known for its high nutritive value and is considered as an important fodder for dairy animals. CARLEP has been promoting winter oat cultivation through supply of Oat seeds to dairy farmer groups. For example, 26200 kgs of oat seeds were supplied to dairy groups during 2021-2022 FY alone for cultivation after crop harvest. The Dzongkhag wise quantity of seeds supplied and area under Oat

cultivation is indicated in the figure above. In addition, 68 households adopted azolla farming in conventional pond as feed supplement at Pemagatshel Dzongkhag.

1.3.5.4: Hydroponic Maize Fodder Promotion

Hydroponic fodder promotion using maize and soya bean were piloted in few Dzongkhags in order to optimize fodder production during winter. The biomass was found to be encouraging and worth scaling-up. During the FY 2021-2022, Lhuentse and Trashiyangtse Dzongkhag piloted maize hydroponic fodder with CARLEP supporting production inputs such as greenhouse plastic, trays, gunny sacks and maize seeds. A total of 9 households received the support for piloting *(Lhuentse= 4 households; Trashiyangtse= 5 households).*

1.4: Production Related Infrastructure

1.4.1: Irrigation Improvement

1.4.1.1: Renovation of Irrigation Schemes for Wetland

The program supports the development of climate-resilient irrigation infrastructure in 6 eastern dzongkhags by renovating the existing dysfunctional gravity-based irrigation system. In FY2021-2022, a total of 3 schemes, one in Mongar and two in Trashigang Dzongkhag, were implemented as spill overs from FY2020-2021 and completed in FY2021-2022.

A total of 7.2 km irrigation canal was renovated, irrigating over 235 acres of land, benefiting 124 households. Paddy is grown as a seasonal crop besides potato and vegetable after paddy harvest.

Table 10: Irrigation channel renovation detail for FY2021-2022

Dzongkhag	Gewog	Scheme Name	Length (Km)	Command area (Ac)	Total HH
Mongar	Saling	Bargheyura	1.5	20	9
Trashigang	Phongmey	Tselamtse to Shontsam irrigation	1.2	150	80
	Bartsham	Jomori-Dungpa aaring	4.5	65	35
Total			**7.2**	**235**	**124**

1.4.1.2: Multiple-use Water Scheme for Dryland Irrigation

During the fiscal year, a total of 10 multiple-use (dryland irrigation) scheme were implemented in all dzongkhag except Samdrup Jongkhar dzongkhag through spring water harvesting and network development in production areas. The implementation support was based on cost sharing where beneficiaries contributed their labour and project supported purchase of material, transportation cost of material and daily wage for skilled labour. These activities are based on the potential of the site and consideration for people who are interested in growing vegetables commercially but face water shortages. A total of 142 households benefited from the construction of schemes.

Table 11: Detail dryland irrigation scheme for FY2021-2022

Dzongkhag	No. of scheme	Total HH
Lhuentse	3	13
Mongar	1	48
Trashiyangtse	5	61
Trashigang	0	0
Pemagatshel	1	20
Total	**10**	**142**

1.4.3: Other Infrastructure

After the midterm review, three major activities were added to the Matching Grant facilities, such as support for electric fencing, land development, and chaff cutters. These activities have greatly impacted and changed the lives of rural communities. Wildlife conflicts have been minimized through solar and electric fencing. Land development activities have made unproductive land cultivable and amenable to agricultural mechanization, reducing drudgery, labor, and time. Similarly, the support of chaff cutter has made it easier for dairy farmers to feed their livestock. All of these factors have led to positive changes, including increased income and improved livelihoods.

1.4.3.1: Fencing Support for HWC

1.4.3.1.1: Electric Fencing

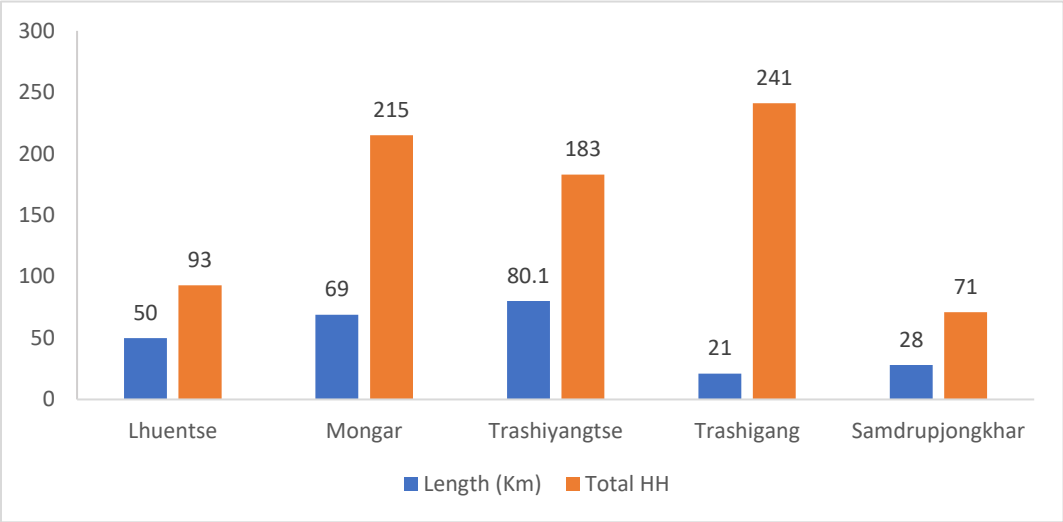


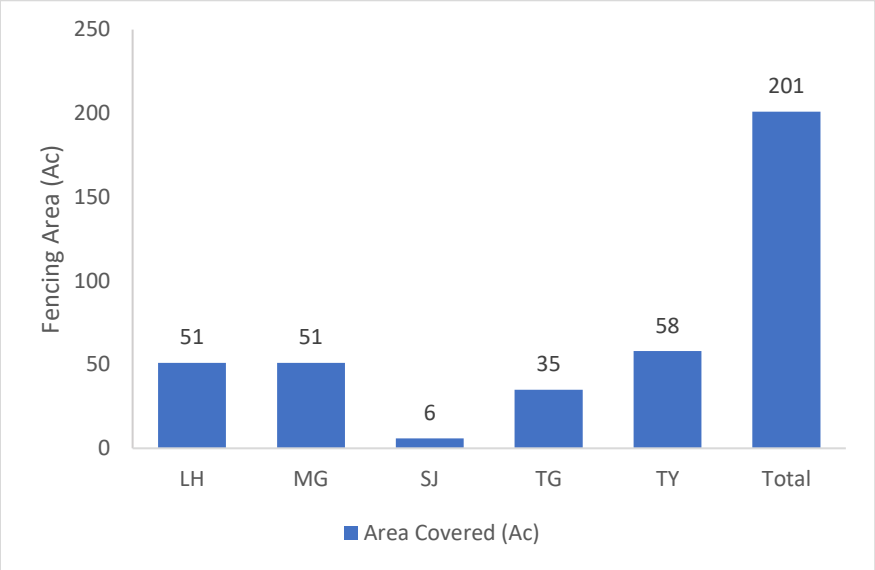
Figure 16: Electric fencing supported

Human-wildlife conflict is one of the major constraints among the farming communities in production. During the fiscal year, the project supported the installation of 248.1 km of electric fencing in the 5 dzongkhags of Lhuentse, Mongar, Trashigang, Trashiyangtse, and Samdrup Jongkhar Dzongkhag, benefiting a total of 803 households.

The implementation modality is based on community willingness, where human-wildlife conflict is the predominant issue. It has been implemented under a 60:40% cost-sharing modality for normal electric/solar fencing, with labour contributed by beneficiaries and materials supported by the project. Similarly, some dzongkhags have used HDPE poles instead of wooden poles, where the cost is shared 90:10%, with 10% of the cost of HDPE pole is borne by the beneficiaries.

1.4.3.1.2: Barbed Wire Fencing

CARLEP continues to support pasture land fencing through subsidy provision for purchase of barbed wire as per MoAF's cost sharing mechanism (60% of the cost supported by CARLEP while 40% is borne by the beneficiaries).



This intervention has benefited 197 household *(101 male; 96 female)* who were able to fence 201 acres of improved pasture land spread across 6 Dzongkhags.

Figure 17: Pasture land fencing support

1.4.3.2: Land Development Support and SLM

The terrain in the six eastern dzongkhags is characterized by steep slopes and stony surface, making it difficult to mechanize agriculture. Even the wetland terraces are too narrow and very small. The Ministry's priority during the 12th Five-Year Plan is land development - consolidation of wetlands, terracing of drylands, and conversion of fallow lands. Although the MoAF prioritizes the conversion of fallow land, CARLEP implementation includes certain requirements that have been communicated to implementing agencies about the conversion of fallow land. 473 households benefited from the development of a total of 418.56 acres of land during the fiscal year through terracing, land consolidation, and fallow land reversion (Details in table 11).

