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Building Resilient Commercial Smallholder Agriculture

(BRECSA)

PROJECT BASELINE STUDY REPORT

Type of Document: Project Baseline Study Report

Document Number: July 2024

Date: September 2025 (Revised Version)

IFAD
Investing in rural people

GAFSP
global agriculture & food security program

WFP

Abbreviations

ARP	Agriculture Resilience Plan
B2B	Business to Business Linkage
BAOWE	Bhutan Association of Women Entrepreneurs
BDBL	Bhutan Development Bank Limited
BMI	Body Mass Index
BRECSA	Building Resilient Commercial Smallholder Agriculture
CLEAR	Consolidated Livelihood Exercise for Analyzing Resilience
CSI	Cottage and Small Industry
DAMC	Department of Agricultural Marketing and Cooperatives
DSC	Dairy Sales Counter
GAFSP	Global Agriculture and Food Security Programme
HAMP	High Altitude Medicinal Plants
HH	Household
IFAD	International Fund for Agricultural Development
KII	Key Informant Interviews
MCC	Milk Collection Center
MFI	Micro Financial Institution
MoAL	Ministry of Agriculture and Livestock
MPU	Milk Processing Unit
MSP	Multi-Stakeholder Platform
NPAG	National Plan of Action for Gender
PWD	Persons with Disability
RENEW	Respect Nurture and Empower Women
RGoB	Royal Government of Bhutan
RNR	Renewable Natural Resources
TA	Technical Assistance
VC	Value Chain
WFP	World Food Programme

Contents

Executive Summary

The Baseline Study was for the Building Resilient Commercial Smallholder Agriculture (BRECSA) Project was conducted to establish benchmarks against which the project progress will be assessed. The data for the study was collected through household surveys (1,163 HHs), Key Informant Interviews (KIIs), and literature reviews, using both quantitative and qualitative approaches.

Methodology

The study employed a mixed-methods, combining quantitative and qualitative techniques where household survey using structured questionnaires and Key Informant Interviews were conducted.

- A total of 1,163 households were interviewed using structured questionnaires and Key Informant Interviews (KIIs) were conducted with relevant stakeholders to validate findings and understand underlying causes of change.
- The review of relevant policies, project documents and socio-economic data were conducted to set context for the study.
- A random cross-sectional sampling across 37 Gewogs and 539 villages, targeting women (60%), youth (30%), and persons with disabilities (5%).
- The data was compiled, consolidated, validated and analyzed using pivot tables and basic descriptive statistics.

Key Baseline Findings

1. **Demographics and Household Characteristics**

- 71% of respondents are smallholder farmers with average landholding of 1.4 acres.
- 38% of female respondents are women-headed households, earning 30% less than male-headed households.
- Youth (18–35 years) make up 23% of respondents with 69% have secondary education, yet 36% are unemployed.
- 3% are persons with disabilities (PWDs), most unemployed and nutritionally vulnerable.

2. **Housing, Assets, and Irrigation**

- 85–96% of households live in permanent housing.
- With respect to asset management, men dominate in control over asset management in Sarpang & Tsirang, while women control asset management in Trongsa & Zhemgang.
- Only 46% of households have adequate irrigation water with Zhemgang recording the highest irrigation coverage (79%), while Sarpang recorded the lowest coverage at 35%.

3. **Agricultural Production and Income**

- Paddy, maize, cardamom, areca nut, and vegetables are the major crops grown at subsistence level.

- Crop production is constrained by small landholding, low mechanization, high climate risks, and high prevalence of human-wildlife conflict.
- Livestock especially dairy and poultry was recorded as the potential commodities for income generation but these value chains are still underdeveloped across four landscape Dzongkhags.
- Household annual income has increased by 16% with Nu. 92,227 in 2022 to Nu. 106,898 in 2023 with 60% of the income derived from farming.
- Highest average household income was recorded in Sarpang while lowest average annual household income was observed in Zhemgang.

4. Nutrition and Health

- Household dietary consumption across four target Dzongkhags is largely limited to cereals with limited diversity.
- In terms of BMI results, high cases of overweight and obesity were observed in Tsirang & Trongsa, while high incidences of undernutrition was recorded in Sarpang & Zhemgang with 66% male and 71% female respondents observed under underweight in Sarpang.
- The baseline for Minimum Dietary Diversity for Women (MDD-W) across four target Dzongkhags was noted as 53% with average MDD-W Score at 4.74.

5. Market Access and Value Chains

- Poor road connectivity, limited storage, and weak aggregation were found to be main challenges hindering market access and value chain development.
- Dependence on informal middlemen with no contracts and low bargaining power was observed as another challenge affecting market access.
- Minimal value addition in dairy and horticulture with lower level of branding was noted to another set of challenges hindering market access in four target Dzongkhags.

6. Financial Services & Rural Enterprises

- Limited access to formal credit and heavy reliance on informal borrowing were identified as undermining factors affecting financial services and enterprise development.
- Few households and youth linked with formal financial institutions (BDBL, CSI Bank, MFIs) were found to other factors affecting the rural enterprise development.
- Weak producer organizations and cooperatives with governance and service delivery have also affected the access to financial service and enterprise development.

7. Climate Resilience and Sustainability

- High exposure to erratic rainfall, drought, pests, diseases, and wildlife depredation were observed to be prominent challenges across four target Dzongkhags.
- Adoption of climate-resilient practices (efficient irrigation, soil conservation, greenhouse, crop rotation, etc.) remains limited.
- Strong dependence on natural resources with relatively lower level of the adoption of sustainable practices were observed as factors affecting community resilience.

1. Introduction

The Ministry of Agriculture and Livestock (MoAL) of the Royal Government of Bhutan (RGoB) is implementing Building Resilient Commercial Smallholder Agriculture (BRECSA) in four Dzongkhags of Sarpang, Trongsa, Tsirang and Zhemgang (Figure 1). The project will be implemented in 37 Gewogs and 539 villages, directly benefitting around 12,074 households (HHs) (47,088 beneficiaries) over a period of seven years.

The total budget of BRECSA is estimated at US$ 30 million, with US$ 13 million grant from Global Agriculture and Food Security (GAFSP) and USD 8.934 million loan from the International Fund for Agricultural Development (IFAD). IFAD is the Supervising entity, while World Food Programme (WFP) is the supervising entity for Technical Assistance (TA) and implementation support. In addition, RGoB, beneficiary and financial institution contributions are estimated at US$ 1.1 million, US$ 6.3 million, and US$ 0.7 million respectively. The purpose of the study is to establish a quantitative benchmark for assessing the success and effectiveness of project implementation, and ensure results-oriented project planning and adaptive management.

The main goal of the BRECSA is to catalyze a 30% increase in resilient commercial agricultural production and improve food and nutrition security in the 4 target Dzongkhags by 2030. The developmental objective of the project is to transform smallholder agriculture into inclusive and resilient agri-food systems that are increasingly profitable and food and nutrition security. BRECSA's target is for the subsistence, semi-commercial and commercial farmer households. The total direct beneficiaries of BRECSA interventions are 12,074 farmer households (47,088 beneficiaries), out of which 60% will be women and 30% youth.

The project has four interconnected components which include, (i)Resilient Production Systems; (ii) Strengthened Value Chain Coordination and Market Linkages; (iii)Innovative and Competitive Agri-Food Sector; and (iv) Project Coordination, Monitoring and Evaluation, and Knowledge Management.

The BRECSA project has three broad outcomes, which are as outlined below:

a) Agri-food sector contribution to resilience, food and nutritional security and income of smallholder farmers, women and youth is enhanced.

b) Commercialization is fostered for farmer groups to develop private sector enterprises and for engaging youth in lucrative commercial ventures and

c) Enabling financial and policy environment to promote a competitive and modernized food sector is enhanced.

Similarly, some of the social inclusion and gender mainstreaming priorities of the project are:

a) Commercialization of agriculture and strengthening of value chain

b) Reduction of poverty

c) Improving nutritional status

d) Resilient climate change

e) Empowerment of women

f) Engagement of youths

g) Inclusion of people with disabilities

1.1. Purpose

The purpose is to establish a quantitative benchmark for assessing the success and effectiveness of project implementation, and ensure results-oriented project planning and management. The baseline study should provide social, economic, and environmental data at the beginning of the project. The study to complement the quantitative data collected with qualitative information and explanations. The study results to point how best the project will be rolled out and set priorities for the project. The study should help to identify any major issues and provide some insights for successful project implementation. The study is expected to provide benchmark information that will be used to direct and guide the implementation of the project and to measure success of implementation.

2. Methodology

2.1. Tools and Approaches Used

The study deployed a combination of qualitative and quantitative methods. The quantitative information was collected through a combination of primary and secondary information. The quantitative primary information was collected through a household survey, while the quantitative secondary information was collected through the literature review. The household survey was conducted by deploying cross-sectional, random and non-purposive sampling methods, ensuring representative coverage of study domain (project target areas) and the stakeholders.

The qualitative data is usually undertaken to understand the processes that caused the change. The qualitative information was collected through key informant interview involving relevant respondents and stakeholders. Both the quantitative and qualitative information were collected were collected simultaneously using the parallel approach.

2.2. Literature Review

The purpose of the literature review was to examine project concepts, project plans, guidelines and project documents to understand the project better, specifically those geared towards disaggregated data of respondents such as male, female, youths and persons with disabilities, economic activities mainly farming and marketing, and women empowerment in decision making.

As part of the desk review, the team reviewed the existing literatures pertaining current socio-economic status, youth engagement, issues related to women and their empowerment in four target dzongkhags. The desk review was undertaken mainly to understand whether or not similar studies had been conducted in the past.

2.3. Study Site

The study was conducted in four project landscape dzongkhags of Sarpang, Trongsa, Tsirang and Zhemgang, as shown in the figure 2 below.

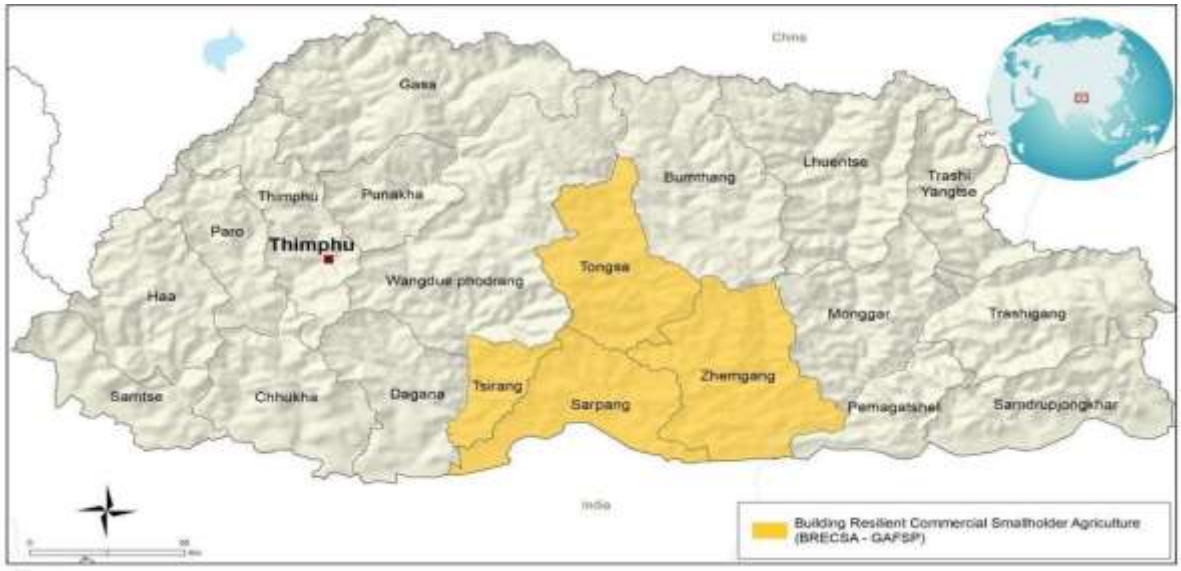


Figure 1: Map showing study sites in four project target dzongkhags

2.4. Sample Design, Sampling frame and Size determination

2.4.1. Sample Design

A two-stage sampling was employed for sampling the respondents under the project areas. Two-stage sampling comprised of triangulation of stratified random sampling (each project area was treated as a stratum and individual beneficiaries as sub-stratum). The selection of the PSU (Primary Sampling Unit) refers to selection of households falling under the purview of project sites. The SSU (Secondary Sampling Unit) are those individuals selected after referring to the available records of households.

$$n = \frac{z^2 p(1-p)(f)(k)}{e^2}$$

The required sample size for each Gewog and Dzongkhag were estimated using data from the project document. The sample size was computed using the following formulae:

Where*;*

n is the number of households required in the sample

z is the value of the statistic in a normal distribution for a 95% confidence interval

p is the estimate of key indicator to be measured by the survey

e is the acceptable margin of error in estimating p; set at 0.05

f is the sample design effect, assumed to be 2.0

k is the adjustment factor for an anticipated non-response at 5%

2.4.2. Sampling Frame

The project is being implemented in the four Dzongkhags of Zhemgang, Trongsa, Tsirang and Sarpang. The target of the project is on gewogs/village clusters that have: (i) demonstrated production potential in selected commodities; (ii) substantial youth demography; iii) are able to access roads and lie within three hours reach of the local market; and (iv) represent localities where existing programmes have identified the clear interest and commitment of communities, farmer groups and cooperatives for market-oriented production and building of market linkages.

The sampling frame was constructed based on the 4 target dzongkhags and its gewogs.

Table 1: Gewog wise project target population

Dzongkhags	Gewogs	Target population
Zhemgang	Trong, Nangkhor, Shingkhar, Bardo, Pangkhar, Ngangla, Goshing, Bjoka	Total 6,500 (women 3,900, men 1,500, youths 2,000)
Trongsa	Nubi, Tangsibji, Drakteng, Korphu, Langthel	Total 4,500 (women 2,700, men 500, youths 1,300)
Tsirang	Sergithang, Tsholingkhar, Tsirang Toe, Semjong, Rangthaling, Phuntenchu, Patshaling, Mendregang, Kilkhorthang, Gosarling, Barshong, Doonglagang	Total 8,000 (women 4,800, men 800, youths 2,400)
Sarpang	Senggye, Gakidling, Shompangkha, Dekidling, Samtenling, Gelephu, Chhudzom, Jigmecholing, Sershong, Chuzargang, Taraythang, Umling	Total 8,500 (women 5,100, men 850, youths 2,550)

2.4.3. Sample Size Determination

Direct targets are the inclusion of women, youth and vulnerable groups like women headed households and persons with disability. 60% of the beneficiaries are women including a minimum of 5% women headed households and 30% youth, 600 differently abled women, men and youth constitute 25% of the population of differently abled persons in the target districts.

Table 2: Dzongkhag wise project beneficiaries

Dzongkhag	Total population	Rural Population	Rural HHs	Men in rural	Women in rural	BRECSA beneficiaries	BRECSA beneficiary HHs
Zhemgang	17763	14252	3751	7338	6914	8165	2150
Trongsa	19960	16414	4559	9979	6435	9350	2600
Sarpang	46004	32994	8047	17220	15774	18683	4600
Tsirang	22376	18866	4717	9641	9225	10890	2724
Total	**106,103**	**82,526**	**21,074**	**44,178**	**38,348**	**47,088**	**12,074**

Note: There are about 120 commercial HHs, 7480 semi-commercial HHs and 4,474 subsistence HHs out of 12,074 beneficiary HHs. Further in each Dzongkhag, the PMU, Inclusion and Nutrition Officer and the Sanam Jabchorpas are supposed to oversee the finalization of the criteria for selection of the vulnerable households for livelihood support in consultation with the Dzongkhag, agri-extension staff and communities. Accordingly, about 1,500 beneficiaries are divided between

the four Dzongkhags proportionate to the population of the Dzongkhags and the targets for youth, women and differently abled persons.

Table 3: Distribution of beneficiaries

Dzongkhag	Total target beneficiaries	Young			Differently abled persons				
		Women	Female	Male	Male	Female	Young male	Young female	Total
Zhemgang	600	281	60	60	70	70	30	30	199
Trongsa	300	141	30	30	35	35	15	15	99
Sarpang	345	136	29	29	53	45	23	23	151
Tsirang	255	74	16	16	53	45	23	23	150
Total	**1500**	**631**	**135**	**135**	**210**	**210**	**90**	**90**	**600**

The total number of persons with disability in the target Dzongkhags is 2,432 of which project targets 600 comprising of 25% of the total population of persons with disability and will ensure to cover mild, moderate and severe persons with disability. A minimum of 50% of the persons with disability to be women and 30% young women and men between the ages of 18 to 35. In cases where the persons with disability is not able to engage in an income-generating activity, the caregivers will be engaged in an agri-related income-generating activity to enable the household to generate more income and have better resources to take care of the persons with disability.

In order to further improve nutritional practices, it is aimed to support training of 6300 youth (boys and girls), 14,700 women and 600 Persons with Disabilities (PWD). It was also highlighted that the Nutrition Officer and the Sanam Jabchorpas (SJs) will provide youth and women with key nutrition information to enhance household consumption and overall dietary improvement.

Table 4: Beneficiaries of nutrition intervention

Nutrition interventions	Youth		Women	PWDs		Total
	Male	Female		Male	Female	
Nutrition education	3,150	3,150	14,700	300	300	21,600
Home gardens/backyard poultry farms	475 (30%)	475 (30%)	1,930 (60%)	143 (4.5%)	143 (4.5%)	3,166

Table 5: Beneficiary sample size

Dzongkhag	Male in rural	Sample Rural Male	Rural Female	Sample Rural Female	BRECSA beneficiary	Sample Beneficiaries	BRECSA Beneficiary HHs	Sample Beneficiary HHs
Zhemgang	7338	366	6914	345	8165	410	2150	109
Trongsa	9979	498	6435	321	9350	466	2600	134
Sarpang	17220	861	15774	788	18683	935	4600	240
Tsirang	9641	482	9225	461	10890	543	2724	137
Total	**44,178**	**2,207**	**38,348**	**1,915**	**47,088**	**2,353**	**12,074**	**620**

Accordingly, the sample size was determined to cover project beneficiaries as well as the households based on the standard principles and formula. Thus, it was decided to cover 620 HHs or the 2,353 beneficiaries in the 4 Dzongkhags which will also include 60 commercial HHs, 374

semi-commercial HHs and 223 subsistence level HHs. Further, there was also a need to include youths consisting of 61 young men and 61 young women as well as differently abled persons consisting of 94 men, 94 women, 41 young men and 41 young women.

Table 6: Young/youth sample size

Dzongkhag	Female	Sample Female	Male	Sample Male
Zhemgang	60	18	60	18
Trongsa	30	9	30	9
Sarpang	29	9	29	9
Tsirang	16	5	16	5
Total	**135**	**41**	**135**	**41**

Table 7: Sample size for persons with disability

Dzongkhag	Male	Sample Male	Female	Sample Female	Young Male	Sample Young Male	Young Female	Sample Young Female
Zhemgang	70	4	70	4	30	2	30	2
Trongsa	35	2	35	2	15	1	15	1
Sarpang	53	2	45	2	23	1	23	1
Tsirang	53	2	45	2	23	1	23	1
Total	**210**	**10**	**210**	**10**	**90**	**5**	**90**	**5**

The sample was further disaggregated by Gewogs at the household level and accordingly, Gewog wise sample size was determined so that details like household numbers of each household are captured for future reference.

Table 8: Household Sample Size by Gewog

Dzongkhag	Gewogs	No. of HHs	Sample HHs	Population	Sample population
Sarpang	Senggye	255	12	1080	55
	Gakiling	501	24	2036	104
	Dekidling	1339	65	2125	109
	Samtenling	622	30	2801	143
	Chhudzom	595	29	2664	136
	Jigmecholing	746	36	3258	167
	Sershong	481	23	2707	139
	Umling	411	20	1586	81
Total		**4950**	**240**	**18257**	**935**
Tsirang	Tsholingkhar	421	19	1745	77
	Tsirang Toed	348	16	1451	64
	Rangthangling	395	18	1585	70
	Patshaling	296	13	1159	51
	Kilkhorthang	524	24	2145	94

	Gosarling	434	20	1864	82
	Dunglagang	411	18	1546	68
	Barshong	224	10	842	37
Total		**3053**	**137**	**12337**	**543**
Trongsa	Tangsibji	492	30	3544	122
	Drakteng	994	60	6200	214
	Langthel	748	45	3750	129
Total		**2234**	**134**	**13494**	**466**
Zhemgang	Trong	584	34	2968	139
	Ngangla	445	26	2256	106
	Bjoka	194	11	856	40
	Goshing	336	19	1396	65
	Shingkhar	319	19	1276	60
Total		**1878**	**109**	**8752**	**410**
Grand Total		**12,115**	**620**	**52,840**	**2,353**

2.5. Survey Questionnaire, training of enumerators and field testing

2.5.1. Survey Questionnaire

A Semi-structured survey questionnaire was formulated during the inception phase and was deliberated at length to align questionnaires with the objectives of the study. The survey questions have undergone numerous changes before the finalization. The questions were finally validated and edited during the enumerator training conducted at Hotel Jordan in Gelephu before the actual survey. The survey questionnaires were uploaded in google forms to enable enumerators to collect data using smart phones and to ease data compilation. Even after the enumerator training, the survey questions were once again modified based on the technical inputs provided by the members.

2.5.2. Enumerator recruitment, training and field testing

The enumerators were recruited from the respective Dzongkhags of the project sites in order to build capacity of the local community and to provide direct benefits in the form of cash incentives. A day-long training was conducted for the survey enumerators in terms of understanding the concept of project terminologies, project scope and objectives. The enumerators were thoroughly trained in terms of details of the survey questions along with the aptitudes and method of conducting the survey professionally. Based on the training, piloting was done within one district to test the questionnaires. The piloting was also done among the enumerators to see convenience of responding to each of the questions. Accordingly, few changes were made in some of the questions based on the findings of the pilot survey.

2.6. Household Survey and Key Informant Interviews

2.6.1. Household Survey

The household surveys were conducted in the four Dzongkhags of the project areas viz. Sarpang, Tsirang, Trongsa and Zhemgang. The selected households in the targeted project areas were approach after obtaining their consent for the interviews. Pre-test of the questionnaire had been

carried out with the nearby village in Sarpang as well as among the enumerators to simply check the flow of the questions and skip patterns. Trained enumerators conducted face-to-face interviews using a pre-developed interview questionnaires that encompassed various dimensions of project requirements from 2nd May to 15th June 2024. During the interviews, interviewers created a comfortable and conducive environment to encourage open and honest responses. Probing techniques were employed to dive deeper into respondents' perspectives and experiences. Care was taken to respect the privacy and consent of the participants, and their responses were accurately recorded through note-taking and online google forms.

2.6.2. Key Informant Interviews (KII)

The qualitative information was collected through Key Informant Interviews (KII) and Focused Group Discussions wherever necessary to understand the key processes that caused the change.

2.7. Data Collection, Validation and Analysis

2.7.1. Data Collection

The main respondents were the members of the households within the project areas. The interview with a structured, standardized questionnaire using google survey forms and hardcopy questionnaire were interchangeably used. In the sampled households where the enumerators faced internet connectivity issues, the hardcopy questionnaires were administered for data collection, which otherwise was done online. The hardcopy data gathered were eventually keyed into the system later. For the other stakeholders, key informant interviews were conducted to support the actual survey results.

2.7.2. Data Validation

The primary household survey data were compiled and validated using the Microsoft Excel features and tools.

2.7.3. Data Analysis

The collected data underwent a systematic process of analysis where the data was exported to Excel spreadsheets to ensure accuracy and consistency. Subsequently, the data was exported to the Statistical Package for Social Sciences (SPSS), a widely used software for statistical analysis. To provide a comprehensive understanding of the data, frequencies and percentages were calculated based on the responses received from the interviewees, considering their gender as a differentiating factor. This enabled a gender-specific analysis of the data to identify any patterns or variations. Cross-tabulation, a statistical technique, was employed to explore potential associations between relevant variables and to uncover any significant relationships. To enhance the clarity and visual impact of the results, tables and graphs were used to present the findings in a clear and concise manner, making it easier for readers to comprehend and interpret the data effectively.

2.8. Limitation of the Study

The study faced several limitations that affected the accuracy and completeness of the findings. Firstly, the data collection was delayed, and the required data did not reach on time, which hindered timely data consolidation, validation, analysis and reporting. Secondly, some of the data received was not relevant to the specific value chain assessment, requiring the team to conduct

re-survey in certain areas to validate and gather more accurate information. Despite these efforts, some inconsistencies and inaccuracies in the data, especially pertaining to the dietary diversity and nutrition knowledge status still remain, limiting the reliability of the results. In order to address these inconsistencies and gaps in the baseline data collected by the service provider, the project conducted data validation and re-survey of dietary diversity and nutrition knowledge status involving Sanam Jabchorpas, which led to further delay in finalization of the baseline report.

3. Project Description

The project to work through inclusive value chain development approach to address the gaps between producers, traders and consumers that are posing a challenge to the sustainability and resilience of Bhutan's food and farming systems. The project focus includes:

a. Commercialization and diversification of farm systems and products meeting market requirements; strengthening of existing value chains (VCs) and developing of new VCs; finance enabling small-scale infrastructure (on-farm water and soil conservation, aggregation centres, cold storage, milk chilling centres etc.);

b. Post-harvest processing and ensuring products meet internationally recognized food standards as set by the Bhutan Agriculture and Food Regulatory Authority (BAFRA); Capacity building and support to youth, cooperatives and other producer organizations for climate resilience agriculture practices, establishment of youth enterprises for provision of organic inputs (biochar, soil stimulants, bio-fertilizer and bio-pesticides); and

c. Facilitating business linkages between producers, buyers, financiers, and local public stakeholders through multi-stakeholder platforms (MSP) and Business interactions meetings (B2B) to meet local, national, regional and global consumer demand.

The project's aims to boost equitable employment and income generating opportunities for smallholder women, men and youths through capacity building and investment support to small-holder farmers on production, marketing, and better access to services (technical, financial, and business) for engaging in profitable value chains as vegetables, dairy, livestock, poultry and high value crops (herbal, aromatic, medicinal and spices). The project seeks to stimulate adoption of climate resilient and market-oriented nutritious food products, and facilitate inward investment for the production and marketing of high quality and high value home-grown Bhutanese agricultural products.

The key areas to be covered by the project includes the following:

Outcome 1 – Resilient production systems

Sub-component 1.1: Increase the resilience, diversity, and market responsiveness of farm production

a) Deploy the CLEAR diagnostic tool for zoning agricultural and livestock production, locating aggregation and processing centres and satellite markets, and streamlining supply-side logistics based on a robust spatial and temporal climate vulnerability and risk assessment

b) Formulate district and sub-district agriculture resilience plans (ARP) involving smallholder households, producer organizations, cooperatives, buyers, financiers, as well as district

agriculture and market facilitation officers. On the production side, the district and sub-district ARPs will focus on the following:

1. Improve crop productivity through sustainable soil and water management (sustainable land management, irrigation and water efficient technologies and permaculture)
2. Enhance production of Nutri-cereals for food diversity (wheat, buckwheat, millets and quinoa)
3. Enhance vegetable production of winter vegetables using greenhouse production technologies (mandatory vegetables-chili, onion and tomato; signature vegetables-ginger, turmeric, shitake mushrooms, herbal, aromatic and medicinal plants (HAMP)
4. Manage human wildlife conflict to reduce crop depredation
5. Enhance dairy (improved livestock breeds, fodder and sheds; sanitary milking approaches and sterilized containers) and poultry production a) Capacitate smallholder farmers, cooperatives and youth-led enterprises to identify and respond to the quantity, quality and time-related demands of production and post-harvest management to maximize revenue generation potential

b) Develop capacity of field staff and dairy farmers including youth on climate resilient farming practices and technologies

Sub-component 1.2: Support the creation of the next generation of farmers

a) Scale up the formation of agricultural youth cooperatives, ensuring proactive engagement of young women, and bring back fallow lands into production.

b) Provide para-legal support to contracting fallow land for youth cooperatives.

c) Train youth farmers on permaculture using farmer field schools and establish a youth farmer network.

d) Provide on-farm lodging and requisite farm facilities and inputs, labor-saving devices and introduce digital agriculture tools as a means to attract youth to farming.

e) Leverage access to existing credit and finance services for smallholder households, groups and cooperatives through service providers (BDBL, CSI Bank, RENEW, BAOWE, Tarayana Foundation).

f) Engage private sector for branding youth farm cooperatives and creation of domestic and international market opportunities.

Outcome 2-Enhance job creation and income generation through resilient value chains

Sub-component 2.1: Improve service provision of local private sector aggregators to support smallholder access to markets

a) Build the capacity of local aggregators (farmer groups and cooperatives, post-harvest processors, youth enterprises and traders) in relation to their:

b) inclusion and support for the leadership of women and youth

c) financial and business literacy

d) production, post-harvest handling and storage solutions

e) Value addition that responds to market demand.

Establish off-farm youth enterprises such as:

(i) fruit processing (drying and pickling);

(ii) production of compost fortified briquettes, soil bio-stimulants and bio-pesticides;

(iii) silage- making in bags;

(iv) seed processing and packaging;

(v) NTFP processing and packaging; and

(vi) juice production and bottling.

Implementation will commence with an awareness campaign to identify interested young entrepreneurs, followed by site-specific feasibility studies, detailed business planning, and intensive training.

Sub-component 2.2: Strengthen market access linkages

a) Undertake market research to understand and address market arrangements that incentivize imported commodities over national agricultural products, and create an enabling environment for strengthening national production to better compete with imports and establish new national and international market opportunities for Bhutanese agricultural products.

b) Convene multi-stakeholder market facilitation platforms involving government agents, producers, traders (including middlemen) and buyers to agree on time- and area- bound value chain development plans that respond to market demands.

c) Stimulate the engagement and negotiation of terms between producer organizations, local enterprises and buyers (contracting, negotiation, and access to market information including over social media and government-led digital platforms).

d) Use existing demand side public sector programmes such as the national school and institutional feeding program to promote and expand farmer sales of local products.

e) Facilitate and support district and ward level public and private sector procurement agreements and contract arrangements between producers and buyers.

Sub-component 2.3: Strengthen government-supported market facilitation in target subsectors

a) Strengthen the capacities of government agents to map and agree on value chain optimization needs from farm-gate to district markets, including local infrastructure weaknesses and export market needs.

b) Build decentralized Department of Agriculture Marketing and Cooperatives (DAMC) market 'focal point' capacities at the district level to:

i) Support the implementation of pro-smallholder market access policies and programmes (dzongkhag staff and management resources).
ii) Facilitate relationships between producers, public and private sector buyers along targeted fresh produce value chains.
iii) Adopt the RNR M&R and AMIS digital platforms.

Sub-component 2.4: Develop market infrastructure to support value chains in targeted subsectors

a) Support the building of climate and disaster resilient aggregation, storage and processing infrastructure and other assets for target value chains and products (e.g. local aggregation, satellite market centres, and cold chain storage and transport for perishable products).

b) With regard to the dairy and livestock sub-sector, vital infrastructure includes, milk processing units (MPU) for production of butter, cheese & yoghurt, milk collection centres (MCC) for groups that have opportunity to market fresh milk in peri-urban areas and dairy sales counter (DSC) in urban areas for marketing of dairy products. The MPU, MCC and DSC are mostly operated by youth and women.

Therefore, focus on value chain development in dairy is accorded high priority through the establishment of post-production facilities at strategic locations to be operated on lease by youth and women entrepreneurs. The focus areas are the following:

i) New product development for production of hygienic diversified dairy products as per market demand to curb the import of dairy products.
ii) Product packaging, branding and marketing.
iii) Support cold chain facilities for better shelf-life of dairy products to be operated on lease by youth and women entrepreneurs.
iv) Strengthen post-production laboratory services to ensure the standardization of processes and products for quality products through applied research.
v) Establishment of milk processing units and milk collection centres for DFGs wherever facilities are not available.
vi) Establishment of hygienic automated dairy processing plants at strategic locations for product diversification and value addition.

Sub-component 2.5: Stimulate enhanced investments to support private sector development

a) Leverage medium-to-large scale private sector investments for aggregators and traders (co-funding of private sector infrastructure and business development investment).

b) Leverage and enhance access to financial services for local private sector aggregators (smallholder producers, farmer groups and cooperatives) (development finance – BDBL, CSI Bank) (microfinance – RENEW MFI, BAOWE, Tarayana Foundation).

c) Enhance digital access to financial services for producers, aggregators and traders including online registration, and visibility of interest rates and charges.

4. Findings of the Study

4.1. Demographic Characteristics

The survey result indicates that household survey interviewed a total of 1,163 households which is more than the sample size of 620 households from the 25 Gewogs in 4 Dzongkhags of Sarpang, Tsirang, Trongsa and Zhemgang. Similarly, the actual number of beneficiaries (respondents) covered by the survey stands at 1,923 out of a total population of 2,423 at the household level. Additionally, the 420 respondents for the survey were youth population and 80 Persons with Disabilities (PWD), as shown in Table 9.

Table 9: Household survey respondents

Gewogs	Sample HHs	Actual HHs covered	Sample population	Actual beneficiaries covered
Sarpang Dzongkhag				
Senggye	12	22	55	45
Gakiling	24	64	104	90
Dekidling	65	68	109	86
Samtenling	30	59	143	97
Chhudzom	29	31	136	103
Jigmecholing	36	42	167	150
Sershong	23	84	139	126
Umling	20	51	81	67
Total	**240**	**421**	**935**	**764**
Tsirang Dzongkhag				
Tsholingkhar	19	57	77	84
Tsirang Toed	16	37	64	46
Rangthangling	18	34	70	55
Patshaling	13	34	51	54
Kilkhorthang	24	65	94	98
Gosarling	20	47	82	67
Goshing (not in sample)		7		11
Dunglagang	18	22	68	24
Barshong	10	35	37	46
Total	**137**	**338**	**543**	**485**
Trongsa Dzongkhag				
Tangsibji	30	51	122	82
Drakteng	60	91	214	97
Langthel	45	86	129	91
Total	**134**	**228**	**466**	**270**
Zhemgang Dzongkhag				
Trong	34	67	139	126
Ngangla	26	26	106	117
Bjoka	11	20	40	41
Goshing	19	21	65	69
Shingkhar	19	42	60	51
Total	**109**	**176**	**410**	**404**
Grand Total	**620**	**1,163**	**2,353**	**1,923**

Of the 420 youth respondents, the survey covered a total of 200 male youth against a sample of just 41, while the female youth covered by the survey was 203 against a sample female youth target of 58, as shown in Table 10.