Table 12: Agriculture land development for FY2021-2022

Agency	Dryland terracing		Wetland consolidation		Wetland fallow land reversion	
	Area (Ac)	Total HH	Area (Ac)	Total HH	Area (Ac)	Total HH
Lhuentse	97	61	67	93		
Mongar	40	45		0	3	5
Trashiyangtse	37	30	19	21	0	0
Trashigang	25	69	44	39	0	0
Pemagatshel	24	40	0	0	3.163	2
Samdrup Jongkhar	43.4	47	6	7	10	14
Total	**266.4**	**292**	**136**	**160**	**16.163**	**21**

CARLEP in collaboration with all implementing agencies strictly implement post land development plans where by beneficiary plan and implement various crops with technical support and guidance from Gewog Extension Officer. This is initiated mainly to reap economic benefit from the intervention implemented and justify the expenditure incurred.

1.4.3.3: Supply of Chaff Cutter

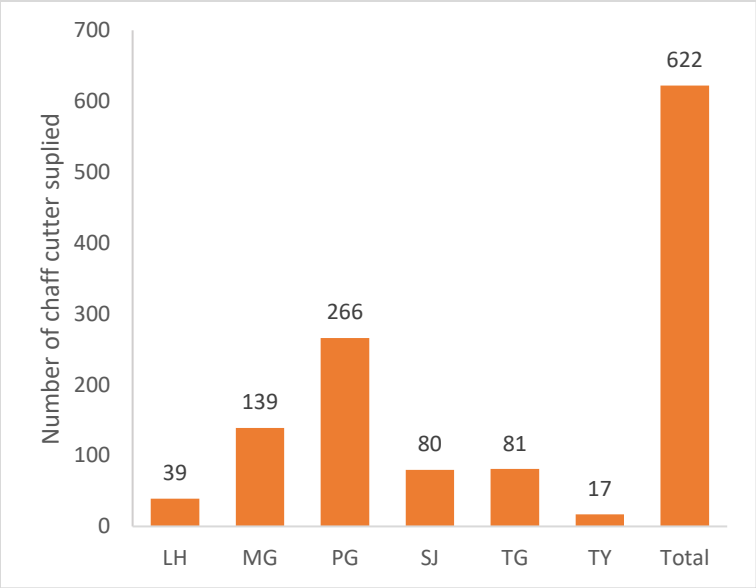


Figure 18: Chaff cutter supplied

Chopping of fodder has always been labor intensive and time-consuming discouraging farmers to conserve fodder for use during lean season. As a solution, subsidy on chaff cutter was provided to dairy farmers to encourage fodder conservation and drudgery reduction, especially for women since women are involved more than men in tending cattle and household chores. A total of 622 chaff cutter sets were supplied to the dairy farmers on cost sharing mode *(60% CARLEP support and 40% beneficiary contribution).* This intervention has benefited 622 household out of which 57% were women beneficiaries.

COMPONENT 2: VALUE CHAIN DEVELOPMENT & MARKETING

2.1: Resilient Vegetable and Dairy Value Chains Developed

2.1.1: Developed Resilient Vegetable Value Chain

2.1.1.1: Vegetable Value Chain Infrastructure

Market infrastructure development remains an important element in the development of the marketing value chain. It provides a platform for buyers and sellers to meet and do business in a specific location, enabling better trading of RNR products.

In this fiscal year, an aggregation center was established in Paytshobi, Tsakaling Gewog, Mongar Dzongkhag in collaboration with the Dzongkhag Agriculture Sector and the Gewog. The aggregation center will help farmers and traders to collect and temporarily

store vegetables, fruits, cereals, eggs and dairy products collected from the area. RNR products will be sorted, graded, packed and then transported to long-distance markets. The aggregation center will benefit 26 households.
The construction of the chili pickling processing unit at Yangtse has been completed with expenditure of Nu. 3.302 million.

2.1.2: Developed Resilient Dairy Value Chain

2.1.2.1: Dairy Value Chain Equipment

Dairy value chain equipment was supported to dairy farmer groups (DFGs) in programme areas. According to the requirements of dairy farmers, a total of 511 milk cans, 226 milking buckets, and 130 lactometers were supported in this fiscal year in significant quantities shown in table 12.

Table 13: Type of dairy equipment supplied across the programme areas

Equipment	LH	MG	PG	SJ	TG	TY	Total
Milk cans	36	217	20	40	13	185	**511**
Display chiller	1	2	2	5		4	**14**
Milking bucket		226					**226**
Lactometer		130					**130**
Milk analyser		2					**2**
Butter churner		1	2	2			**5**
Deep freezer		10	4			7	**21**
Milk transport trolly	2	5					**7**
Milk chiller		2			5		**7**
Cream separator	2	1	4	2		5	**14**
Digital bench scale		5		5		4	**14**
Cool box	30					13	**43**
Plastic sealing machine				10			**10**

2.1.2.2: Dairy Value Chain Infrastructure (MCS, MCC, MPU)

Product aggregation plays a crucial role in channelizing fresh milk from farms to dairy processing units. Due to the smallholding nature of dairy farms and scattered settlements, multiple product aggregation points are unavoidable. In this reporting period, the program supported construction of 9 milk collection sheds (5 MCS in Mongar and 4 MCS in Trashigang); construction of 3 milk collection centers (1 each in Lhuentse, Pemagatshel and Trashigang); and renovation of 1 Milk Processing Unit in Mongar Dzongkhag. These

facilities are expected to motivate farmers in collective marketing of dairy products besides improving hygiene.

2.1.3: Value Chain Development, Strengthening and Expansion

2.1.3.1: Multi-Stakeholder Platforms and Network Development

The Multi Stakeholder Platform (MSP) is a platform where producers and buyers meet and discuss agricultural trade. This fiscal year, RAMCO have conducted two multi-stakeholder platforms (MSPs) as a tool to build a strong bond between producers and buyers. MSP participants are buyers (schools and aggregators) and sellers (farmer groups). Other value chain supporters are Dzongkhag Agriculture and Livestock office, Dzongkhag Education office, Schools, Gewog Agriculture Office, FCBL, BLDC, KIL, FMCL.

During the workshop, the stakeholders and supporters of the value chains updated the current status of the value chains with their progress, achievements and challenges. More importantly, the platform gave them the opportunity to address issues, discuss on collaborative activities, develop action plans, and chart a path forward. The platform has also helped farmers interact with schools, aggregators, and stakeholders to develop plans for linkages (B2B and B2S). As a result of these platforms, the action plan to further strengthen the SHFP program was developed.

1 trader group and 16 farmer groups has been established in FY2021-2022. The total of 137 schools are linked to 278 farmer groups (3191 HHs). Of these, nine new linkages were made and 25 FGs were renewed.

In addition, 69 newly registered executive members of FGs were trained in bookkeeping and accounting. A total expenditure of Nu 1.501 million was made.

2.2: Support to Entrepreneurs & Young Farmers (Matching Grant)

2.2.2: Matching Grant for Entrepreneur

2.2.2.1: Support to Inputs, Equipment and Infrastructure (Livestock)

Support to enterprise development was implemented mainly to stimulate agricultural investments and business activity. The support was provided to agricultural entrepreneurs, especially youths who are keen in medium and large agribusiness investment. This is to foster long-term investment in agribusiness development contributing to national food security and export to niche markets. During this reporting period, 2 semi-commercial dairy enterprises have been developed (1 each in

Pemagatshel and Lhuentse) with CARLEP matching grant support in the form of material for shed construction, fodder development and subsidy for dairy cow/heifers' procurement. The support mechanism was designed in such a way that 50 % of the investment costs was contributed by entrepreneurs either through Priority Sector Lending (PSL) or self-financing while 50 % was supported by the CARLEP project.

2.2.2.2: Support to Inputs, Equipment and Infrastructure (Agriculture)

A total of 2 Nurseries for production of high value grafted fruits seedlings were established under Matching Grant Support from CARLEP – IFAD supplemented with Credit Investment support availed by the entrepreneurs from the Queens Project Office Loan supports. In their first year of operation, these entrepreneurs generated approximately Nu. 0.275 million from the sale of avocado seedlings (see Table 13).

Similarly, in Lhuentse Dzongkhag in Gangzur Gewog, a Kurtoed food processing enterprise was established with 3 youths. The main purpose of the enterprise is to create sustainable employment for rural youth in Gangzur Gewog by actively engaging in agribusiness, building entrepreneurial skills and creating market linkages through the production of processed vegetables, fruits and cereal products. These enterprises are now fully operational.

Table 14: Matching grant amount disbursement and income earned

Name of Enterprise	Dzongkhag	Location	Grant amount (Nu. Million)	Income generated (Nu. Million)
Youth Agro processing	Lhuentse	Gangzur	0.647	0
Khemsar Fruit Nursery	Mongar	Wengkhar	0.372	0.132
Paksam Nursery	Mongar	Wengkhar	0.322	0.143
Total			**1.341**	**0.275**

2.3: Agricultural Commercialization and Enterprise Development Strengthened

2.3.1: Support to Agriculture Enterprise Development

2.3.1.1: Enterprise Development

2.3.1.1.1: Support to Establishment of Mushroom Enterprises

ARDC Wengkhar supported 7 mushroom production enterprises and 1 spawn production unit during the year. During this financial year, the mushroom enterprises have generated

approximately Nu. 1.1 million (see table below) though many of these enterprises have just started their business.

Table 15: Mushroom enterprise supported for FY2021-2022

Name	Dzongkhag	Funding	Total bags cultivated	Total Harvest-ed (kg)	Total Sold (Kg)	Income (Nu)	Rem-arks
Oyster mushroom production enterprises							
Phub Gyeltshen	Mongar	CSI	600	200	180	54000	
Ugyen Tenzin	T/gang	Self-funding	400	65	59	20000	
Dendup Tshering		Self-funding	600				**New**
Rinzin Wangmo	Lhuentse	CSI	550	100	70	21000	
Norbu Tashi	Mongar	Self-Funding	400	30	0	0	
Sherab Gyeltshen		Self-funding	160				**New**
Shacha Tenzin	T/yangtse	Self-Funding	160	25	15	450	
Total			**2870**	**420**	**324**	**95450**	
Mushroom spawn production enterprise							
Jambay Dorji	P/gatshel			200 bottles	100 bottles	12000	
Total						**12000**	
Grand total						**107450**	

C. Activities & Outputs: Key achievement highlights

The overall programme outreach to date is 88.594% (25670 HHs with target of 28,975) based on the log frame indicator (Without double counting of households). There are 12227 males and 13443 female households' beneficiary.

The main achievements of the activities and outputs during the FY 2021-2022 are as highlighted:

a) 12 new groups were registered with RAMCO and 4 FGs were upgraded to cooperatives which benefitted 625 members.

b) A total of 3123 HHs have benefited from the intensification and diversification of crops on 2551.5 acres of land.

c) A total of 1.480 MT of Pioneer Hybrid Maize (P3502), 1.2 MT of Improved Maize (Yangtsepa), and 50kg of Wengkhar Hybrid Maize-1 were supported to 308 households in the region

d) 95 households (36 males and 59 female) living in the remote villages received the support to establish poultry backyard farms

e) A total of 40 bee hive sets were supplied to 24 households for honey production and to increase on-farm diversity

f) 190 households in the programme areas adopted biogas technology

g) A total of 336 orchards were established in five Dzongkhags

h) A total of 329 greenhouse sets were distributed to 326 households

i) 220 households (M=131; FM=89) received improved cattle breed subsidy support

j) 147 hygienic cow sheds have been constructed

k) 489 dairy farmers received training on dairy management and clean milk production

l) 188 acres of fodder cuttings were propagated in fallow and marginal land

m) A total of 5321 MT of fodder were reported to have conserved for feeding dairy animals during lean season

n) A total of 7.2 km irrigation canal was renovated, irrigating over 235 acres of land, benefiting 124 households.

o) A total of 142 households benefited from the construction of 10 multi-use dryland irrigation schemes.

p) 248.1 km of electric fencing benefitted a total of 803 households

q) 197 HHs benefitted from 201 acres of barbed wire fencing

r) 473 households benefited from the development of a total of 418.56 acres of land through terracing, land consolidation, and fallow land reversion

s) A total of 622 chaff cutter sets were supplied to the dairy farmers, 57% were women beneficiaries

t) 9 milk collection sheds, 3 milk chilling center and 1 milk processing unit were constructed

u) 2 semi-commercial dairy enterprises have been developed

v) A total of 2 fruit nurseries and a processing enterprise have been supported

D. Convergence and Partnership

CARLEP/IFAD is not officially coordinated with other projects**/**agencies in the region such as a Global Climate Change Alliance through the European Union (EU-GCCA), Government of India (GoI) supported projects, Highland Research and Development Centre, Gewog and Dzongkhag Development Grants. It is therefore important to synchronise or harmonise the annual work plan and budgeting between projects and programmes to avoid duplication and to take advantage of synergy and complementarity effects. Office of the Programme Management is ensuring that there is no duplication of the same activities supported by different projects.

E. Grant Activities

In this reporting period five matching grants enterprises were established with the grant support of Nu. 2.560 million, 2 dairy farming and 2 horticulture nursery and 1 processing unit.

IFAD grant and ASAP trust grant mainly supported the training, farmers group formation, supply of inputs such as seeds, seedlings, water harvesting technologies, permaculture, nursery raising, biogas installations, organizing meetings and workshops, and lead farmers training. Although grant fund covers training related both In-country and ex-country, no training was entertained in this fiscal year due to COVID-19 Pandemic.

F. Constraints/Bottlenecks Affecting Component Progress and Actions Taken

The geographical location of the far-flung nature of village settlement has the utmost constraint and bottleneck affecting the overall development in the region. Some of the factors challenging the villagers are: water shortage and developmental activities affecting the network of water channels, wildlife depredation, and post-harvest losses due to pests and disease among others. Therefore, CARLEP supported efficient irrigation facilities, protected agriculture, irrigation renovation, and electric fencing installation.

Besides, the beneficiaries are also provided capacity-building training to address challenges faced.

Similarly, limited access to suitable agricultural land is one of the challenges faced by the agriculture sector. The challenges are further aggravated with the factors such as empty households, and rural-urban migration resulting in fallow of land.

G. Progress Towards Programme Purpose & Goal

The programme aims to facilitate the transformation of subsistence-based agriculture into a sustainable value chain market-driven productive sector by promoting climate-smart approaches in agriculture and strengthening the local or community capacity. The programme is gearing towards the goal and objective of CARLEP. The production of milk has increased and certainly increased the income from the dairy sector. The targeted interventions through the provision of input supports have helped crop diversification and enhanced income generation and enhancing farm resilience. The conservation of local crop varieties or native animal breeds will also contribute towards resilience and balance development. The establishment of climate smart villages through the participatory approach, a way towards strengthening local capacity to adapt towards climate change impact. These interventions will directly contribute to increased rural income and thus reduce rural poverty.

The commercialization of vegetable production and the establishment of dairy cooperatives is expected to contribute towards the development of sustainable value chains in both the vegetable and livestock commodities. This is evident from enhanced vegetable and milk production in the programme areas. To sustain the value chain, investments are being made in infrastructure development as well as strengthening the capacities of the farmers' groups and other actors in the value chain. The support in post-harvest technology and product diversification both in vegetables and dairy will help in the establishment of a sustainable value chain. The overall programme outreach till this reporting period is 22,226 HHs (target HHs is 28,975) based on the log frame indicator (Without double counting of households), of which22553 are male and 15920 are female beneficiary.

H. Programme Sustainability

CARLEP has followed the cost-sharing guideline to ensure programme sustainability and to instil a sense of ownership among beneficiaries. The involvement of communities in the management of irrigation infrastructure through the establishment of Water Users Associations (WUA) is expected to ensure sustainability. The beneficiary contribution of

20% is being implemented for the supply of post-harvest equipment and protected agriculture (supply of greenhouse structure) in the vegetable value chain. Farmers contribute 30% of the cost for the purchase of crossbred cattle. Similarly, beneficiaries contribute labour and locally available raw materials for the construction of dairy sheds while the programme supports the purchase of other raw materials such as cement, nails and corrugated iron (CGI) for roofing. Therefore, the programme management will continue to emphasize on programme sustainability through sensitization programs.

Further, the involvement of Public-Private-Partnership (PPP) is being solemnly pursued especially for infrastructure with higher investments. In the dairy value chain, the establishment of milk processing units on the PPP model has been initiated. The linking of dairy groups from Trashigang Dzongkhag to Kufouku International Limited (Japan assisted programme) has assured the milk market to the farmers. The programme will closely work with the company to sustain the dairy value chain. Similarly, the involvement of NGOs like the Samdrup Jongkhar Initiative (SJI) and Tarayana foundation will ensure the sustainability of impacts and benefits of climate change adaptation measures and resilient farming practices through adoption and expansion of farmer-farmer extension methodology.