Table 10: Youth survey respondents

Dzongkhag	Female	Sample Female	Actual Female	Male	Sample Male	Actual Male	Sample Total	Total Covered
Zhemgang	60	18	19	60	18	13	36	32
Trongsa	30	9	95	30	9	92	18	187
Sarpang	29	9	79	29	9	79	18	158
Tsirang	16	22	10	16	5	16	10	43
Total	**135**	**58**	**203**	**135**	**41**	**200**	**82**	**420**

Similarly, with respect to the Persons with Disabilities (PWD), the household survey covered a total of 50 male PWD and 30 female PWD against a total sample target of 10 numbers each of male and female PWD, as shown in Table 11.

Table 11: PWD Respondents

Dzongkhag	Male	Sample Male	Female	Sample Female	Actual Male	Actual Female	Total Covered
Zhemgang	70	4	70	4	14	7	21
Trongsa	35	2	35	2	19	11	30
Sarpang	53	2	45	2	13	5	18
Tsirang	53	2	45	2	4	7	11
Total	**210**	**10**	**210**	**10**	**50**	**30**	**80**

In terms of the gender category of the respondents, 78% of the male respondents interviewed were adult (n=898), 18% were youth (n=207) and 3% were Persons with disabilities (PWD) (n=50). Similarly, of the 1241 female respondents interviewed, 80% were adult (n=993), 18% were youth (n=218) and 2% were PWD (n=30). Overall, 79% of the respondents interviewed were adult (n=1891), 18% were youth (n=425) and 3% were PWD (n=80), as shown in the Table 12 below.

4.1.1. Gender and Type of Respondents

In terms of the category of respondents by Dzongkhag, Sarpang Dzongkhag recorded the highest number of adult respondents at 40.31% (n=761), followed by Tsirang at 24.31% (n=459), and the lowest number of adult respondents was recorded in Trongsa at 14.30% (n=270). On the contrary, Trongsa witnessed highest number of youths at 43.7% (n=187), followed by Sarpang at 37.47% (n=160) and the lowest number of youth respondents was recorded in Zhemgang at 7.96% (n=21). Interestingly, Trongsa has the highest number of PWDs at 37.04% (n=30), followed by Zhemgang at 25.93% (n=21) and the lowest number of PWDs was recorded in Tsirang at 13.58% (n=11), as shown in the Table 13.

Table 12: Respondents by gender

Category	Male (Nos.)	Male (%)	Female (Nos.)	Female (%)	Total (Nos.)	Total (%)
Adult	898	78%	993	80%	1891	79%
Youth	207	18%	218	18%	425	18%
PWD	50	4%	30	2%	80	3%
Total	**1155**	**100%**	**1,241**	**100%**	**2396**	**100%**

Table 13: Category of Respondents by Dzongkhag

Dzongkhag	Adult (%)	Youth (%)	PWD (%)	Total (%)
Sarpang	40.31% (n=761)	37.47% (n=160)	23.46% (n=19)	39.23% (n=940)
Trongsa	14.30% (n=270)	43.79% (n=187)	37.04% (n=30)	20.33% (n=487)
Tsirang	24.31% (n=459)	10.77% (n=46)	13.58% (n=11)	21.54% (n=516)
Zhemgang	21.08% (n=398)	7.96% (n=34)	25.93% (n=21)	18.91% (n=453)
Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**

The result clearly indicates that, while Trongsa Dzongkhag has the comparative advantage in terms of the number of youths to tap the actual potential of youth population. However, the significantly higher number of PWD means that Dzongkhag is also required to come up with a tailored livelihood enhancement program to ensure the livelihood and nutrition of the vulnerable groups.

4.1.2. Health Status

The household survey also collected information on weight and height of the individual respondents. This was done to determine the Body Mass Index (BMI) of the respondents, where BMI less than 18.5 means underweight, BMI in the range of 18.5 to 24.9 means normal, BMI in the range of 25 to 29.9 means overweight and BMI above 30 means obese. Interestingly, Sarpang dzongkhag topped other three dzongkhags in all four categories with over 42% of male respondents and more than 44% of female respondents interviewed were healthy, while over 47% male and 42.5% female respondents were obese, over 42.8% male and 46% female respondents were overweight and 66.07% male and 71.05% female respondents interviewed were underweight, as shown in Table 14.

Table 14: Respondents' health status

Dzongkhag	Healthy (%)	Obese (%)	Overweight (%	Underweight (%)

	Male	Female	Male	Female	Male	Female	Male	Female
Sarpang	42.58% (n=221)	44.06% (n=178)	47.46% (n=28)	42.57% (n=106)	42.81% (n=122)	46.06% (n=216)	66.07% (n=37)	71.05% (n=27)
Trongsa	5.59% (n=29)	14.11% (n=57)	8.47% (n=5)	20.48% (n=51)	7.72% (n=22)	20.04% (n=94)	1.79% (n=1)	10.53% (n=4)
Tsirang	29.67% (n=154)	19.31% (n=78)	38.98% (n=23)	30.12% (n=75)	21.75% (n=62)	14.29% (n=67)	25.00% (n=14)	15.79% (n=6)
Zhemgang	22.16% (n=115)	22.52% (n=91)	5.08% (n=3)	6.83% (n=17)	27.72% (n=79)	19.62% (n=92)	7.14% (n=4)	2.63% (n=1)
Total	**100% (n=519)**	**100% (n=404)**	**100% (n=59)**	**100% (n=249)**	**100% (n=285)**	**100% (n=469**	**100% (n=56)**	**100% (n=38)**

4.1.3. Household Head and Members

The survey results indicate that Trongsa recorded the highest women-headed households at 41% (n=183), while the men-headed households was lowest in Trongsa at just 6% (n=45). On the contrary, Tsirang recorded the lowest women-headed households at 6% (n=28), while the men-headed households were highest among the four dzongkhags at 43% (n=310), as shown in Table 15.

Table 15: Head of the Households

Dzongkhag	Women-Headed HHs (Nos.)	Women-Headed HHs (%)	Men-Headed HHs (Nos.)	Men-Headed HHs (%)	Total (Nos.)	Total (%)
Sarpang	141	32%	280	39%	421	36%
Trongsa	183	41%	45	6%	228	20%
Tsirang	28	6%	310	43%	338	29%
Zhemgang	95	21%	81	11%	176	15%
Total	**447**	**100%**	**716**	**100%**	**1,163**	**100%**

The survey results show that 55.20% of the household members in the survey sites were adult, 19.97% were youth, 16.35% were children, 0.81% were PWDs, 3.03% were civil servants and 4.63% were school going children. However, on the basis of actual members of the households, 56.29% were adult, 16.99% were youth, 22.93% were children and 3.79% were PWDs. Hence, the survey results clearly indicates that 52.37% of the respondents interviewed have actual members of the households currently residing at the time of the survey. Table 16 provides a detailed summary of the members of the household in the study sites.

Table 16: Members of the households

Dzongkhag	Adult		Youth		Children		PWD		Civil Servants		School Children	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Sarpang	448	445	92	308	113	111	3	3	4	23	49	24

Trongsa	246	246	123	111	147	139	3	23	12	61	62	50
Tsirang	480	475	122	116	137	142	1	4	4	7	13	18
Zhemgang	329	333	133	81	52	48	2	5	24	30	22	14
Total	**1,503**	**1,499**	**470**	**616**	**449**	**440**	**9**	**35**	**44**	**121**	**146**	**106**

4.1.4. Age of Respondents

The mean age for both male and female is 49 years with 47 as the average years for both male and female. The minimum age of the respondents was 15 and the maximum was 92 years. The proportion of youth (aged 35 years and below) was 23.39% with those aged over 35 years being 76.6%.

Similarly, the shape of the population pyramid constructed using the age of the households interviewed also clearly indicate a sign of aging population with lower birth rates, indicating that majority of the households have older men and women in relation to number of youths below 35 years of age, as shown in Figure 2.

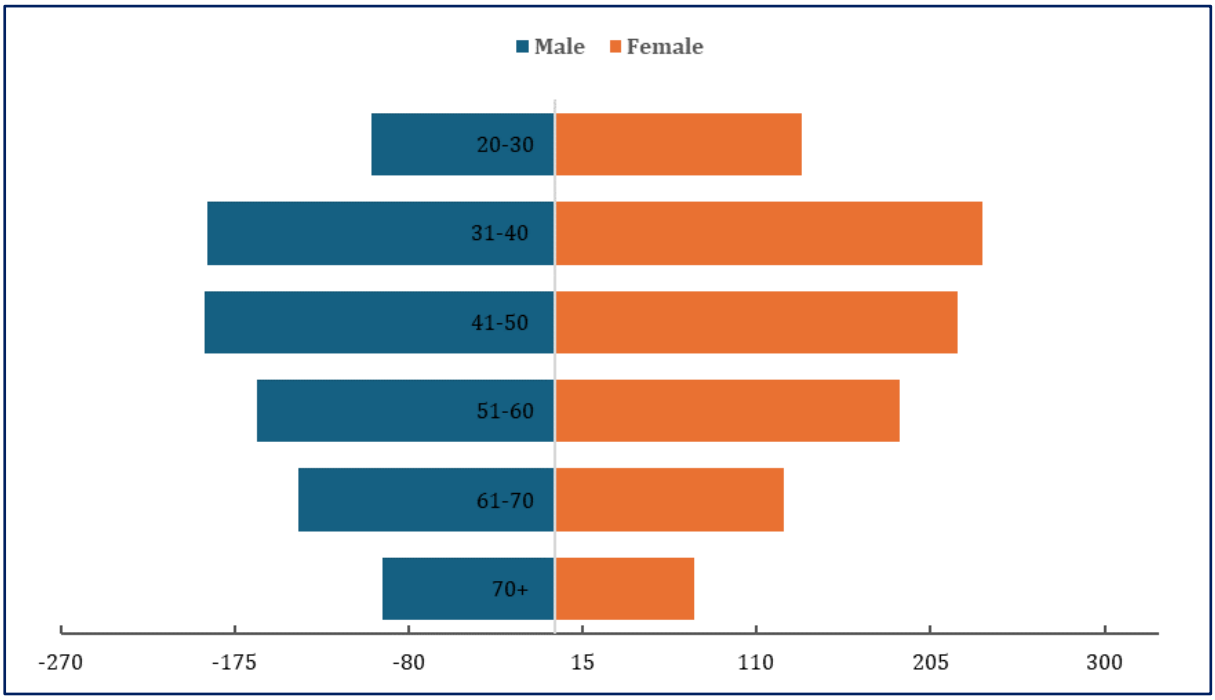


Figure 2: Population pyramid of respondents

4.1.5. Level of Education

The survey results show that 52.3% of adult male (n=461) have no formal education, while 22.2% of adult male respondents have received primary education (n=196), followed by 15.8% have received secondary education (n=139), 5.2% of the respondents interviewed have diploma qualification (n=46), 3.5% have received non-formal education, and less than 1% of the male respondents have attained religious studies, tertiary education and master studies.

Similarly, among the adult female respondents interviewed, 62.4% have no formal education (n=618), while 13.4% of the adult female respondents have secondary education (n=133), 12.9% have received primary education (n=128), 7.4% have received non-formal education (n=73),

2.3% of the adult female have received diploma and 1.6% have received tertiary education (n=16) as shown in Table 17.

In contrast, 58.3% of male youth respondents interviewed have received primary education (n=35), followed by 15% of male youth having attained religious studies (n=9), while 13.3% have received secondary education (n=8) and 6.7% of the male youth respondents have either received no formal education or non-formal education. On the other hand, 53.5% of the female youth respondents interviewed have reported receiving primary education (n=23), while 41.9% of the female youth have received secondary education and 2.3% have received higher secondary education, as shown in Table 17.

Table 17: Educational level of respondents

Education Level	Adult				Youth			
	Male (No.)	Male %)	Female (No.)	Female (%)	Male (No.)	Male (%)	Female (No.)	Female (%)
No Education	461	52.3	618	62.4	4	6.7	1	2.3
Non-Formal Education	31	3.5	73	7.4	4	6.7	-	-
Religious Studies	1	0.1	-	-	9	15.0	-	-
Primary Education	196	22.2	128	12.9	35	58.3	23	53.5
Secondary Education	139	15.8	133	13.4	8	13.3	18	41.9
HS Education	-	-	-	-	-	-	1	2.3
Diploma/Certificate	46	5.2	23	2.3	-	-	-	-
Tertiary Education	5	0.6	16	1.6	-	-	-	-
Masters	2	0.2	-	-	-	-	-	-
Total	**881**	**100 %**	**991**	**100%**	**60**	**100%**	**43**	**100%**

4.1.6. Marital Status

Overall, 82% of the respondents interviewed were married (n=1559), while 8% of the respondents were single (n=161), 5% of the respondents were divorced (n=87) and the remaining 5% were widow (n=94), as shown in Table 18 below. This shows that most of the households are managed by married adults compared to single or divorced ones.

Table 18: Marital Status of Respondents

Dzongkhag	Married (%)	Divorced (%)	Single (%)	Widow (%)
Sarpang	38.81% (n=605)	49.42% (n=43)	44.72% (n=72)	36.17% (n=34)
Trongsa	12.96% (n=202)	29.88% (n=26)	4.348% (n=7)	32.98% (n=31)
Tsirang	28.48% (n=444)	2.3% (n=2)	19.25% (n=31)	2.13% (n=2)
Zhemgang	19.76% (n=308)	18.39% (n=16)	31.68% (n=51)	28.72% (n=27)
Total	**100% (n=1559)**	**100% (n=87)**	**100% (n=161)**	**100% (n=94)**

4.1.7. Occupation of Respondents

The survey results indicate that the majority of the respondents interviewed were engaged in farming at 71.02% (n=1647), followed by student at 9.27% (n=215), unemployed at 7.03% (n=163), employed at 5.05% (n=117), while 5.52% of the respondents interviewed were operating a business (n=117) and less than 1% (n=12) of the respondents interviewed were either a retired civil servant or a dependent, as shown in Figure 3.

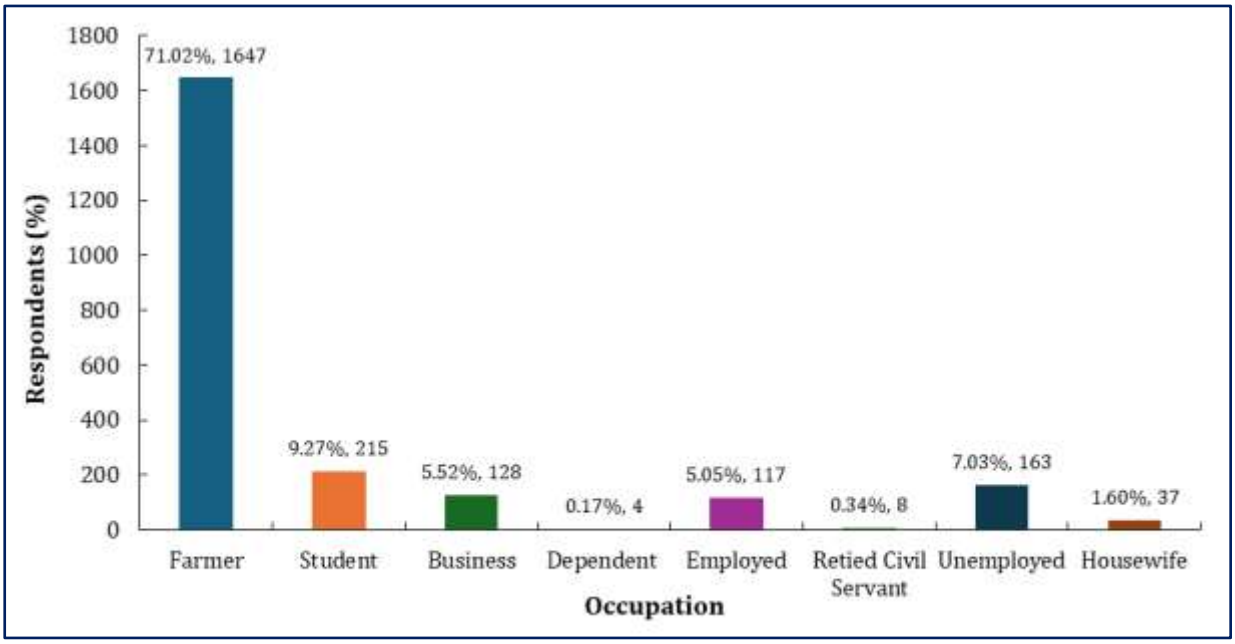


Figure 3: Occupation of Respondents

4.1.8. Persons with Disabilities (PWD)

The survey results show that majority of the PWD respondents interviewed were male constituting about 62.50% (n=50) and 37.50% (n=30) were female. In terms of the age, majority of the respondents interviewed were above 60 years at 36% (n=29), followed by the PWD respondents in the age range of 50-60 years at 11% (n=9), 40-50 years at 13% (n=10), age range 30-40 years at 21% (n=17) and below 30 years at 19% (n=15). This result clearly indicates that disability in the older age category was mostly related to loss of sight and not able to walk properly which is a common aging problem.

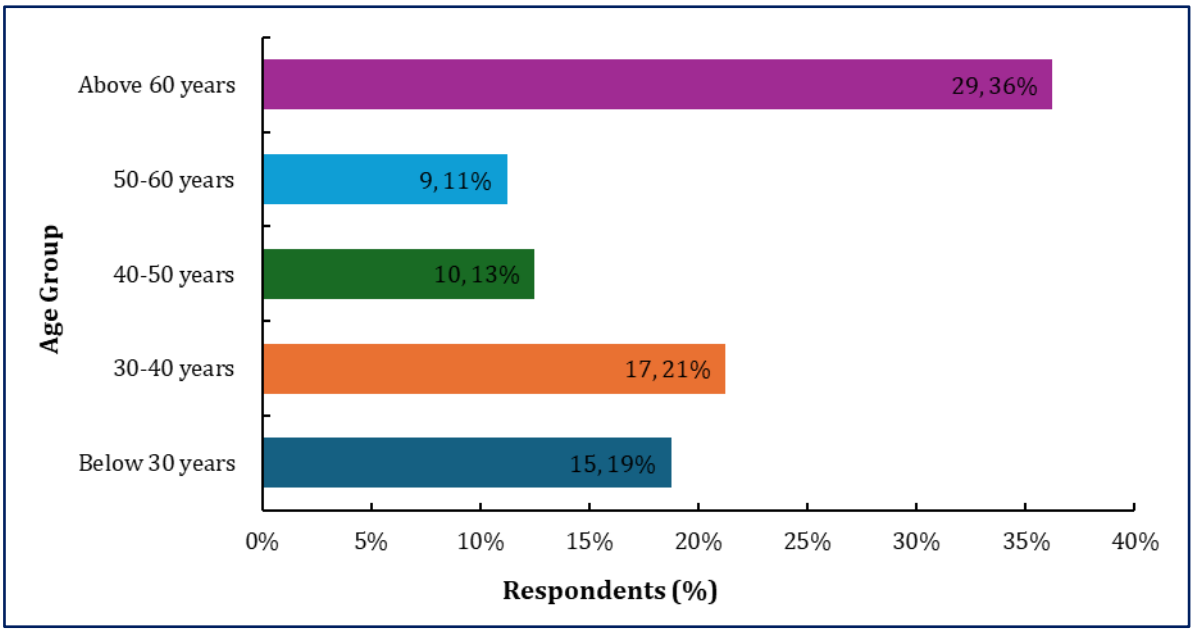


Figure 4: PWD by Gender

On the contrary, higher number of respondents in the age bracket below 30 years and in the age range of 30-40 years is alarming since the PWDs in these age range fall under economically productive age group. Out of a total of 80 PWDs interviewed across four dzongkhags, Trongsa recorded the highest number of PWDs at 38% (n=30), with male PWDs at 38% (n=19) and female PWDs at 37% (n=11), while lowest was observed in Tsirang at 14% (n=11) with male PWD at 8% (n=4) and female PWD at 23% (n=7), as shown in Table 19.

Table 19: PWD by Gender across four dzongkhags

Dzongkhag	Male	Male (%)	Female	Female (%)	Total (Nos.)	Total (%)
Sarpang	13	26%	5	17%	18	23%
Trongsa	19	38%	11	37%	30	38%
Tsirang	4	8%	7	23%	11	14%
Zhemgang	14	28%	7	23%	21	26%
Total	**50**	**100%**	**30**	**100%**	**80**	**100%**

In terms of the types of disability, the survey results show that 28% of the PWDs interviewed (n=22) have reported having physical disability, followed by hearing impairment at 19% (n=15), visual impairment at 13% (n=10), mental health at 9% (n=7) and speech impairment at 8% (n=6), as shown in Figure 8. On the contrary, 25% of the PWDs interviewed have reported having a combination of disabilities, comprising of speech, hearing and visual impairment and physical disability. This result clearly calls for the need to come up with a tailored and targeted intervention support to improve their livelihood.

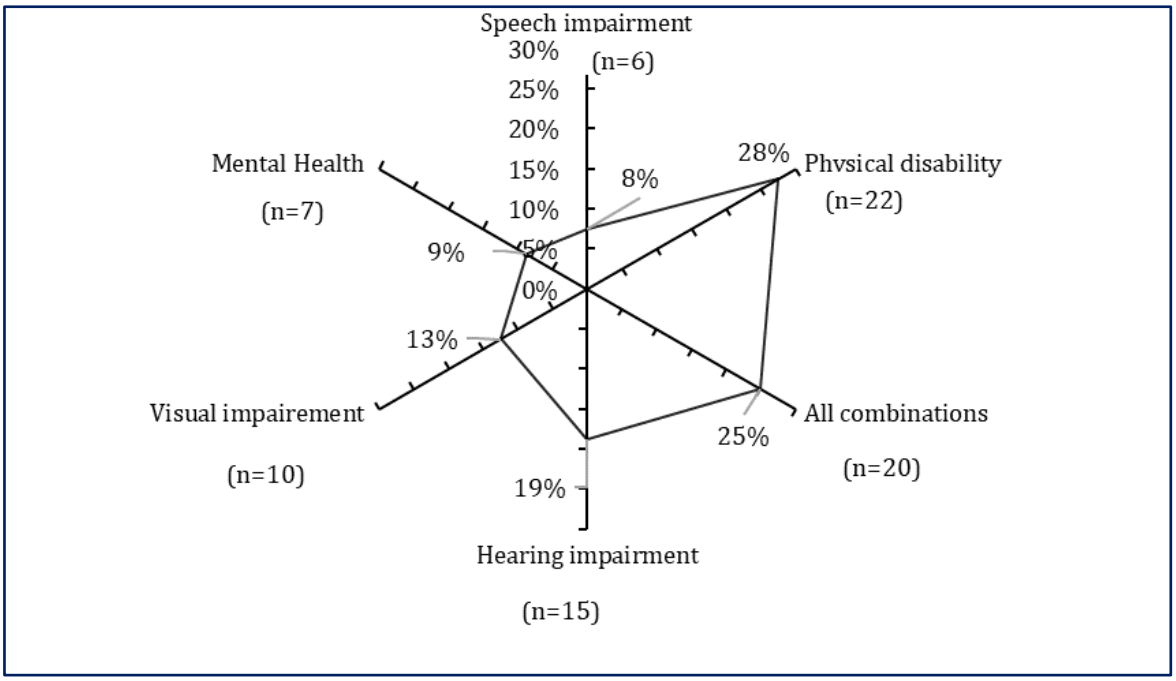


Figure 5: Types of Disabilities

Only about 10% have received some form of support such as enrolling into special education programs like those in deaf and blind school (Wangsel institute for deaf at Paro). Others have got the opportunity to avail services such as in vocational rehabilitation services for job trainings or training on business establishment. Accordingly, some are working as tailor after receiving tailoring training in the specific professional areas.

In terms of the PWDs' accessibility to dietary diversity or nutritious food, 41.25% of respondents interviewed have reported having access to proper nutritious food, while 58.75% respondents have reported having no access to proper nutritious food. However, the survey result has indicated following as some of the reasons for PWDs' limited access to proper nutritious food:

a) Limited availability of nutritious foods along with lack of awareness or education about nutrition and healthy eating habits

b) Limited access to fresh fruits and vegetables due to geographical location or transportation issues along with limited support or programs promoting healthy eating habits.

c) High-cost involvement to have nutritious foods along with limited time or resources to prepare nutritious food.

Notwithstanding, in terms of job opportunities, out of a total of 80 PWDs interviewed, only 4% (n=3) are employed where two are working in the traditional medicine in the hospital and another one is serving as a teacher, while the remaining 96% are unemployed.

4.1.9. Youths

There is almost equal proportion of men and women representation for youth as represented by 50.13% and 49.87% respectively. As per the age of the youths, majority 62.98% are between 19 to 30 years, while 37.02% are between 14 to 18 years.

In terms of the level of education, majority of the youth respondents interviewed reported having completed secondary education at 69% (n=272), followed by 13% youths (n=53) reported having completed primary school, 7% youths (n=27) having completed tertiary level education, while 6% of the youths (n=23) interviewed have completed diploma and 1% of youths (n=4) have received non-formal education and 1% of youths (n=5) interviewed have no formal education, as shown in Figure 6.

This indicates that majority of the youths remaining in the villages have at least primary or secondary education level compared to adults. Further, it was also interesting to note that majority of the youths interviewed were students at 51% (n=201) and 36% youths (n=141) interviewed in the study sites were unemployed. Thus, the results suggest that there are a greater number of dependent youths in the villages, while other youths are either employed or working as farmer, housewife, monk and some are running small business.

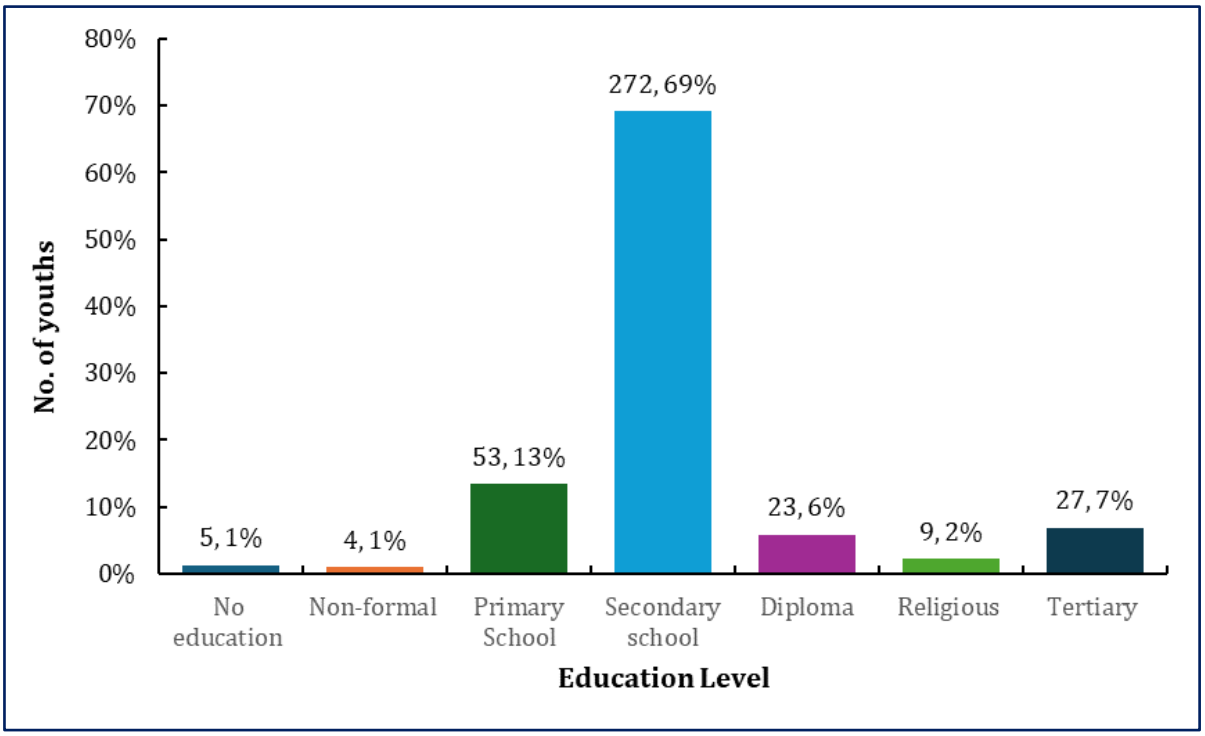


Figure 6: Education level of youths

Among the youths, only 33.59% have received some form of support from the government as shown below:

a) Youths are able to received support in terms of employment assistance such as participation in job training and into various employment schemes, free education and scholarships.

b) Received healthcare assistance which is free of cost. Opportunity for financial assistance such as government allowances or grants, food assistance through subsidized food programs or from the community kitchens.

c) Some youths do receive housing assistance such as into government housing schemes or rent subsidies including agricultural support like agricultural subsidies or farm assistance to those who are into farming.

In terms of employment, only 2.54% of the youths are employed and they are into ECCD facilitator, working as driver, teller in the banks, in automobile workshop and as painters. Some

of the youths are into Desup training or army trainings. As per the support to improve nutrition, youths receive received the following:

a) Subsidized or free nutritious food programs.

b) They do receive nutritional supplements such as iron tablets and vitamin A capsules. Further, health workers regularly monitor the growth and development of children in the household and provide counseling or support services. Pregnant women and mothers with young children receive support through maternal and child health services, including prenatal care, breastfeeding support, and counseling on infant and young child feeding practices.

c) Community-based nutrition interventions include nutrition-focused initiatives such as community gardens, nutrition education sessions or cooking demonstrations to promote healthier eating habits and to improve nutritional outcomes.

4.2. Housing and Assets

4.2.1. Housing

An assessment of housing conditions across the four project Dzongkhags Sarpang, Trongsa, Tsirang, and Zhemgang revealed that the majority of participants reside in permanent housing structures. In Sarpang, out of 421 respondents, 69.5% live in permanent dwellings, 24.2% in semi-permanent, and 6.1% in temporary shelters. Trongsa shows a relatively better housing condition, with 84.6% living in permanent structures, 14% in semi-permanent, and only 1.3% in temporary shelters. Tsirang recorded the highest proportion of permanent housing, with 96% of participants living in permanent structures, none in semi-permanent, and 3.9% in temporary housing. Similarly, in Zhemgang, 87.8% of respondents reside in permanent structures, 10.9% in semi-permanent, and 1.1% in temporary shelters. Overall, the data shows that 995 individuals across all four dzongkhags in permanent housing followed by 153 individuals (13%) in semi-permanent, and 44 individuals (4%) in temporary structures. This indicates a generally stable housing situation among the majority of beneficiaries. In terms of basis of occupying the house, majority are owned by themselves as represented by 84.16%.

This is true as in most of the villages in Bhutan, people build their own house within their own land and it is very rare to find someone living in other's house as represented by 13.33%. This may be true to those who do not have adequate land as they land up working for others and they live in other's land. On the other hand, minority group of about 2.44% are living in rented house in other's building.

Table 20: Types of houses

Dzongkhag	Permanent (%)	Semi-permanent (%)	Temporary (%)	Total (%)
Sarpang	31% (n=293)	67% (n=102)	59% (n=26)	37% (n=421)
Trongsa	20% (n=193)	21% (n=32)	7% (n=3)	20% (n=228)
Tsirang	33% (n=317)	0% (n=0)	30% (n=13)	29% (n=330)
Zhemgang	16% (n=152)	12% (n=19)	5% (n=2)	15% (173)
Total	**100% (n=955)**	**100% (n=153)**	**100% (n=44)**	**100% (n=1152)**

4.2.2. Land Holding

Out of a total of 1917 households surveyed, only 1273 respondents responded with an overall response rate of 66%. Of these, 72.84% of the respondents interviewed reported having access to land for agricultural and livestock rearing purposes, while 27.16% responded having no access to land for the farming purposes.

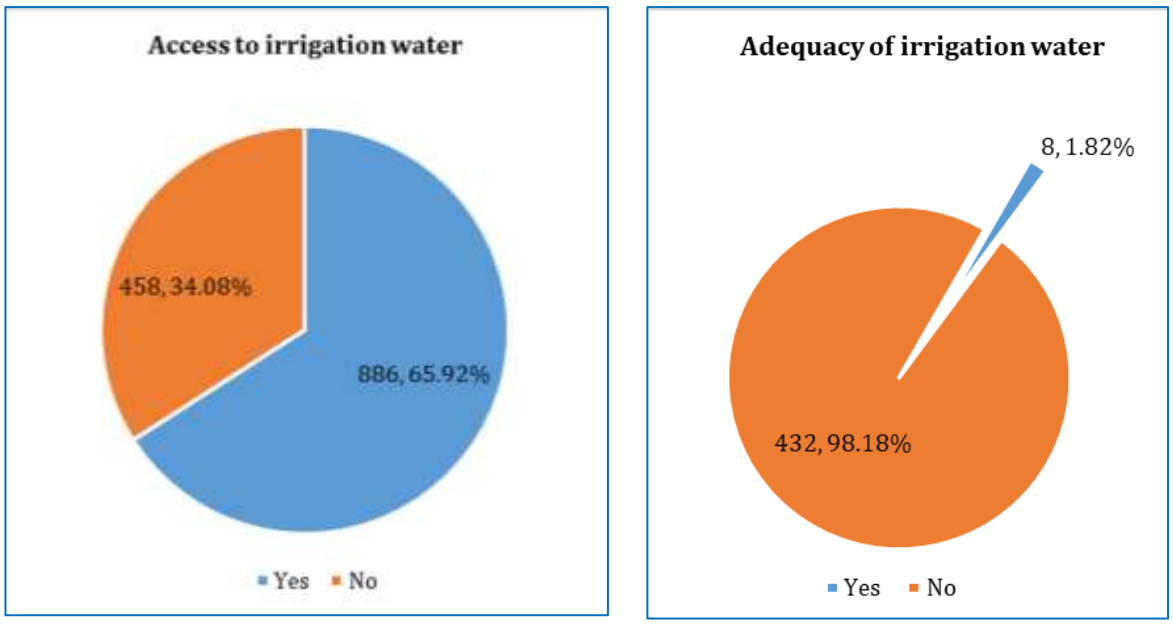
Interestingly, the survey result indicated an average agricultural landholding of 1.43 acres with a maximum landholding of 6.79 acres and a minimum landholding of 0.06 acre. Among the Dzongkhags surveyed, Trongsa Dzongkhag recorded the highest average landholding of 1.52 acres (n=226), followed by Sarpang Dzongkhag at 1.43 acres, Zhemgang at 1.39 acres, while the lowest average landholding was observed in Tsirang at 1.37 acres (n=469) as shown in Table 21. This clearly indicates significant variation in average landholding among the households surveyed across four dzongkhags.