I. Programme Management

The Office of the Programme Management has conducted most of the coordination meetings through virtual meetings for FY2021-2022. The endorsement of Annual Work Plan and Budget has been also done virtually. However, financial workshop has been conducted at Trashigang.

Moreover, a regular meeting and discussion with the Dzongkhags, Regional institutions sector heads (Agriculture, Livestock, Planning Officers, Budget and Account Officers) were conducted through virtual mode.

Regular monitoring is carried out through field visits, telephonic conversations, e-mails, and other means of communication, However, physical monitoring in Samdrup Jongkhar could not be carried out because of COVID-19 travel restriction. Therefore, most of the monitoring was carried out through phone calls, e-mail and virtual zoom meetings.

J. Financial Management

The financial achievement during FY 2021-2022 FY is 81.73% with an increase of 15.57% compared to last year's progress achievement of 69%. The achievement is based on the annual revised planned target.

Table 16: Consolidated financial progress for FY 2021-2022

Agency	Revised Budget	Total Expenditure	Achi. %
ARDC	29.111	29.037	99.746
Lhuentse	30.789	36.162	117.450
Mongar	47.298	39.270	83.027
OPM	32.482	26.224	80.734
P/gatshel	49.862	36.516	73.234
RAMCO	7.230	6.829	94.454
RLDC	18.542	2.941	15.861
S Jongkhar	33.711	25.498	75.637
T/Yangtse	32.472	30.455	93.788
Trashigang	38.284	28.433	74.269
TOTAL	**319.781**	**261.365**	**81.732**

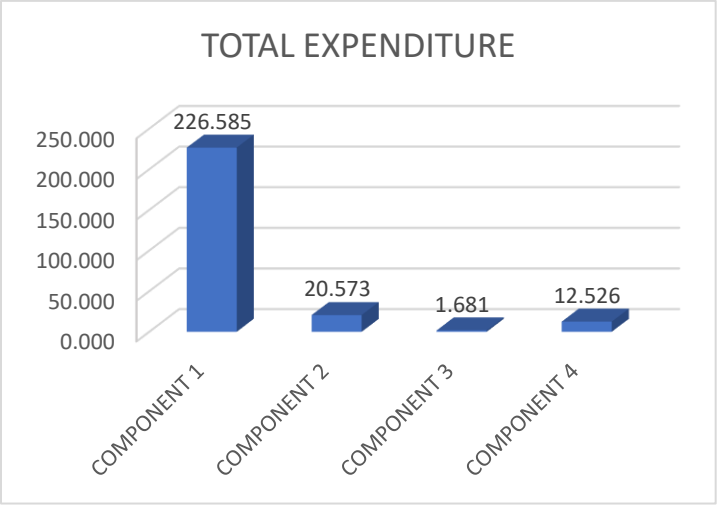


Figure 20: Component wise expenditure

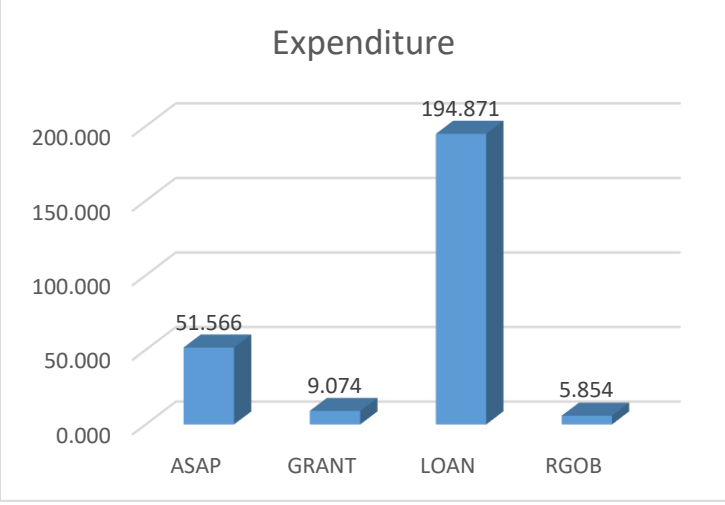


Figure 19: Expenditure sorted in funding sources

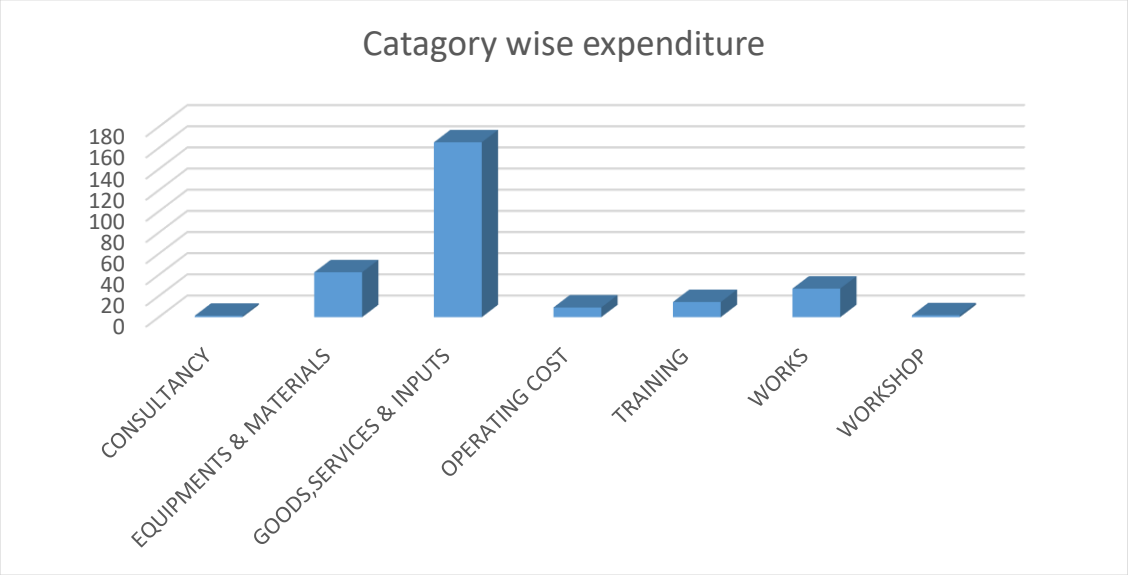


Figure 21:Category wise expenditure

K. Procurement

The procurement plan is based on the IFAD guideline and implemented as per the plan. In every Annual Work Plan and Budget (AWPB) meeting, all the reverent officers are made aware of the procurement guidelines and asked to make a procurement plan based on the work plan. The sanction is based on the procurement plan and gets the funds released to the OPM.

L. M&E, Communications, and Knowledge Management

Knowledge Management (KM) is considered an integral part of CARLEP. KM is about facilitating the processes by which knowledge is created, shared, replicated, and used in changing people's attitudes, behaviours and work patterns thereby improving the performance and effectiveness of the programme. This facilitation under CARLEP is guided by the IFAD knowledge value chain concept which advocates a strong connection between KM and M&E.

The programme recognizes the importance of Knowledge and its contribution to the following outcomes such as i) Improved programme performance and results through enhanced learning, knowledge sharing and dissemination/communication; ii) Enhanced information management system (IMS) to ensure better access to reliable information and

knowledge iii) Improved engagement, partnership and collaboration with the programme implementing partners in KM.

Since its inception, CARLEP has done substantial work related to knowledge management and dissemination including the compilation of stories, articles, pamphlets and audio-visual documentation. In FY 2021-2022, the Office of the Programme Management (OPM), CARLEP and Agriculture Research and Development Center (ARDC) Wengkhar has put in extra effort to translate field expertise into video documents/ tutorial videos to create awareness and educate people, especially farmers on advanced farming technologies, practices, and management. To date, CARLEP has produced 26 audio-visual documentations, of which 5 videos have been produced with the in-house capacity of Programme Office and ARDC Wengkhar during FY 2021-2022.

List of the KM Products produced this fiscal year are listed below:

1. Zhonggar Nazhoen Detshen: Strengthening Dairy Value in Mongar
2. Bhutan Agro- Benefiting Rural Farmer
3. Dryland Irrigation Benefits Wamakhar Farmers
4. How To Grow Oyster Mushroom
5. School linking programme

Likewise, the programme has also produced AOS 2021 and story of change _issue IV. All these KM Products were disseminated through various social media platforms i.e. IFADASIA Facebook page, CARLEP Facebook page, YouTube Channel (KMG Production-ARDC Wengkhar and OPM), Official WeChat Group, Official website and local channels to grasp wider audiences or farmers for more outreach and knowledge dissemination.