Table 21: Average land holding for agriculture per household

Dzongkhag	Average Land Holding (Acre)	Max Land Holding (Acre)	Min Land Holding (Acre)
Sarpang	1.43 (n=303)	7.00	0.00
Trongsa	1.52 (n=226)	6.15	0.05
Tsirang	1.37 (n=469)	7.00	0.10
Zhemgang	1.39 (n=275)	7.00	0.08
Total	**1.43 (n=1273)**	**6.79**	**0.06**

4.2.3. Access to irrigation water

In terms of the access to irrigation water, 65.92% of the respondents interviewed reported having access to irrigation (n=886), while 35.08% reported having no access to reliable access to irrigation water (n=458) as shown in Figure 7(a). In contrast, only 1.82% of respondents reported having irrigation water adequate for crop cultivation (n=8), while 98.18% of the respondents reported having no adequate irrigation water for crop cultivation (n=432), as shown in Figure 7(b).



(a) (b)

Figure 7(a &b): Access and adequacy of irrigation water

In terms of the irrigation water source, of the 907 respondents interviewed, 98.79% of the respondent reported river and stream as the main source of irrigation (n=896), while only 0.66% of the respondents reported pond as the main source of irrigation (n=6), 0.44% of the respondents reported rain water as the main source (n=4) and 0.11% reported well as the primary source of irrigation water (n=1), as shown in Table 22.

Table 22: Source of irrigation water

Source	Respondent (Nos.)	Respondent (%)
River/ Stream	896	98.79%
Pond	6	0.66%
Rain Water	4	0.44%
Well	1	0.11%
Total	**907**	**100.00%**

Among the four Dzongkhags, Zhemgang leads with 79% of households using irrigation, while other districts report much lower usage, indicating unequal access to irrigation infrastructure. Water sufficiency is also a major concern, with only 46% of households across all districts reporting adequate water availability for agriculture, as shown in Table 23. These findings highlight both landholding disparities and the urgent need to improve irrigation systems and ensure reliable water supply to enhance agricultural productivity and strengthen household resilience.

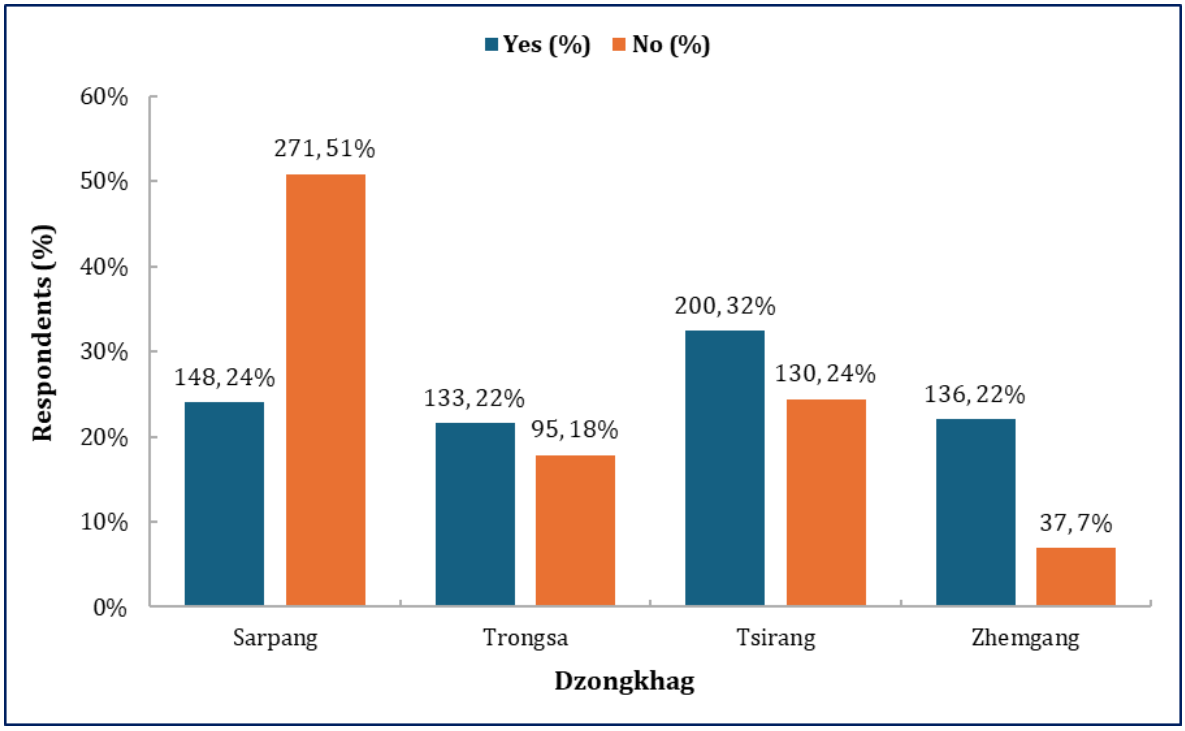


Figure 8: Status of irrigated area in four target Dzongkhags

As evident from Figure 8, the highest irrigated area was observed in Sarpang Dzongkhag with 51% (n=271), followed by 32% in Tsirang, 22% in Trongsa, while Zhemgang recorded the lowest irrigated area. These findings clearly suggest that Zhemgang Dzongkhag has the lowest irrigation infrastructure among the four Dzongkhags.

4.2.4. Decisions on use of assets

The survey results indicate that most of the household assets are controlled by the household members themselves, with significant variations among the districts. In Sarpang, men have a predominant share of control with 57.72% of male respondents interviewed having control over the assets, while women hold 35.15%, while 7.13% of respondents interviewed have reported that the use of household asset is jointly decided by both male and female members of a family. In contrast, Trongsa and Zhemgang recorded a reverse trend, with women managing 61.84% of the assets and men at 12.72% in Trongsa, and women managing 36.93% of the assets and men at 6.82%. On the other hand, Tsirang noted a reverse trend with 77.22% of the assets controlled by men, leaving women with just 9.76%, as shown in Table 23. This pattern underscores that intrinsic agency, or autonomy in ownership, is largely exercised by the household members themselves, with significant regional differences in how this control is distributed.

Overall, the ownership of the households and productive assets like tools are mostly owned by the respondent themselves as represented by 42.61%, followed by husband with 16.90%, father at 13.59%, mother at 8.48%, wife at 9.21% and the rest accounting to 9.21%. However, in most cases, it is owned jointly by various members of the family such as respondent themselves, husband, wife, mother, father, son, sister, brother, daughter etc.

Table 23: Decision on purchase of assets

Gender	Sarpang	Trongsa	Tsirang	Zhemgang

Men (%)	57.72	12.72	77.22	6.82
Women (%)	35.15	61.84	9.76	36.93
Both (%)	7.13	25.44	13.02	56.25
Total	**100.00**	**100.00**	**100.00**	**100.00**

As Table 23 underscores that, while households have complete autonomy over asset purchases across all dzongkhags, the gender dynamics in decision-making vary widely. Trongsa and Zhemgang exhibit a higher degree of female participation in asset purchase decisions, contrasting with Sarpang and Tsirang, where men play a more dominant role. The absence of data on instrumental and collective agency suggests that these forms of decision-making are either not prevalent or not reported.

4.3. Production

4.3.1. Land structure

The land mass of Bhutan has fragile geology and immature soils. In the foothills, a combination of factors such as steep slope gradient and loosely consolidated bedrock tends to promote severe surface erosion in spite of thick vegetative cover.

In the high mountains, rocks are resistant to weathering, and because of low rainfall and temperature, chemical weathering is also slow. Hence the soil formation is slow, leading to shallow soil depth with a high percentage of rockiness and stoniness. In the middle mountains, granites and limestones are highly weathered. The series of mountains in Bhutan are dissected by fast moving rivers that flow from north to south through deep and narrow gorges and steep-sided ravines. These rivers are fed by perennial snows and the summer monsoon or both. Owing to the wide variations in the physical features within short vertical as well as horizontal distances, Bhutan has great diversity in climate compared to other regions of similar size, ranging from hot and humid subtropical in the south to perpetual ice and snow in the high Himalayas.

Each valley has unique climatic characteristics resulting from differences in altitude, rainfall, and exposure to sunlight and wind, but the predominant climatic feature is the southwest monsoon. About 64% of the land area is covered by forest, 6.6% by alpine pasture/meadows and shrubs, 8.8% by agriculture, 10% by snow and glacier and 10.6% by exposed rock, grasslands, water, etc. The temperatures and climatic zones of Bhutan are divided into three distinct regions, each contributing to the country's rich and diverse agriculture practice.

Alpine Zone (4000 m to 7517 m): Summers are short and cool, while winters are cold with significant snowfall. This region features tundra vegetation, alpine meadows, snow- covered peaks, and glaciers.

Temperate Zone (2000 m to 4000 m): The climate here is cool, with cold winters and hot summers that bring moderate rainfall. Coniferous forests are found on drier slopes and in the valleys.

Sub-tropical Zone (150 m to 2000 m): Characterized by subtropical vegetation, this zone is warm in winter and hot and humid with plenty of rainfall in summer. It is marked by steep slopes and dense broadleaf forests.

The vast majority of households (93.20%) in the target Dzongkhags fall under the Subtropical Zone, indicating a significant reliance on crops that flourish in warmer and more humid

conditions. The staple crops of this zone, such as paddy, chili, cardamom, areca nut, wheat, and ginger, are crucial to the agricultural output and food security of these regions. Conversely, a smaller portion of households (6.80%) in the target Dzongkhags fall under the Temperate Zone, focusing on crops like paddy, maize, potatoes, buckwheat, barley, and chili.

Table 24: Target areas by climatic zones and their major crops

Climate Zones	No. of Households	%	Major Crops
Subtropical Zone (150 m to 2000 m)	1084	93.20	Paddy, chili, cardamom, areca nut, wheat, ginger
Temperate Zone (2000 m to 4000 m)	79	6.80	Paddy, maize, potatoes, buckwheat, barley, chili

4.3.2. Crop information and income

Overall, major crop production is mostly paddy or rice followed by cash crops such as cardamom, areca nut and orange. They also grow maize, buckwheat, barley, potato and other vegetables such as cabbage, chili, ginger, tomato, spinach etc. Besides, some also grow fruits such as mango, banana, guava, papaya etc. Some of the farmers also get involved in piggery, dairy and poultry farming. However, majority are into rice and cardamom production represented by 16.04% and 10.03% respectively followed by areca nut 9.14%, maize 8.15%, orange 8.88% and vegetables 4.91%. The common crops cultivated by all the Dzongkhags are paddy, maize, orange and vegetables. Even for vegetable cultivation, most of the products are similar for all the Dzongkhags.

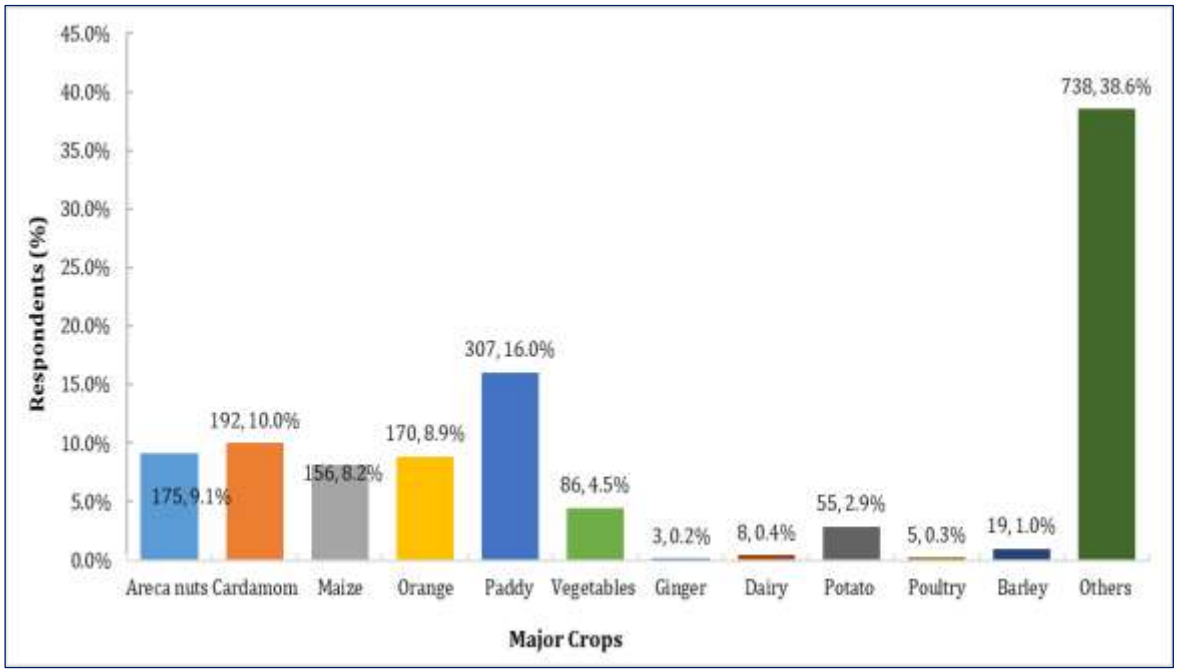


Figure 9: Major crop production

4.3.3. Annual Household Income

In 2022, the average total household income was 92,227, with farm income contributing 55,222, non-farm income 29,049, and an estimated consumption value of 7,957. By 2023, the overall

average household income increased to 169,709, with farm income rising to 64,332, non-farm income reaching 33,296, and consumption value increasing to 9,270. In 2023, farming remains the primary source of income in Sarpang, Tsirang, and Zhemgang, while in Trongsa, both farm and non-farm incomes contribute almost equally to household earnings. Sarpang stands out with the highest average household income and Zhemgang—the district with the lowest household income.

Additionally, there is a clear gender disparity in income levels. Women-headed households (W-HH) have annual incomes approximately 30% lower than those of male-headed households (M-HH). This income gap is largely due to significantly lower farm income among women-headed households, which may be linked to limited access to resources, labor, agricultural inputs, and market opportunities for women. These findings highlight the need for targeted support to boost agricultural productivity in low-income areas like Zhemgang and to address gender-based economic inequalities through tailored interventions.

Table 25: Annual household income

		2022			
Dzongkhag	**N**	**Total Income**	**Farm Income**	**Consumption Value**	**Non-farm Income**
Sarpang	421	152625	88099	8384	56143
Trongsa	228	66243	26508	13244	26491
Tsirang	330	65112	51942	5048	8121
Zhemgang	173	32581	19312	6864	6405
Total	**1152**	**92227**	**55222**	**7957**	**29049**
		2023			
Dzongkhag	**N**	**Total Income**	**Farm Income**	**Consumption Value**	**Non-farm Income**
Sarpang	421	169709	101271	9637	58801
Trongsa	228	72928	28911	14445	29572
Tsirang	330	88045	64730	6291	17024
Zhemgang	173	34776	20364	7238	7173
Total	**1152**	**106898**	**64332**	**9270**	**33296**
Women-headed Households					
		2023			
Dzongkhag	**N**	**Total Income**	**Farm Income**	**Consumption Value**	**Non-farm Income**
Sarpang	141	166682	101074	8408	57200
Trongsa	183	60224	20063	13254	26907
Tsirang	28	95107	55893	3500	35714
Zhemgang	94	32166	18638	8772	4755
Grand Total	446	90157	47623	10165	32368
Male-headed Households					
		2023			
Dzongkhag	**N**	**Total Income**	**Farm Income**	**Consumption Value**	**Non-farm Income**
Sarpang	280	171233	101370	10256	59607

Trongsa	45	124592	64894	19289	40409
Tsirang	302	87391	65550	6550	15291
Zhemgang	79	37881	22418	5413	10051
Grand Total	706	117474	74888	8704	33881

4.3.4. Average percentage change

A total of 1,152 households were surveyed across the four Dzongkhags. Overall, 34% of households reported an increase in household income, while 16% experienced an increase of at least 30%. The increase in household income was primarily driven by farm income, underscoring the critical role of agriculture in rural livelihoods.

Disaggregated data reveals notable differences between male-headed households (M-HHs) and women-headed households (W-HHs). Of the total surveyed, 706 were male-headed households and 446 were women-headed households. Women-headed households reported lower average total income and farm income compared to male-headed households. In particular, the farm income among W-HHs was considerably lower, indicating potential disparities in access to productive resources, agricultural inputs, and market opportunities.

Table 26: Annual household income and average percentage change

Dzongkhag	**Number**	**Total Income**	**Farm Income**	**Non-farm Income**	**% HHs reporting Increase**	**% HH reporting at least 30% increase**
Sarpang	421	13	13	3	38	10
Trongsa	228	14	16	6	34	19
Tsirang	330	33	27	4	35	25
Zhemgang	173	11	9	5	22	13
Grand Total	1152	19	17	4	34	16
Women-Headed Households						
Dzongkhag	**N**	**Total Income**	**Farm Income**	**Non-farm Income**	**% HHs reporting Increase**	**% HH reporting at least 30% increase**
Sarpang	141	7	6	2	40	7
Trongsa	183	14	15	4	33	18
Tsirang	28	65	37	27	50	36
Zhemgang	94	8	6	9	26	14
Grand Total	446	14	11	6	35	15
Male-Headed Household						
Dzongkhag	**N**	**Total Income**	**Farm Income**	**Non-farm Income**	**% HHs reporting Increase**	**% HHs reporting at least 30% increase**
Sarpang	280	16	17	3	38	11
Trongsa	45	14	22	11	36	22
Tsirang	302	30	26	2	34	24
Zhemgang	79	15	13	1	18	13

Grand Total	706	22	21	3	34	17

4.3.5. Crop Production

Overall, the results of the household survey indicated that 25% of the husbands in the family members are involved in crop cultivation (n=314), followed by male members at 21%, wife at 18%, father at 16%, son at 7%, mother at 6%, brothers, sisters and daughters at 2% each and other members of the family at 1%, as shown in Figure 10.

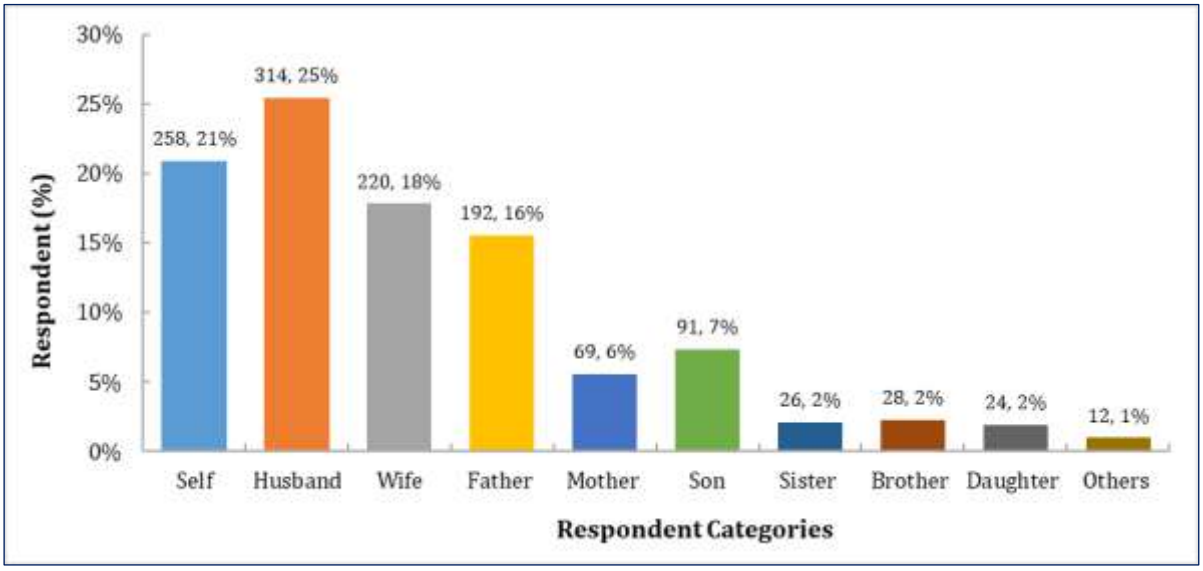


Figure 10: Participation in crop cultivation by categories of respondents

In Tsirang, 64% of the respondents interviewed reported that respondents themselves are involved in crop cultivation (n=164), while 44% respondents reported that husband are involved in crop cultivation (n=137) and 29% reported that wife are involved in crop cultivation (n=64). Similarly, in Sarpang, 29% of the respondents reported that wives are involved in crop cultivation (n=64), followed by husband at 28% (n=54) and father at 18% (n=56). However, in Trongsa, 19% of the respondents reported that husbands are involved more in crop cultivation (n=61), whereas in Zhemgang, 35% of the respondents have indicated that wives are engaged more in crop cultivation (n=77), followed by father at 35% (n=67) and husband at 19% (n=60), as shown in Figure 11.

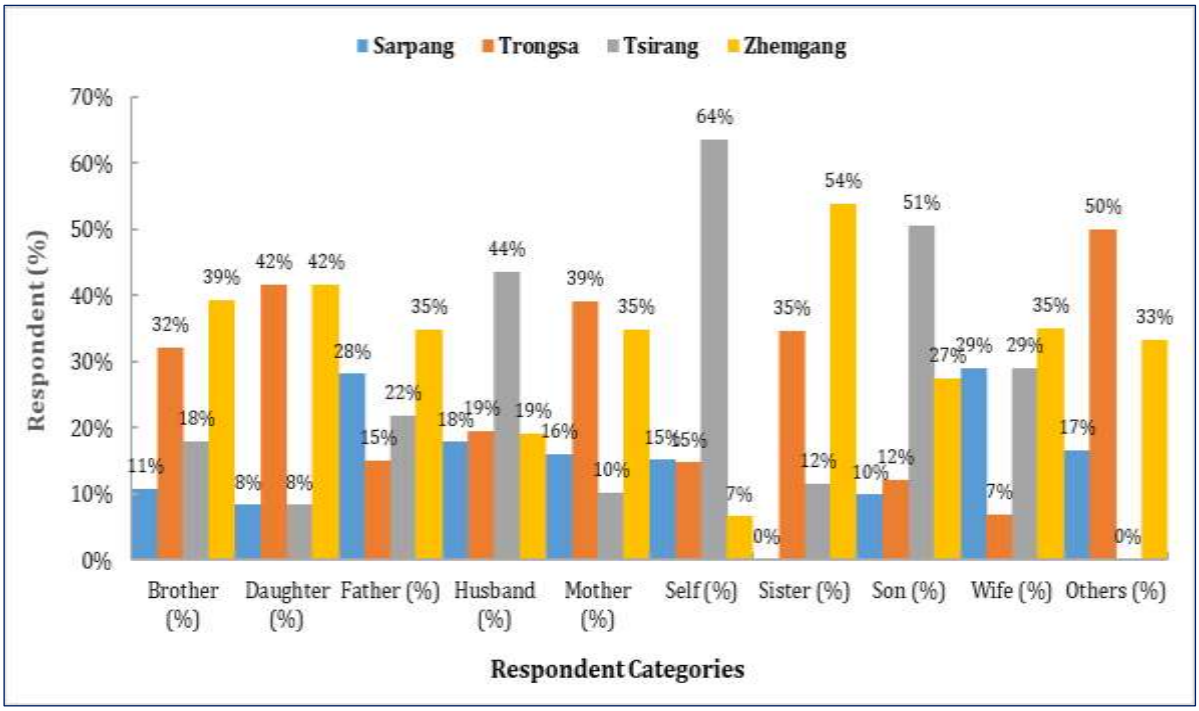


Figure 11: Participation in crop cultivation by Dzongkhags

In terms of the participation of family members in crop harvesting, the survey results indicated that fathers are involved in crop harvesting at 28.8%, husbands at 17.4% and sons at 9% in Sarpang, while for Trongsa, mothers are involved with 43.1% whereas the involvement of wives were lowest at 5%. Interestingly, for Tsirang, the crop harvesting was dominated by wives at 51.2%, followed by sons at 42.1%. Similarly, for Zhemgang, the involvement of mothers in crop harvesting was highest at 30.6%, while the involvement of husbands in crop harvesting was the lowest at 17.7%, as shown in Table. These results clearly show the crucial role played by women in crop harvesting.

Table 27: Participation of family members in crop harvesting

Dzongkhag	Father (%)	Husband (%)	Mother (%)	Self (%)	Wife (%)	Son (%)	Others (%)
Sarpang	28.8% (n=53)	17.4% (n=57)	12.5% (n=9)	16.3% (n=27)	26.6% (n=79)	9.0% (n=8)	7.6% (n=7)
Trongsa	13.0% (n=24)	19.9% (n=65)	43.1% (n=31)	18.7% (n=31)	5.0% (n=15)	14.6% (n=13)	33.7% (n=31)
Tsirang	25.5% (n=47)	44.9% (n=147)	13.9% (n=10)	51.2% (n=85)	42.1% (n=125)	50.6% (n=45)	13.0% (n=12)
Zhemgang	32.6% (n=60)	17.7% (n=58)	30.6% (n=22)	13.8% (n=23)	26.3% (n=78)	25.8% (n=23)	45.6% (n=42)
Total	**100% (n=184)**	**100% (n=327)**	**100% (n=72)**	**100% (n=166)**	**100% (n=297)**	**100% (n=89)**	**100% (n=92)**

More than 72% of the respondents interviewed have reported that production has remained same (n=897), while over 24% of the respondents have indicated an increase in production (n=300). However, about 4% of the respondents have reported that production has decreased over the years (n=44), as evident from Figure 13 below.

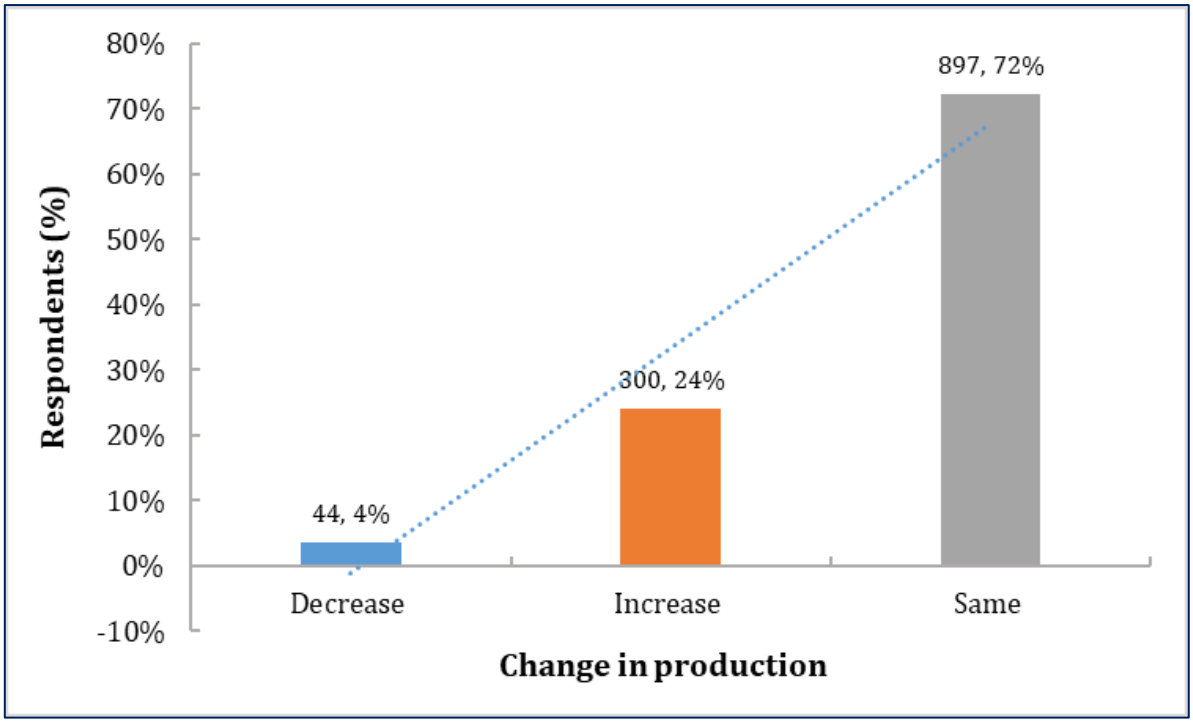


Figure 12: Change in production overtime

In terms of production of specific crops, rice is one of the most common and highest produced crops in all Dzongkhags except Zhemgang. The next major crop is areca nut followed by orange or mandarin, then maize and vegetables. However, whatever is being produced, most are being used for consumption after the harvest leaving little for sale. Accordingly, following are some of the specific supports required as shown below.

Table 28: Support required by Dzongkhag

Dzongkhag	Supports required from the project
Sarpang	Input supplies (such as seeds/seedlings, vermi-compost, liquid fertilizer etc.), Human wildlife conflict management (e.g., electric fencing), Irrigation and water management Production and technology, Market access and financial access
Trongsa	Input supplies (such as seeds/seedlings, vermi-compost, liquid fertilizer etc.), Human wildlife conflict management (e.g., electric fencing), Irrigation and water management, Production and technology, Market access and financial access, Value chain enhancement, Market linkages and networking, Processing, packaging and storage, Innovation and business management
Tsirang	Input supplies (such as seeds/seedlings, vermi-compost, liquid fertilizer etc.), Human wildlife conflict management (e.g., electric fencing), Irrigation and water management Value chain enhancement, Processing, packaging and storage, Innovation and business management
Zhemgang	Input supplies (such as seeds/seedlings, vermi-compost, liquid fertilizer etc.), Market access and financial access, Market linkages and networking

4.3.6. Livestock Production

With respect to status of livestock rearing across four target Dzongkhags, 35% of the respondents interviewed have responded that they rear livestock while 42% of the respondents indicated that they do not rear livestock and 23% of the respondents reported that neither own nor rear livestock.

However, the status of livestock rearing by Dzongkhags indicated that 27% of respondents in Zhemgang own livestock, followed by Tsirang at 26%, and Sarpang and Trongsa at 24%, respectively. On the contrary, corresponding proportion of respondents interviewed reported that they do not own livestock with Tsirang at 39%, followed by Sarpang at 37%, Zhemgang at 19% and Trongsa at 6%. Overwhelmingly, 69% of the respondents interviewed in Sarpang have chosen to remain neutral while 16% of the respondents in Trongsa have chosen to remain neutral, followed by Zhemgang at 14% and only 1% of the respondents in Tsirang have indicated as neutral, as shown in Figure 14.

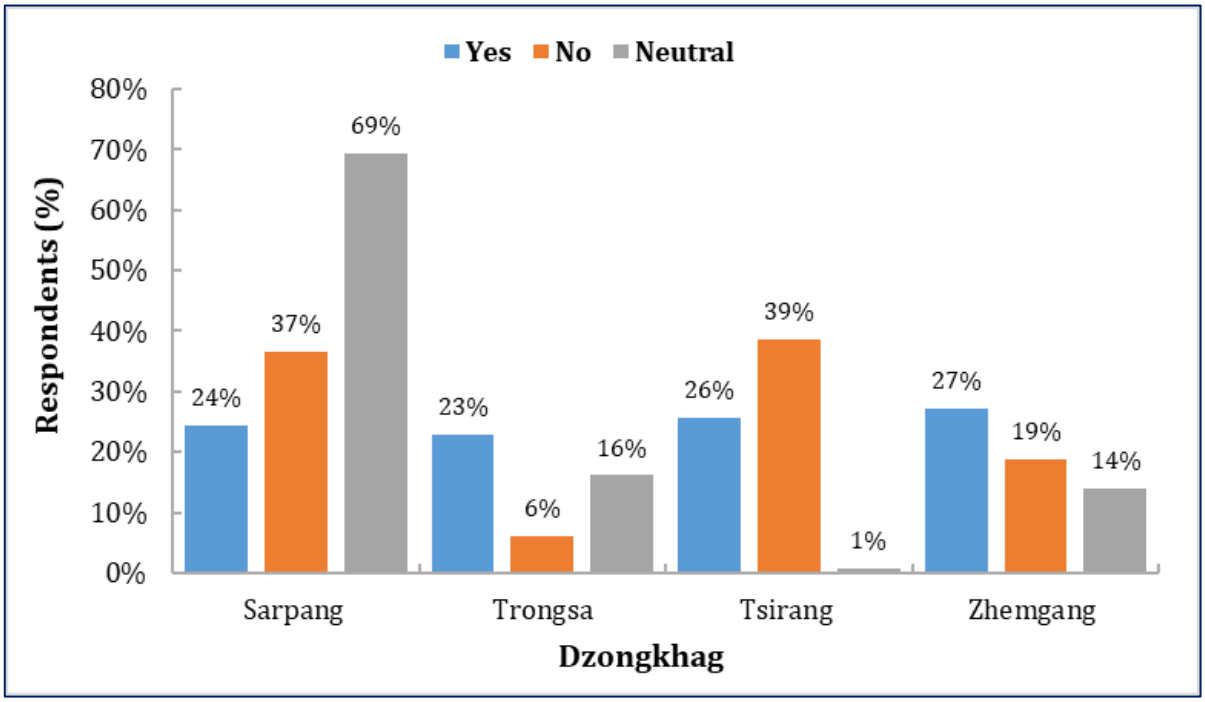


Figure 13: Households owning livestock

In terms of the ownership of livestock, majority are owned by either wife or husband as indicated by 23% and 22% respectively. Then it is followed by father 16%, mother 6%, respondent

themselves 7% and son 5%. Besides, there are also others who owns the livestock in the household such as daughter, brother, sister, grandfather, in-law, nephew, niece, grandmother etc.

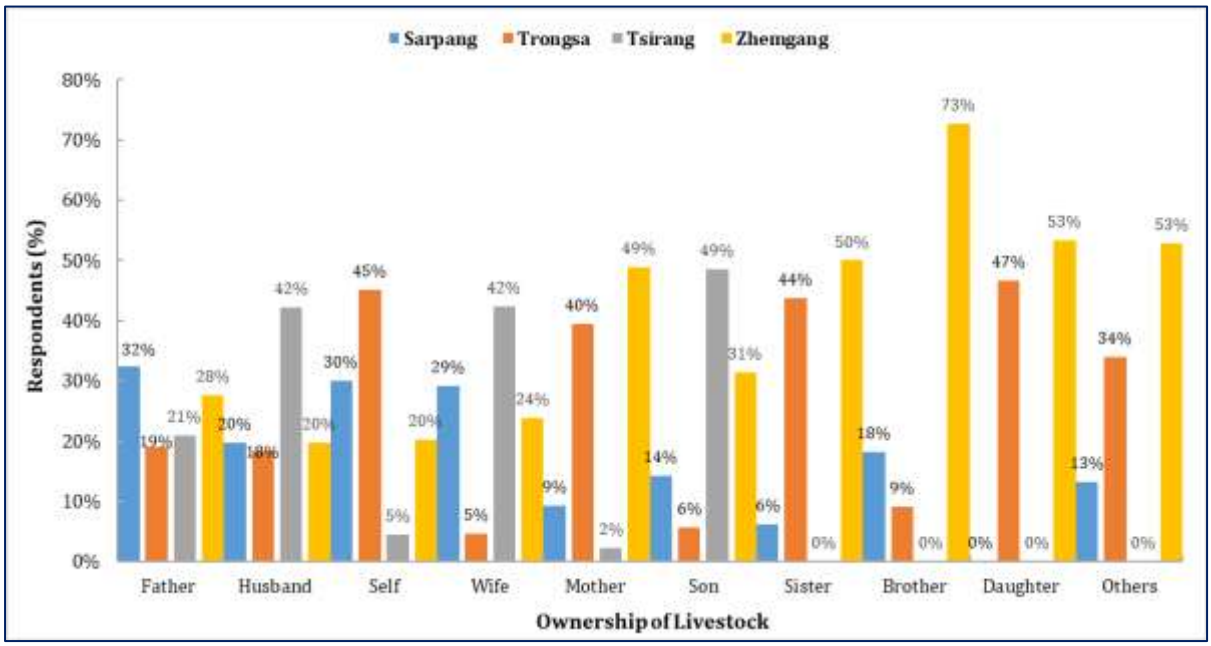


Figure 14: Ownership of livestock

Overall, 25% of the respondents interviewed have reported that husband and wife play a dominant role, followed by father at 15% and mother at 7%, while in an extended family, other members of family also influence decision.