L.1. Gender

The project explores and facilitates the promotion of need-based gender-friendly farm machinery, technologies, equipment & tools such as chaff cutter, corn sheller, quinoa de-husking, protected agriculture, electric dryers, electric fryers, weighing and sealing machine, Flexi-biogas, mini-power tillers, and also facilitate the promotion of efficient water use technologies such as drip irrigation, sprinkler, and automated irrigation to ease the burden of women farmers and enhance production. Likewise, training on climate-smart technologies is also facilitated to enhance community resilience to climate change.

CARLEP also supports the formation of women's groups to ensure active participation of women in project-related activities, decision-making bodies and committees. Likewise, the programme promotes a proportionate representation of women beneficiaries in

training and capacity development programmes of farmers groups/cooperatives. Moreover, the development of thematic knowledge products related to gender and women empowerment is also given importance and emphasized in gender mainstreaming.

In this fiscal year, 3 staff members, one each from OPM and RAMCO AND RLDC, attended a training organized by the National Commission for Women and Children (NCWC) on basic gender mainstreaming methods and tools for mainstreaming reference group members and GFPs from May 16-20, 2022 at the Shambala Resort in Paro.

M. Summary of Lessons Learned

The Office of Programme Management (OPM) takes the lead in preparing the annual work plan and budgeting each cycle of the project phase. During implementation, Gewog extension agents submit the raw data/plan to the Dzongkhag Sector heads, which are then reviewed and presented in the annual planning review meeting organised by OPM. Over the course of the project period, it has been learned that there is a need for improvement in planning to get the realistic target and budget estimation for better project outcomes.

Engaging youth in agriculture and agri-business has not been a successful measure to date. A thorough study is needed, ranging from a business perspective to the engagement of individual youth in agriculture as a business. A critical review and discussion among the various stakeholders in the platform are needed. The land use certificates (LUC) is a typical example and clearly show that the number of youths in each area has been reduced to a minimum.

A success of Dairy value chain model, adopted with smallholder milk producers linking to Koufuko International Limited (Dairy Plant) based at Trashigang. KIL serves as an assured market for fresh milk produced by the dairy farmers in the eastern region. As a lesson learnt, vegetable value chain development is also focusing on few crops such as pineapple and chilli marketing to the Agro Processing Unit at Lingmethang.

N. Conclusions and Recommendations for follow-up

- The overall physical outreach is 73.26% and financial achievement is 81% in FY2021-2022 based on the annual plan allocation outlay.

- Clear strategic planning is essential to engage youth in agriculture, and it is important to involve individuals at the planning stage for better outcomes.

- As per the 5th National Programme Steering Committee Meeting (NPSC), the promotion of greenhouses may need to be down-scaled and the fund for protected agriculture in FY2022-2023 need to be pooled at OPM. The NPSC endorsed that the greenhouses to be supported to the implementing agencies based on proper feasibility study.

- All implementing agencies tried their best to complete planned activities within the timeframe. Most implementing agencies reported that they faced challenges in procuring materials from third countries and India amidst the pandemic, resulting in delays in completing activities on time.

- To ensure smooth implementation and timely completion of activities, OPM closely monitors all major activities and frequently reminds implementing agencies to complete planned activities expeditiously to achieve targeted outcomes.

O. Annexure

Annexure 1. Progress Report Matrix (2021-2022)

Annual Progress Report Matrix											
OUTPUT	**Sub Activity**	**Indicator**	**Unit**	**Annual Target (2021-22)**	**Annual Achi. (2021-22)**	**Annual Exp. (2021-22)**	**Appraisal Target**	**Past years**	**Cumulative**	**Achi. % till date**	**Financer**
1.1.A	Climate Smart Agriculture Production and Management										
1.1.A	Upgrading of existing farmer groups (Agriculture)	No. of farmers Groups upgraded	No.	20	16	0.398	300	59	75	25.00	ASAP
1.1.A	Upgrading of existing farmer groups (Livestock)	No. of farmers Groups upgraded	No.	2	1	0.200	150	21	22	14.67	ASAP
1.1.A	Training of extension agents	No. of EAs trained	No.	0	0	0.000	420	81	81	19.29	ASAP
1.1.A	Production inputs for farm resilience and diversification, Vegetable seed (Agriculture)	Area under farm resilience and diversification	Acre	888	1003	10.457	7414	4593	5596	75.48	LOAN
1.1.A	Production inputs for farm resilience and diversification (Livestock - Poultry)	No of native poultry units promoted	No.	131	146	4.507	300	674	820	273.33	ASAP
1.1.A	Production inputs for farm resilience and	No. of native piggery units promoted	No.	0	0	0.000	150	30	30	20.00	ASAP

	diversification (Livestock - Piggery)										
1.1.A	Promotion of SLM techniques	Area under SLM	Acres	0	0	0.000	200	77	77	38.50	LOAN
1.1.A	wet land consolidation (land development)	Area under land development	Acres	104	63	3.052	450	573	636	141.33	LOAN
1.1.A	Dryland terracing (land development)	Area under land development	Acres	647	339	13.879	450	305	644	143.11	LOAN
1.1.A	Fallow land conversion (land development)	Area under land development	Acres	51	42	6.906	450	444	486	108.00	LOAN
1.1.A	Local germplasm collection, conservation and promotion	No. of lines	No.	0	0	0.000	100	78	78	78.00	ASAP
1.1.A	Crop diversification(Cereals, oil seeds, pulses)	Area under diversification	Acre	2807	2580	8.290	3000	7961	10541	351.37	LOAN
1.1.A	Mushroom intensification	No. of mushroom entrepreneurs established	Site	8	8	2.989	150	39	47	31.33	ASAP
1.1.A	Promote integrated nutrition garden	Area under kitchen garden	Acre	18	16	5.364	100	100	116	116.00	ASAP
1.1.A	Green manure crops	Area under green manure	Acre	0	0	0.000	120	120	120	100.00	ASAP
1.1.A	Train CBSP farmers on hybrid maize	No. of people trained	No.	0	0	0.000	70	36	36	51.43	ASAP
1.1.A	Upscale of pineapple production	Area under pineapple	Acre	5	17	3.374	100	11	28	28.00	ASAP
1.1.B	**Innovation through Permaculture & Biogas**										

1.1.B	Farm level rainwater harvesting infrastructure	No. of infrastructure established	No.	10	65	1.434	162	36	101	62.35	LOAN
1.1.B	Tree crop seedlings	Area covered	Acre	105	624	12.300	300	104	728	242.67	LOAN
1.1.B	Inputs for permaculture (agriculture)	Sets of tools supplied	set	0	0	0.000	36	31	31	86.11	ASAP
1.1.B	Inputs for permaculture (livestock)	No. of units supported	No.	0	0	0.000	36	14	14	38.89	ASAP
1.1.B	Bee Keeping	No. of household supported	No.	165	40	0.689	600	480	520	86.67	ASAP
1.1.B	Nursery set up (Agriculture)	No. of nurseries set up	No.	8	8	0.299	50	24	32	64.00	ASAP
1.1.B	Nursery set up (Livestock)	No. of nurseries set up	No.	0	0	0.000	6	5	5	83.33	ASAP
1.1.B	Staff training on permaculture	No. of training	No.	0	0	0.000	2	3	3	150.00	ASAP
1.1.B	Farmers training on permaculture	No. of farmers trained	No.	0	0	0.000	250	205	205	82.00	ASAP
1.1.B	Permaculture materials & translation	No. of materials published	set	0	0	0.000	25	4	4	16.00	ASAP
1.1.B	Biogas digester	No. of biogas digester promoted	No.	341	190	5.240	1412	764	954	67.56	ASAP
1.1.B	TA biogas	No. of TA recruited	No.	0	0	0.000	1	0	0	0.00	ASAP
1.1.B	Capacity building on biogas technology /a	No. of training	No.	40	12	0.289	76	1	13	17.11	ASAP
1.1.B	Electric fencing	Length of the fencing	km	1006	237	13.631	90	1815	2052	2280.00	LOAN
1.1.B	Promotion of solar dryers	No. of dyer	No.	10	8	0.820	36	1	9	25.00	ASAP

1.1.B	Support to LUCs	lumpsum	No.	6	1	0.500	6	20	21	350.00	LOAN
1.1.C	**Innovation through ICTs**										
1.1.C	Hand-held tablets, software and soil test kits	No. of ICT tools introduced	No.	0	0	0.000	100	32	32	32.00	ASAP
1.1.C	Training on tablet-based soil monitoring technology	No. of training conducted	No.	0	0	0.000	4	0	0	0.00	ASAP
1.1.C	Training on report writing documentation and information sharing	No. of training conducted	No.	0	0	0.000	5	3	3	60.00	ASAP
1.1.C	Pilot e-reporting system	No. of e-reporting system	No.	0	0	0.000	1	1	1	100.00	LOAN
1.1.C	Information management dissemination	No. of publication		0	0	0.000	50	18	18	36.00	LOAN
1.1.D	**Increase Outreach of Extension Services**										
1.1.D	**Strengthening & expansion of the Lead Farmer Model**										
1.1.D	Training of trainers (ToT) (Agriculture)	No. of ToT conducted	No.	0	0	0.000	14	14	14	100.00	ASAP
1.1.D	Training of lead farmers	No. of lead farmers trained	No.	45	30	4.896	240	220	250	104.17	ASAP
1.1.D	Development of training material and field manuals	No. of training materials developed	No.	3	2	0.125	13	7	9	69.23	ASAP
1.1.D	Expansion of lead farmers	No. of lead farmers trained	No.	142	2283	4.652	1300	1056	3339	256.85	LOAN
1.1.D	Farmer field festivals/field day	No. of Farmers field festivals convened	No.	10	10	0.050	63	34	44	69.84	ASAP

1.1.D	Workshops (planning, review, evaluation)	No. of Workshops conducted	No.	6	5	2.646	20	21	26	130.00	GRANT
1.1.D	Documentation and systematization	Documents produced	No.	0	0	0.000	3	2	2	66.67	GRANT
1.1.D	Protected gear kits for extensions	No. of Kits supplied	No	150	157	1.211	100	4	161	161.00	LOAN
1.1.D.2	**Demonstration inputs & equipment for lead farmers**										
1.1.D.3	Low-cost greenhouse structure	Area covered under protected agriculture	No.	0	0	0.000	130	4247	4247	3266.92	LOAN
1.1.D.4	Supported plastic sheet for nursery	No. of poly-tunnels set up	No.	0	0	0.000	35	105	105	300.00	LOAN
1.1.D.5	Protected greenhouse with structures frame set	No. of poly-tunnels set up	No.	553	306	21.787	60	458	764	1273.33	LOAN
1.1.E	**Resilient & Water Use Efficient Irrigation Development**										
1.1.E	**Training on Climate Resilient Irrigation**										
1.1.E	District engineers and extension agents (design and construction)	No. of DEs and EAs trained on climate resilient irrigation	No.	0	0	0.000	100	20	20	20.00	ASAP
1.1.E	Water Users Associations (O&M)	No. of WUAs trained on Climate resilient irrigation	event	6	9	0.210	33	29	38	115.15	ASAP
1.1.E	Preparation of manual for upgrading irrigation engineering norms	Manual for upgrading Irrigation Engineering norms prepared	No.	0	0	0.000	1	0	0	0.00	ASAP
1.1.E.2	**Irrigation Infrastructure**										
1.1.E.3	Feasibility studies	No. of Feasibility studies conducted	No.	5	6	0.057	2	10	16	800.00	LOAN
1.1.E.4	Renovation of irrigation infrastructure	Irrigation Infrastructure renovated (Area coverage)	Acre	400	350	6.746	3052	2744	3094	101.38	LOAN

1.1.E.5	Pilot irrigation schemes	No. of Pilots irrigation schemes developed	No.	0	0	0.000	26	4	4	15.38	LOAN
1.1.E.6	Quality control and supervision	No. of quality control and supervision conducted	No.	0	0	0.000	12	0	0	0.00	LOAN
1.1.E.7	Water efficient irrigation/dryland irrigation for commercial vegetables	No. of improved irrigation system	No	21	11	16.000	18	63	74	411.11	LOAN
1.1.E.8	Pump irrigation network up to field edge	No. of pump irrigation	No.	0	0	0.000	20	4	4	20.00	LOAN
1.1.E.9	Promote sprinkler irrigation system	No. of sets	Set	0	0	0.000	5000	4220	4220	84.40	LOAN
1.1.E.10	Support- supply of drip sets	No. od sets	Set	533	624	10.762	300	300	924	308.00	LOAN
1.1.E.11	Water source protection/catchment area	No. of site	site	0	0	0.000	10	8	8	80.00	ASAP
1.1.F	**Strengthening of Local Institutions on Smallholder's Climate Resilience**										
1.1.F	Development of business model and sustainability plan for service and O&M	No. of business model and sustainability plan developed	No.	0	0	0.000	3	2	2	66.67	ASAP
1.1.F	Upgrading of farm roads to climate resilient standards	No. or length of farm roads upgraded to climate resilient standards	No./ Km	0	0	0.000	32	0	0	0.00	ASAP
1.1.G	**Technical Assistance (C1)**										

1.1.G	Recruitment of National TA done	No. of TA recruited	No.	0	0	0.000	6	0	0	0.00	ASAP
1.2.A	**Development of training and extension material**										
1.2.A	Training & extension material developed	No. of training & extension materials developed	No.	3	2	0.125	20	8	10	50.00	ASAP
1.2.B	**Capacity Development of Vegetable Production Groups**										
1.2.B	**Awareness & Mobilization**										
1.2.B	Awareness and mobilization carried out (Agriculture)	No. of awareness & mobilization conducted	No.	0	0	0.000	104	62	62	59.62	ASAP
1.2.B.2	**Training on Production Techniques & Post-harvest Management**										
1.2.B.3	Training on vegetable production techniques	No. of farmers training conducted	No.	0	0	0.000	390	93	93	23.85	ASAP
1.2.B.4	Retraining on vegetable production techniques	No. of farmers training conducted	No.	0	0	0.000	790	8	8	1.01	RGoB
1.2.B.5	Training on post-harvest management	No. of farmers trained on post-harvest management	No.	0	0	0.000	390	1384	1384	354.87	ASAP
1.2.B.6	Retraining on post-harvest management	No. of farmers retrained on post-harvest management	No.	0	0	0.000	790	5	5	0.63	RGoB
1.2.B.7	Exchange visits for farmers	No. of exchange visits	No.	0	0	0.000	18	12	12	66.67	
1.2.B.8	Training on preparation of bio pesticides	No. of farmers training conducted	No.	0	0	0.000	20	8	8	40.00	ASAP
1.2.C	**Vegetable Seed Research & Production**										

1.2.C	Training and certification of vegetable seed growers	No. of vegetable seed growers trained on seed certification	No.	0	0	0.000	130	27	27	20.77	ASAP
1.2.C	Equipment and input support vegetable seed growers	No. of Equipment supplied to veg. seed growers	No.	0	0	0.000	130	19	19	14.62	LOAN
1.2.C	Retraining of vegetable seed growers	No. of veg. seed growers retrained	No.	0	0	0.000	195	6	6	3.08	RGoB
1.2.C	Seed processing units vegetable seed farm NSC	No. of seed processing units supported	No.	0	0	0.000	2	1	1	50.00	LOAN
1.2.C	Glasshouse construction vegetable seed farms NSC	No. of glasshouse constructed	No.	0	0	0.000	2	1	1	50.00	LOAN
1.2.D	**Provision of Vegetable Production Inputs**										
1.2.D	Provision of stress tolerant vegetable seeds	Quantity of vegetable seeds supplied	Acre	73	104	0.799	3000	2280	2384	79.47	ASAP
1.2.D	Small post-harvest equipment	No. of small post-harvest equipment promoted	No.				730	46	46	6.30	LOAN
1.3.A	**Development of training & extension materials**										
1.3.A	Training & Extension materials developed (Livestock)	No. training & extension materials developed on dairy production	No.	0	0	0.000	78	1	1	1.28	ASAP
1.3.A	AI Services expansion & CAIT established	Unit of semen	semen	0	0	0.000		4157	4157		LOAN
1.3.A	Training on AI	No. of people trained	No.	0	0	0.000		719	719		ASAP
1.3.B.1	**Awareness & Mobilization**										