In terms of the decision-making powers of family members regarding the rearing of livestock, Sarpang recorded wife as the highest decision-maker at 32%, while in Trongsa, husband and wife equally bear the shared responsibility with 36% and 37%, respectively. On the other hand, Zhemgang noted wife as the main influencer at 22%, closely followed by husband at 18%, as shown in Table 29.

Table 29: Decision-making powers regarding rearing of livestock

Dzongkhag	Father	Husband	Self	Wife	Mother	Son	Others	Total
Sarpang	22% (n=36)	19% (n=31)	18% (n=30)	32% (n=52)	4% (n=6)	3% (n=4)	3% (n=4)	100%
Trongsa	11% (n=17)	28% n=43)	22% (n=34)	9% (n=13)	11% (n=17)	1% (n=1)	18% (n=27)	100%
Tsirang	13% (n=23)	36% (n=62)	2% (n=3)	37% (n=63)	1% (n=2)	11% (n=18)	-	100%
Zhemgang	14% (n=23)	18% (n=33)	9% (n=16)	22% (n=40)	13% (n=24)	7% (n=13)	17% (n=30)	100%

When it comes to decisions related to livestock production, consumption, or sale of products, similar patterns are observed. The wife and husband are again the primary decision-makers, often making choices jointly. This reflects a collaborative household dynamic, particularly in managing resources and planning the utilization of livestock products. Other family members such as the father, mother, and the respondents themselves are also involved, suggesting a shared

responsibility framework that includes both older and active household members. Extended relatives occasionally participate as well, particularly in larger or more traditional family settings.

The overall awareness of livestock rearing practices, input supplies, and available technologies remains relatively low among respondents. Only 21% of respondents reported being aware of such practices and technologies, while a significant 40.51% indicated they were not aware. The remaining respondents held a neutral stance, suggesting uncertainty or limited understanding. This highlights a critical gap in knowledge and outreach, with the majority lacking sufficient information on best practices, nutritional requirements, and technological options that could enhance livestock productivity and management.

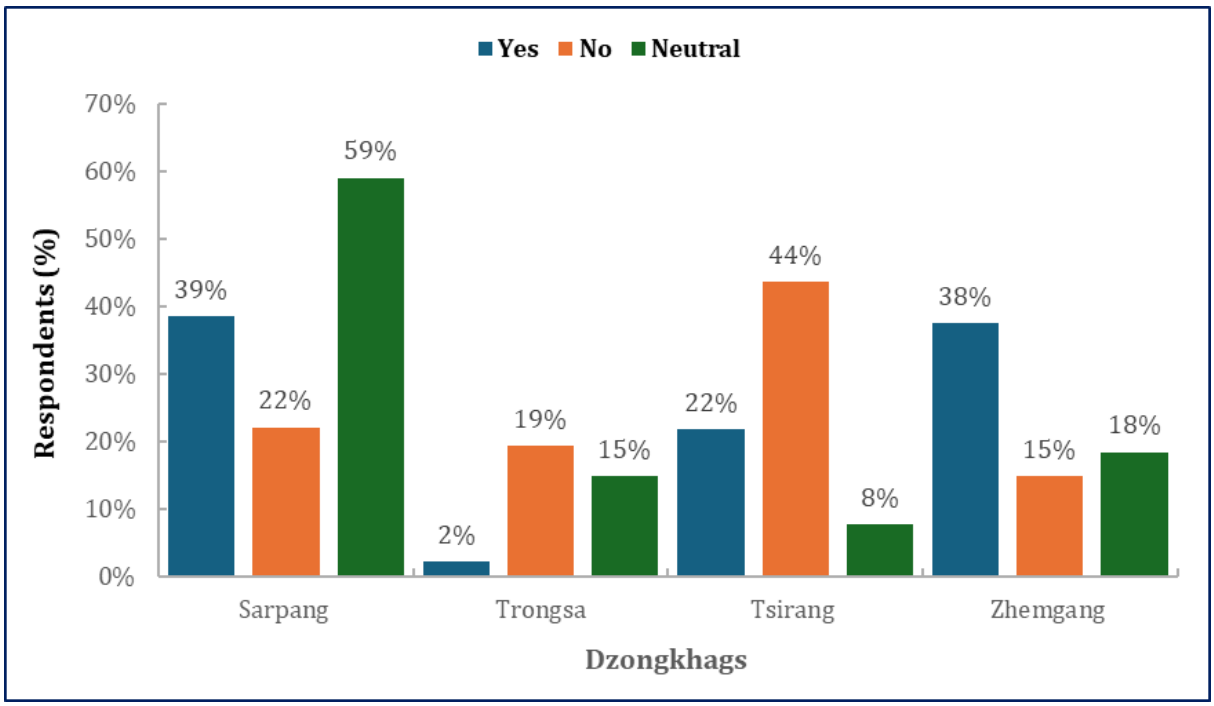


Figure 15: Awareness about livestock practices

4.3.7. Fishery Production

In terms of the involvement of family members in fishing activities, less than 1% of the respondents reported that they are involved in fishing activities while majority are not engaged in fishing activities. This indicates that most of the respondents in the respective Dzongkhags are not really interested in fishing or fish farming activities rather dependent on either agriculture, livestock or poultry farming practices.

Among the respondents interviewed in four Dzongkhags, Tsirang and Zhemgang recorded the highest share of respondents engaged in fishing activities (40%), while almost one-third of the respondents in Trongsa (35%) and one-fourth in Zhemgang reported that fishing is not a relevant activity. In contrast, Sarpang recorded considerably smaller proportion of respondents involved in fishing at 20% (n=2), while one-third of the respondents do not engage in fishing (33%) and

more than half of the respondents do not consider fishing as a relevant activity (56%), as shown in Figure 17. This result clearly shows that fishing is a notable livelihood activity in Tsirang and Zhemgang, indicating the potential of fishing interventions in the two Dzongkhags.

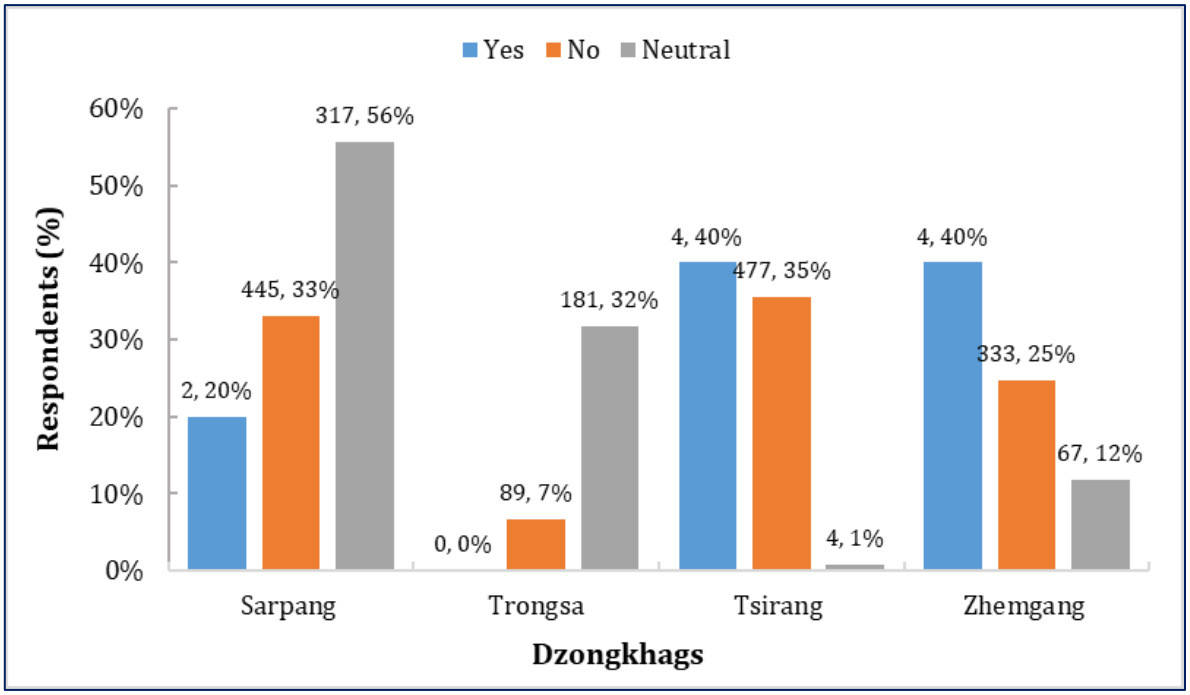


Figure 16: Respondents Engagement in fishing activity

With respect to the decision for consumption or sale of fish, the survey results found that it is mainly decided by head of the family usually father, mother and sometimes other members of the family. Similarly, in terms of the decision to use earnings from fish, the results show that it is mainly decided by father and mother, sometimes by other members of the family. Since there is not much of fishing activities in the Dzongkhags, there is lesser number of people deciding on what needs to be done with earnings from fishing. Accordingly, it is the mother, father, and respondent themselves or brother. Fishing activities are usually carried out in ponds, river or lakes. Among the respondents, only 7 has fishing pond for the fishery farming.

In Sarpang, only 2.56% of households are engaged in fishing, while 97.44% do not participate. Trongsa shows a higher engagement, with 13.04% of households involved in fishing, compared to 86.96% not participating. Tsirang and Zhemgang have very low participation rates, with only 1.19% of households engaged in fishing and 98.81% are not participating in both the dzongkhags.

Table 30: Fishing activities

Parameters	Sarpang	Trongsa	Tsirang	Zhemgang
No	97.44	86.96	98.81	98.81
Yes	2.56	13.04	1.19	1.19

When it comes to decisions about fishing production, men are the primary decision-makers in Sarpang, Trongsa, and Zhemgang in terms of decisions to catch the fish for self-consumption or for sale. In Tsirang, decision-making is more balanced, with men and women each accounting for

50% of the decisions. Similarly, decisions regarding the use of earnings from fishing are exclusively made by men in Sarpang, Trongsa, and Zhemgang. While in Tsirang, the decision-making is equally shared between men and women. Fishing activities are primarily conducted in ponds in Sarpang and Tsirang. In Zhemgang, fishing is mostly done in ponds and rivers or ponds and lakes. Ownership of fishing ponds are rare across all 4 dzongkhags, with only a small percentage of households in Sarpang (1.53%) and Tsirang (1.42%) owning ponds. No households in Trongsa and Zhemgang reported owning fishing ponds.

4.4. Processing and market access

4.4.1. Crop Storage

The survey result indicates that majority of about 84.20% have not stored crops from the last harvest and only 15.80% have stored from the last harvested crop. This indicates that in most cases, the harvest is not even enough for their own consumption leave aside for sale or to store. As far as storage facility is concerned, mostly use wooden boxes or sacks as indicated by 60%. About 15.45% use traditional granary or barrel for the storage followed by 6% using sack and traditional granary and 6% use only wooden boxes. Few others use combination of barrel, sacks, metal boxes, wooden boxes etc. Some cases, they just pile up in the open.

In Sarpang, a staggering 96.20% of households do not store harvested crops, with only 3.80% storing on an average of 2000 Kg. Storage methods include cold storage, sacks, unprotected piles, and wooden boxes. Trongsa shows a contrast, with 75.00% of households storing crops and on an average storage of 1275 kg using metal boxes, traditional granaries and wooden boxes. In Tsirang, only 0.59% store crops, with an average of 302 kg, primarily using wooden boxes. Zhemgang has 88.07% of households not storing crops, while 11.93% store on an average of 1781 kg using methods such as heaping in the house, unprotected piles, improved granaries and wooden boxes.

In terms of functionality of the storage facilities, 52.79% claims that the facilities are very functional, 33.46% claims it is somewhat functional, 12.64% feels it is somewhat un-functional and 1.12% feels it is very un-functional. All the storage facilities are owned by themselves and only in one case, they used cold storage facility established by the Food Corporation of Bhutan (FCB).

Table 31: Types of main storage facility being used

Dzongkhag	Main storage facility for the crop
Sarpang	Cold storage, sacks, unprotected piles and wooden boxes
Trongsa	Metal boxes, sacks, traditional granary, unprotected pile
Tsirang	wooden boxes
Zhemgang	Open pile, wooden boxes, sacks

4.4.2. Access to Market

The survey result showed that different Dzongkhags have reported mixed perspectives in terms of access to market. Among the Dzongkhags, alarmingly, only 6% of the respondents interviewed in Sarpang reported having access to market, followed closely by Zhemgang at 19%, Trongsa at 28% and the highest proportion of respondents (40%) having access to market was recorded in Tsirang, as shown in Figure 18 below. In other words, 40% of respondents interviewed in Sarpang lack access to market, followed by Tsirang at 25%, Zhemgang at 24% and Trongsa at 10%. This

result clearly shows that market accessibility is uneven across Dzongkhags, with Tsirang leading in positive market access, while Sarpang appears to struggle with market uncertainty and weak market linkages.

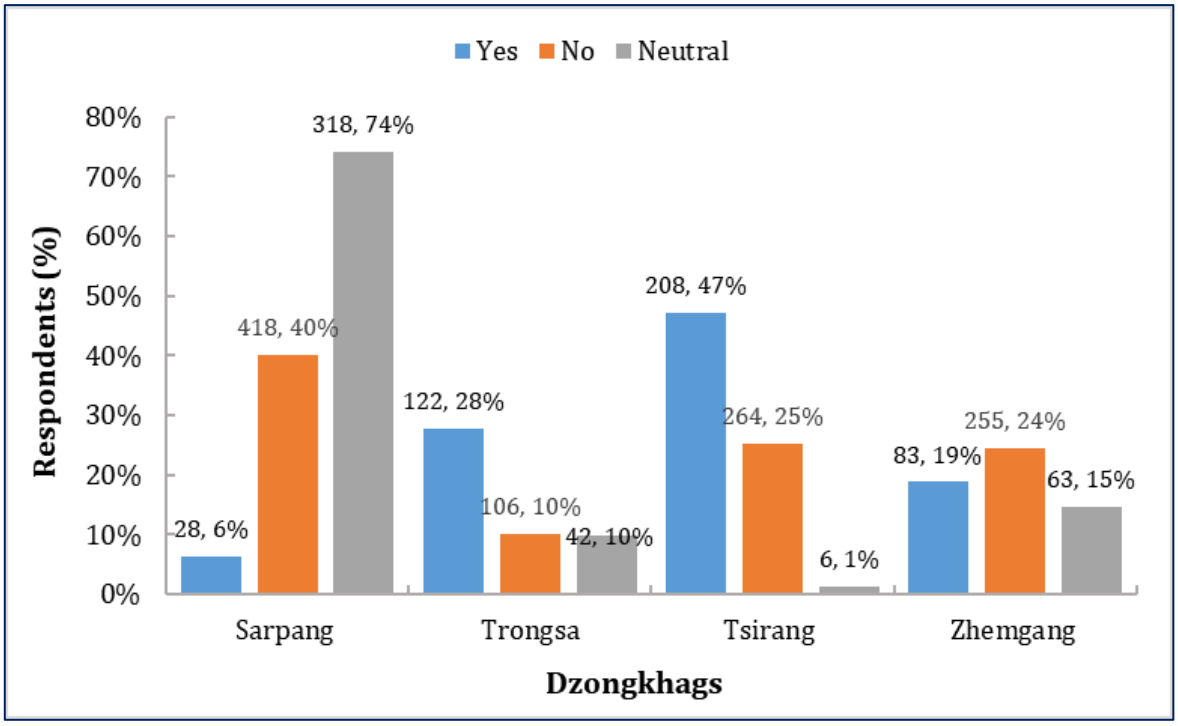


Figure 17: Access to market

The survey result indicated that products are mostly sold in the local markets, schools and colleges. Among the Dzongkhags, overwhelmingly high proportion of respondents in Zhemgang (94.4%) reported selling their products in local markets, followed by Sarpang at 71.4% and Trongsa at 54.7%, while 91% of the respondents interviewed in Tsirang reported selling their products to aggregators, as shown in Table 32 below. This result explicitly shows that Tsirang appears to have high market linkage, while the farmers of other Dzongkhags seem to rely heavily on local markets and appears to have limited linkage with aggregators, indicating a strong opportunity for the project to create market linkage.