1.3.B.2	Awareness & Mobilization Carried Out (Livestock)	No. of Dairy groups sensitized and mobilized	No.	1	1	0.357	95	27	28	29.47	ASAP
1.3.B.2	**Training on Good Dairy Management Practices**										
1.3.B.3	Training on livestock husbandry	No. of dairy groups or individuals trained on livestock husbandry	No.	1	1	0.230	150	416	417	278.00	ASAP
1.3.B.4	Retraining on livestock husbandry	No. of dairy groups or individuals retrained on livestock husbandry		0	0	0.000	420	9	9	2.14	RGoB
1.3.B.5	Training on clean milk production	No. of dairy groups or individuals trained on clean milk production	No.	1	1	0.150	150	698	699	466.00	ASAP
1.3.B.6	Retraining on clean milk production	No. of dairy groups or individuals retrained on clean milk production	No.	0	0	0.000	420	28	28	6.67	RGoB
1.3.B.7	Training on farm record keeping	No. of dairy groups or individuals trained on farm record keeping	No.	0	0	0.000	65	74	74	113.85	ASAP
1.3.B.8	Retraining on farm record keeping	No. of dairy groups or individuals retrained on farm record keeping	No.	0	0	0.000	420	18	18	4.29	RGoB
1.3.C	**Improved Services Outreach through CAHWs & Lead Farmers**										
1.3.C	**CAHW Model**										
1.3.C	CAHW model development and packaging	No. of CAHW model developed	No.	0	0	0.000	2	1	1	50.00	LOAN
1.3.C	Training of trainers (ToT)	No. of ToT conducted on CAHW & lead farmers	No.	0	0	0.000	2	1	1	50.00	ASAP
1.3.C	Training of CAHWs	No. of CAHWs trained	No.	0	0	0.000	105	82	82	78.10	ASAP
1.3.C	Retraining of CAHWs	No. of CAHWs retrained	No.	0	0	0.000	80	0	0	0.00	RGoB
1.3.C	Kits for AI practitioner	No. of Kits supplied	No.	0	0	0.000	80	32	32	40.00	ASAP

1.3.C	Transport facilities for CAHWs	No. of CAHWs supported with transport facilities	No.	0	0	0.000	75	0	0	0.00	ASAP
1.3.C	AI service expansion & CAIT establishment breed intensification through sex sorted semen	No. of CAIT established	Semen	0	0	0.000	5100	10	10	0.20	ASAP
1.3.C	Breed intensification through community breeding bull services	No.of bulls supplied	No.	19	20	0.411	75	11	31	41.33	ASAP
1.3.C	Breed intensification through CHBPP	No. of breed intensification	semen	0	0	0.000	2295	1700	1700	74.07	LOAN
1.3.C	Stipend for CAHWs	Amount disbursed	Nu.	0	0	0.000	90	0	0	0.00	LOAN
1.3.C	Sero surveillance of animal diseases	No. of samples	No.	0	0	0.000	2000	1718	1718	85.90	ASAP
1.3.D	**Support to Fodder & Feed Production**										
1.3.D	Perennial fodder in fallow and marginal land	Area of fallow & marginal land under perennial fodder	Acre	762	517	5.315	1633	2484	3001	183.76	LOAN
1.3.D	Winter fodder crop demonstration and seed supply	Area under Winter fodder	Acre	643	655	1.125	1885	6063	6718	356.39	LOAN
1.3.D	Training of feed producers	No. of feed producers trained	No.	0	0	0.000	200	60	60	30.00	ASAP
1.3.D	Chopping machine (for dairy groups)	No. of chopping machines supplied	No.	465	622	10.987	947	1535	2157	227.77	LOAN
1.3.D	Training on use of crop residues and feed/fodder	No. of training conducted	No.	0	0	0.000	40	50	50	125.00	ASAP

1.3.D	Collection of indigenous fodder germplasm	No. of germplasm	No.	0	0	0.000	45	56	56	124.44	LOAN
1.3.D	Planting native species fodder	Area under native Fodder spp.	Acre	0	0	0.000	150	0	0	0.00	LOAN
1.3.D	TMR facilities for youth	No. of unit	No.	0	0	0.000	5	0	0	0.00	LOAN
1.3.D	Inputs for hydroponic production	No. of site	No.	23	9	0.750	50	20	29	58.00	LOAN
1.3.D	Inputs supply for fodder conservation such as silage making	MT	MT	5593	5321	1.068	5000	188	5509	110.18	LOAN
1.3.D	supply of barbed wire for pasture fencing	Area of pasture land	Acres	190	195	2.897	250	194	389	155.60	ASAP
1.3.E	**Provision of Dairy Production Inputs**										
1.3.E	Milk cans	No. of Milk cans supplied	No.	0	0	0.000	2000	935	935	46.75	LOAN
1.3.E	Cross-breed cattle	No. of cross-breed cattle supported	head	332	253	8.064	2600	1789	2042	78.54	LOAN
1.3.E	Shed construction	No. of sheds constructed	unit	105	147	4.046	2000	2139	2286	114.30	LOAN
1.3.E	Equipment dairy production groups	No. of equipment supplied to dairy producer groups	No.	77	141	6.973	147	197	338	229.93	LOAN
2.1.A	**Strengthening of FCBL for Value Chain Development**										
2.1.A	Capacity development activities	No. of staff trained on value chain development	No.	0	0	0.000	450	7	7	1.56	ASAP
2.1.B	**Vegetable value-chain design and business plan**										

2.1.B	Vegetable value chain plans prepared	Vegetable value-chain design & business plan in place	Plan	0	0	0.000	3	1	1	33.33	LOAN
2.1.C	**Dairy value-chain design and business plan**										
2.1.C	Dairy value chain business plans prepared	Dairy value-chain design & business plan in place	Plan	0	0	0.000	3	1	1	33.33	LOAN
2.1.D	**Value Chain Development, Strengthening and Expansion**										
2.1.D	Multi Stakeholders facilitation process	No. of stakeholders engaged or consulted	No.	4	2	0.988	10	194	196	1960.00	LOAN
2.1.E	**Technical Assistance (C2)**										
2.1.E	National/External TA	No. of National/External TA recruited	No.	0	0	0.000	6	0	0	0.00	ASAP
2.2.B	**Support to Marketing Groups**										
2.2.B	Awareness on marketing groups	No. of Marketing groups sensitized	No.	1	1	0.428	200	120	121	60.50	LOAN
2.2.B	Strengthening of existing marketing and cooperative capacity development packages	No. of marketing & cooperative capacity development packages strengthened	No.	60	69	0.475	3	5	74	2466.67	LOAN
2.2.C	**Training on Marketing Groups**										
2.2.C	Formation of vegetable marketing groups	No. of vegetable marketing groups formed	No.	40	3	0.200	230	26	29	12.61	LOAN
2.2.C	Formation of dairy marketing groups	No. of dairy marketing groups formed	No.	0	0	0.000	150	20	20	13.33	LOAN
2.2.C	Training in marketing & value-chain	No. of groups or individual farmers	No.	0	0	0.000	450	60	60	13.33	ASAP

		trained on marketing & value-chain									
2.2.C	Training in packaging & handling	No. of groups or individual farmers trained on packaging & handling	No.	0	0	0.000	415	38	38	9.16	ASAP
2.2.D	**Support to Entrepreneurs**										
2.2.D	Development of training packages for agriculture entrepreneurs	No. of training packages developed for agriculture entrepreneurs	No.	0	0	0.000	2	1	1	50.00	LOAN
2.2.D	Entrepreneur identification and engagement process	No. of entrepreneurs identified and engaged	No.	0	0	0.000	1	2	2	200.00	LOAN
2.2.D	Enterprise developed	No. of enterprise developed	No.	10	5	2.428	50	26	31	62.00	LOAN
2.2.E	**Other Trainings to Groups, Cooperatives & Entrepreneurs**										
2.2.E	Training provided to other groups and entrepreneurs	No. of groups, coops & entrepreneurs trained	No.	0	0	0.000	50	34	34	68.00	ASAP
2.2.F	**Multi-stakeholder Platforms & Network development**										
2.2.F	Multi-stakeholder platforms and networks developed	No. of platforms & networking established	No.	0	0	0.000	5	2	2	40.00	LOAN
2.3.A	**Planning & Design**										
2.3.A	Business plan-based planning of market infrastructure	No. of market infrastructure developed based on business plan	No.	2	3	0.168	3	3	6	200.00	LOAN
2.3.A	Development of business plans for 3 windows shops	No. of Developments windows shops convened	No.	0	0	0.000	2	3	3	150.00	LOAN

2.3.B	**Vegetable Value-chain, Post-harvest & Market Infrastructure & Equipment**										
2.3.B	Value-chain equipment	No. of value-chain equipment promoted	No.	56	36	1.649	12	15	51	425.00	LOAN
2.3.B	Value-chain infrastructure	No. of value-chain infrastructure put in place	No.	1	1	1.000	8	27	28	350.00	LOAN
2.3.B	Support to KIL	lumpsum	No.	0	0	0.000	5	0	0	0.00	LOAN
2.3.C	**Dairy Value-chain Post-harvest & Market Infrastructure & Equipment**										
2.3.C	Construction of milk collection Center (MCC)	No. of MCC constructed	No.	6	3	3.229	44	58	61	138.64	LOAN
2.3.C	Construction of milk collection shed (MCS)	No. of MCS constructed	No.	7	9	0.917	180	26	35	19.44	LOAN
2.3.C	Milk processing unit (MPU)	No. of milk processing unit established	No.	1	1	0.530	24	14	15	62.50	LOAN
2.3.C	Milk chilling van	No. of milk chilling van provided	No.	0	0	0.000	4	3	3	75.00	LOAN
3.1.A	**Strengthening of the DAMC Market Information System**										
3.1.A	Strengthening of the DAMC market information system	DAMC MIS strengthened	MIS	0	0	0.000	2	0	0	0.00	LOAN
3.1.A	Equipment related to Market Information System upgrade	No. of equipment supplied for MIS upgradation	No.	0	0	0.000	4	3	3	75.00	LOAN
3.1.B	**Curriculum development of RNR Training and Education institutes**										
3.1.B	Curricula for RNR Training & Education Institutes Developed	No. of curriculum developed	No.	0	0	0.000	2	0	0	0.00	ASAP
3.2.A	**Participatory policy development and monitoring approach**										
3.2.A	Participatory Policy Development	No. of participatory policy development	No.	0	0	0.000	2	0	0	0.00	ASAP

	Approaches Developed	process or approach initiated									
3.2.B	**Mainstreaming climate resilience and value chain development lessons in agricultural policies**										
3.2.B	Policy Notes Developed, incorporating lessons from Climate Resilient Value Chain Development	No. of Policy Notes developed based on Climate resilience & and value chain development lessons	No.	0	0	0.000	3	0	0	0.00	ASAP
3.2.C	**Development of a regulatory framework for PPP**										
3.2.C	Regulatory Frameworks for PPP	A regulatory framework for PPP developed	Framework	0	0	0.000	2	0	0	0.00	ASAP
3.2.D	**Technical Assistance (C3)**										
3.2.D	National/International TA	No. of Nationals/International TA recruited	No.	0	0	0.000	4	0	0	0.00	ASAP
3.2.D	Support budget RNR training and education institutes	Amount supported	No.	0	0	0.000	3	0	0	0.00	ASAP
3.2.D	Support budget climate resilience mainstreaming	Amount supported	No.	0	0	0.000	4	0	0	0.00	ASAP
3.2.D	Support budget PPP regulatory framework	Amount supported	No.	0	0	0.000	3	0	0	0.00	ASAP
4.1.	**Project Management Unit**										
4.1.A	**Material & Equipment**										

4.1.A	Vehicles	No. of vehicles purchased	No.	0	0	0.000	11	3	3	27.27	ASAP
4.1.A	Laptops	No. of laptops purchased	No.	0	0	0.000	37	25	25	67.57	GRANT
4.1.A	Printer	No. of printers purchased	No.	0	0	0.000	15	10	10	66.67	GRANT
4.1.A	Scanner	No. of scanners purchased	No.	0	0	0.000	4	1	1	25.00	GRANT
4.1.A	Photocopier heavy duty	No. of heavy duty photocopier purchased	No.	0	0	0.000	3	1	1	33.33	GRANT
4.1.A	Office equipment	Sets of office equipment purchased	Set	1	1	3.947	28	5	6	21.43	GRANT
4.1.B	**Capacity Building**										
4.1.B	Training on gender	No. of staff trained on gender	No.	0	0	0.000	3	1	1	33.33	ASAP
4.1.B	Training on knowledge management	No. of staff trained on KM	No.	0	0	0.000	4	3	3	75.00	ASAP
4.1.B	Training on monitoring and evaluation	No. of staff trained on M&E	No.	0	0	0.000	5	2	2	40.00	ASAP
4.1.B	Training on financial management	No. of staff trained on FM	No.	0	0	0.000	12	4	4	33.33	ASAP
4.1.B	Training and workshop for OPM staff	No. of training	Event	0	0	0.000	12	0	0	0.00	ASAP
4.1.C	**Coordination**										
4.1.C	Coordination meetings with dzongkhags	No. of Dzongkhags coordination meeting held	No.	3	1	1.835	20	17	18	90.00	GRANT
4.1.D	**Food Corporation of Bhutan**										
4.1.D.1	**Material and equipment**										

4.1.D.2	Materials and Equipment Procured for FCBL	No. of Materials and equipment procured by FCBL	No.	0	0	0.000	6	2	2	33.33	LOAN
4.1.E	**Monitoring & Evaluation**										
4.1.E	Baseline and impact studies	No. of baseline & impact studies conducted	No.	0	0	0.000	1	1	1	100.00	GRANT
4.1.E	Programme Supervision Mission	No. Of Mission	No.	0	0	0.000	17	9	9	52.94	GRANT
4.1.E	Annual outcome surveys	No. of AOS conducted	No.	1	1	1.253	7	4	5	71.43	LOAN
4.1.E	Other surveys/studies	No. of survey/studies conducted	No.	0	0	0.000	9	2	2	22.22	LOAN
4.1.E	Mid-term review	Mid-term review conducted	Mission	0	0	0.000	1	1	1	100.00	GRANT
4.1.E	Project completion report	PCR prepared	Report	0	0	0.000	2	0	0	0.00	GRANT
4.1.E	MIS	No. of MIS	No.	0	0	0.000	4	2	2	50.00	GRANT
4.1.E	Software development for M&E	No. of MIS	No.	0	0	0.000	2	2	2	100.00	GRANT
4.1.E	Study tours and learning visits (Both in-country and overseas)	No. study tour	No.	0	0	0.000	9	7	7	77.78	ASAP
4.1.F	**Knowledge Management**										
4.1.F	Printing and publications	No. of quality KM products published	No.	10	2	0.100	12	29	31	258.33	GRANT
4.1.F	Setting up IMS (CARLEP Webpage)	Web page established	No.	0	0	0.000	1	1	1	100.00	GRANT
4.1.F	Workshops and meetings	No. of workshops & meetings conducted	No.	0	0	0.000	11	10	10	90.91	ASAP

4.2.A	**OPM, Mongar**										
4.2.A	National Program Director	No. of months Paid	Months	12	12	0.000	126	84	96	76.19	RGoB
4.2.A	Finance Manager	No. of months Paid	Months	12	12	0.000	126	84	96	76.19	RGoB
4.2.A	Accountant	No. of months Paid	Months	12	12	0.000	126	84	96	76.19	RGoB
4.2.A	M&E and Gender Manager	No. of months Paid	Months	12	12	0.000	126	84	96	76.19	RGoB
4.2.A	Project Support Officer	No. of months Paid	Months	12	12	0.000	126	84	96	76.19	RGoB
4.2.A	KM Officer	No. of months Paid	Months	12	12	0.000	126	84	96	76.19	RGoB
4.2.A	Component Manager (Agriculture Production)	No. of months Paid	Months	12	12	0.000	126	84	96	76.19	RGoB
4.2.A	Component Manager (Livestock Production)	No. of months Paid	Months	12	12	0.000	126	84	96	76.19	RGoB
4.2.A	Component Manager (Value-chain and Marketing)	No. of months Paid	Months	0	0	0.000	126	60	60	47.62	RGoB
4.2.A	Dy. Manager-RAMCO	No. of months Paid	Months	0	0	0.000	126	0	0	0.00	RGoB
4.2.A	Office Assistant	No. of months Paid	Months	12	12		126	24	36	28.57	RGoB
4.2.A	Driver (x2)	No. of months Paid	Months	12	12	0.000	252	24	36	14.29	RGoB
4.2.B	**Liaison Office, Thimphu**										
4.2.B	IFAD Focal Officer, PPD	No. of months Paid	Months	0	0	0.000	126	0	0	0.00	RGoB

4.2.B	IFAD Focal Officer, AFD	No. of months Paid	Months	0	0	0.000	126	0	0	0.00	RGoB
4.2.C	**Operating Cost, Project Management Unit**										
4.2.C	Vehicle operation and Maintenance	No of Vehicles	LPS	0	0	0.000		2	2		RGoB
4.2.C	Maintenance of Building	Lump sum	LPS	0	0	0.000		2	2		RGoB
4.2.C	Maintenance of Equipment	Lump sum	LPS	0	0	0.000		2	2		RGoB
4.2.C	Utilities - telephone, internet, electricity, water, sewerage, fax, post, etc.	Lump sum	LPS	1	1	0.100		2	3		RGoB
4.2.C	Office supplies	Lump sum	LPS	0	0	0.000		3	3		GRANT
4.2.C	Travel and Meetings	Lump sum	LPS	11	11	0.733		0	11		RGoB

Annexure 2: OPM Staff List

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Commercial Agriculture and Resilient Livelihoods Enhancement Programme

Ministry of Agriculture and Forests
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