Table 32: Supply of products

Markets	**Sarpang**	**Trongsa**	**Tsirang**	**Zhemgang**
Aggregators	25.7	3.9	91.0	5.6
College and Schools	-	11.7	-	-
Local Market	71.4	54.7	9.0	94.4
Local Market and Schools	-	5.5	-	-
Schools	2.9	24.2	-	-
Total	**100**	**100**	**100**	**100**

In terms of the sale of the produce to the market and consumption, there is significantly smaller portion of producers who are selling their produce as indicated by 15.13%. This indicates that the produce is mainly used for their own consumption and in some cases, it is not even sufficient for their own consumption. Those who are selling their produce are mainly sold to individuals within the community as represented by 90%, about 4% are selling to institutions like colleges or schools, 2.68% are selling to traders, 2.5% are selling to cooperatives or groups constituted within the communities and the rest less than 1% are sold to agro industry, dairy processing units or other producers.

About 53.35% prefers to sale their produce during the annual events where communities gathered and they sale their produce. Another 30.30% prefers to sale their produce during weekly markets while 9.67% sales their farm produce on daily basis. They also participate in bi-weekly markets, monthly markets and others like selling at the road side, supply to institutions like schools or colleges and traders coming to their house to take the farm produce etc. In terms of proper functionality of the market, 78.95% feels that the markets are somewhat functional, 17.19% feels it is very functional while about 4% do not agree on the proper functionality of the market. This indicates that still there is room for improvement in terms of making the markets more efficient in its operation.

4.4.3. Processing facility

As pointed out in the previous sections, the survey results show that most of the respondents interviewed are smallholder farmers and their production is hardly sufficient for self-consumption. It also reflects on availing of market facilities in the communities. Thus, only 4.32% are actually availing the market facilities being made available in the proximity. The other factors for not availing those market facilities are mainly due to traders or individuals coming to their homes to purchase the products and not having enough produce to sale or store in the facilities. The other reason is that some of the communities do not have such facilities to use.

Further, when asked about the processing of part of their produce in the processing facility, it was confirmed that only 8.11% are processing their products in the processing facility while 27.35% do not use those facilities. On the other hand, majority of the respondents 64.53% are uncertain about using such production processing facilities in the communities, as shown in Figure 18 below. This can be true because most of the individuals have their own traditional way of processing their products.

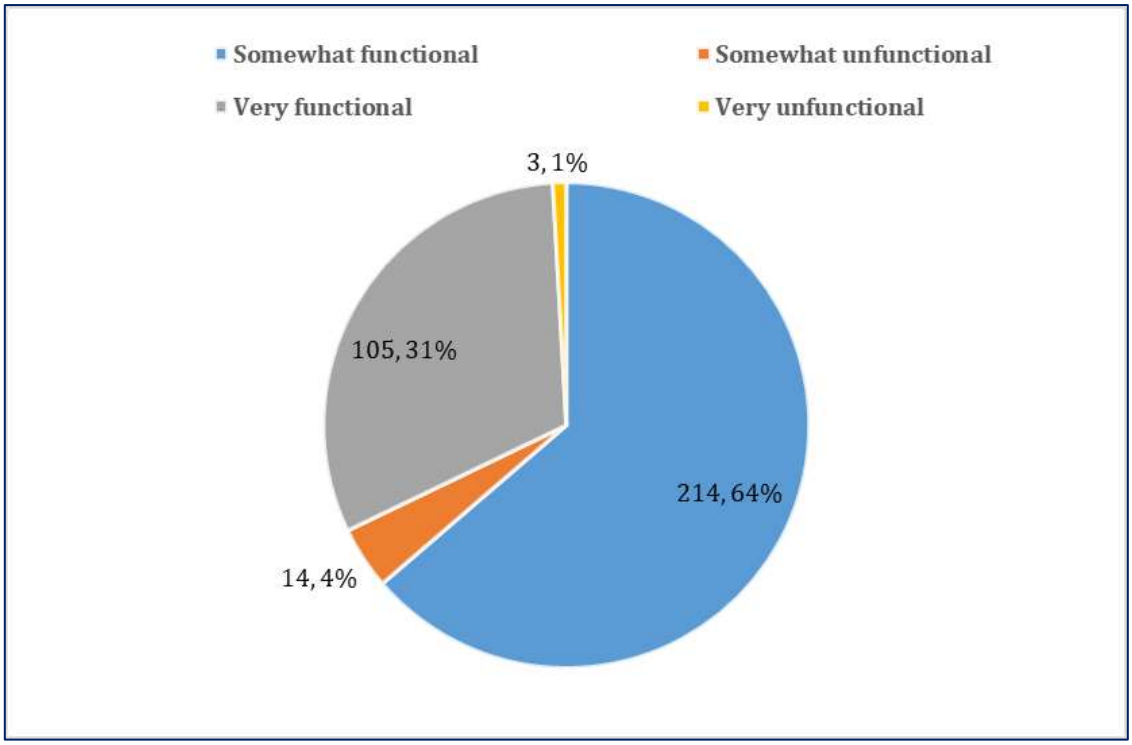


Figure 18: Functionality of processing facilities

Table 33: Type of existing processing facility

Dzongkhag	Type of existing processing facility
Sarpang	Dairy, vegetables and deep fridge
Trongsa	Dairy, spices and vegetables,
Tsirang	Dairy, vegetables, fruit, cereals and spices,
Zhemgang	Cereals, spices, fruit and vegetables

The processing facility was segregated; it was found that majority are those used for processing of vegetable products, fruits or cereals as represented by 59%, as shown in Figure 19. This is followed by processing of vegetables along with spices as indicated by 16% and processing of cardamom by 10% of the respondents. The other processing facilities are mainly for cereal, dairy products, eggs, orange or meat processing. This shows that there are not many processing facilities for various products in the communities which also limits their usage or availing those facilities. While availing those processing facilities majority takes 1 to 5 hours to travel to those facilities as indicated by 58.44% while 39.39% takes less than hour and there are also others about 2.16% which takes more than 8 hours.

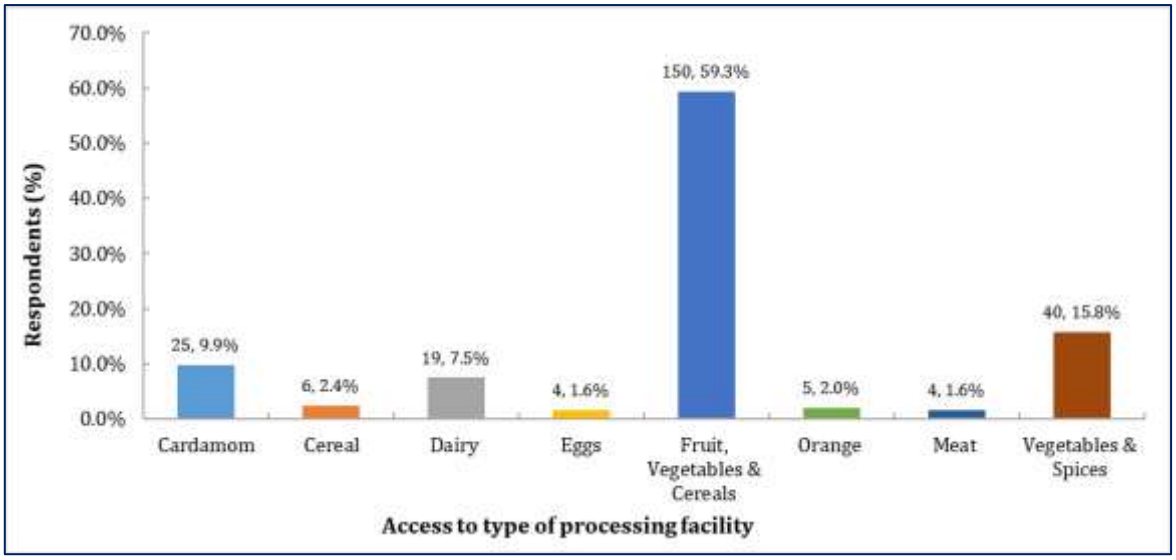


Figure 19: Access to type of processing facility

There are various reasons why households do not avail post-harvest facilities across different dzongkhags,

Lack of Production and Products to Store: The most common reason is the lack of production or products to store due to which some of the respondents remarked that "I have no production, we don't have huge production, and we don't have enough products to store."

Aggregators Collecting from Homes: Another major reason is that aggregators come directly to their homes to collect products. Many respondents indicated that aggregators visit their homes to buy or collect products, reducing the need for storage facilities due to which many respondents remarked that "contactor comes to collect the products from home itself."

Home Consumption: Some households consume all their products at home, negating the need for storage. This includes responses like "All for home consumption" and "We directly sell the product."

Lack of Facilities and Awareness: A significant number of responses pointed out to the absence of facilities and lack of awareness. Many households were unaware of such facilities or mentioned that no facilities were available in their villages. Statements include "No facility," "No facility available," and "Not provided" were common in some of the communities.

Distance and Accessibility: Some households mentioned that the distance to processing facilities is longer and they are not able to use them. Statements like "It's really far from here" and "They don't have access and have no history of storing" reflect these issues.

In Sarpang, the majority reported issues such as lack of facilities and infrastructure, limited water supply, and no access to water. Other notable problems include the absence of irrigation water, ineffective use of resources, and limited road infrastructure. Trongsa faces challenges such as acute shortage of drinking water and water supply problems. In Tsirang, common issues include water supply problems and limited access to clean water. Zhemgang also struggles with water supply issues, with reports highlighting limited water supply and road infrastructure problems.

Table 34: Improved access to marketing facilities

2.2.6	**Households reporting improved physical access to markets, processing and storage facilities**
Mandatory Disaggregation	For each relevant type of facility (Market, processing, storage) Households reporting improved physical access to Market (number) = 260 Households reporting improved physical access to Market (%) = 22.36 Size of Households (number of people) = 1300 Households reporting improved physical access to Processing (number) = 108 Households reporting improved physical access to Processing (%) = 9.29 Size of Households (number of people) = 540 Households reporting improved physical access to Storage (number) = 204 Households reporting improved physical access to Storage (%) = 17.54 Size of Households (number of people) = 1020

A total of 358 households, representing 30.82% of the surveyed population (comprising 1,790 members), reported improved physical access to markets. This suggests that nearly one-third of households have better access to essential market places. In contrast, the percentage of households reporting improved access to processing facilities is notably lower. Only 103 households, or 8.90% of the surveyed population (515 membered households), reported better access to these facilities. Further, in terms of storage facilities, 264 households, or 22.73% of the surveyed population (1,321 household members), reported improved access.

4.5. Financial Services

Access to financial services varies significantly across Dzongkhags. In Tsirang, majority of the respondents (98.82%) reported having access to financial services, while in Sarpang, access is notably lower at 17.58%. Zhemgang shows a relatively higher access rate of 80.11%, whereas the respondents reported (40.35%) having access to financial services. This variation indicates differing levels of respondents' perceptions about access to financial service across four Dzongkhags.

Table 35: Access to financial services

Dzongkhag	Respondents (Yes)	Respondents (No)	Total
Sarpang	17.58	82.42	100
Trongsa	40.35	59.65	100
Tsirang	98.82	1.18	100
Zhemgang	80.11	19.89	100

Within households, financial services are most frequently accessed by the respondents themselves, indicating their active involvement in managing financial matters, as shown in Figure 20. This is followed by husbands and fathers, reflecting a continued influence of male members in financial decision-making. Sons and wives also participate, though at comparatively lower rates. In addition to these primary members, other relatives such as brothers, daughters, mothers, in-laws, grandparents, nephews, and others are occasionally involved, suggesting that access to financial services can extend across various members of the extended family depending on the

household context. This pattern highlights the diversity in financial engagement roles within families, with responsibilities often shared or delegated based on availability, trust, or capacity.

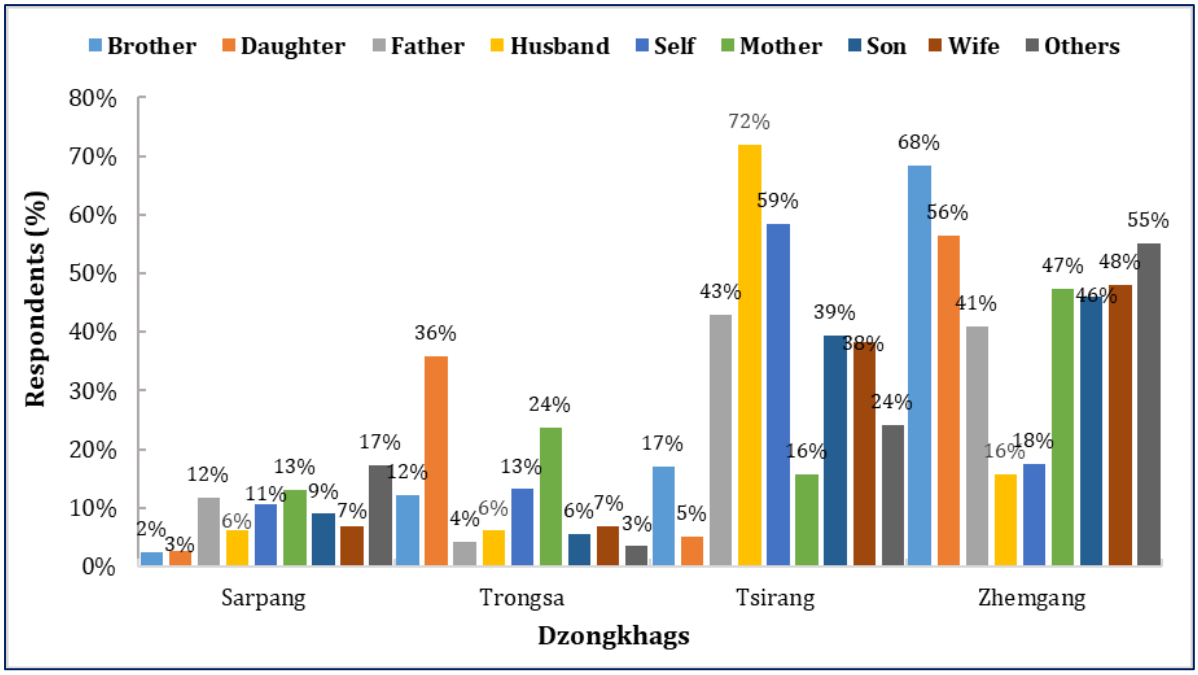


Figure 20: Availing financial services in a household

Among the PWDs, only 40% have access to financial services while in the case of youths there are almost equal number of those having access to financial services than those without as represented by 50.26% against 49.74%. Some of the PWDs face barriers in obtaining financial services due to being a blind person, unable to speak to others, financial support from family and lack of idea about the banking services. The main barriers faced in accessing financial services by the youth include:

a) Unstable source of income to avail the financial services and insufficient collateral to process credit services from the banks.

b) Limited financial literacy or awareness on available financial services along with language barriers.

c) Longer distance to financial institutions from the villages or limited physical access.

d) High costs associated with financial products and services with limited suitable financial products for specific need

4.6. Nutrition

4.6.1. Nutrition Background

Nutrition is the biochemical and physiological process by which an organism uses food to support its life. It provides organisms with nutrients, which can be metabolized to create energy and chemical structures. Failure to obtain the required amount of nutrients causes malnutrition.

So, nutrition is a critical part of health and development. Better nutrition is related to improved infant, child and maternal health, stronger immune systems, safer pregnancy and childbirth,

lower risk of non-communicable diseases (such as diabetes and cardiovascular disease), and longevity.

Healthy children learn better. People with adequate nutrition are more productive and can create opportunities to gradually break the cycles of poverty and hunger. Malnutrition, in every form, presents significant threats to human health. Today the world faces a double burden of malnutrition that includes both undernutrition and overweight, especially in low- and middle-income countries. There are multiple forms of malnutrition, including undernutrition (wasting or stunting), inadequate vitamins or minerals, overweight, obesity, and resulting diet-related non-communicable diseases. The developmental, economic, social, and medical impacts of the global burden of malnutrition is serious and lasting for individuals and their families, for communities and for countries.

4.6.2. Diet diversity

The Minimum Dietary Diversity for Women (MDD-W) was included as one of the parameters in the baseline survey to understand the eating habits and nutritional status of the women in the reproductive age range of 15 to 49 years in four BRECSA project Dzongkhags namely, Sarpang, Tsirang, Trongsa, and Zhemgang Dzongkhags. A total of 1,203 women were interviewed to assess how diverse their diets were over the past 24 hours. The survey looked at three main areas: how many different food groups each woman consumed (out of a total of ten), how many women met the minimum dietary diversity (which means eating at least five different food groups), and how commonly each of the ten food groups was consumed across the target areas. These results give a clearer picture of the current nutrition situation and help identify where improvements are most needed to guide future project activities that aim to improve women's diets and overall food security.

Table 36: Food group consumption patterns

Dzongkhag	Respondents	Average MDD-W Score	% Reporting MDD-W	Grains/ Tubers	Beans	Nuts	Dairy Products	Meat	Eggs	Greens	Other Vegetables	Fruits (Vitamins)	Other Fruits
Sarpang	532	4.91	56	89	64	17	84	25	42	59	19	55	36
Trongsa	145	5.41	74	52	52	13	86	68	59	59	35	32	41
Tsirang	334	4.74	55	68	68	12	70	26	47	54	21	55	43
Zhemgang	192	3.79	26	46	46	10	59	27	42	36	15	35	29
Total	**1203**	**4.71**	**53**	**64**	**58**	**13**	**75**	**37**	**48**	**52**	**23**	**44**	**37**

Among the four Dzongkhags, Trongsa recorded the highest MDD-W score, primarily attributed to greater consumption of meat, which significantly contributed to overall dietary diversity. In contrast, Zhemgang showed the lowest MDDW score, highlighting limited dietary diversity and pointing to possible challenges related to food availability, access, or awareness. The table also shows low overall consumption of nuts, dairy, and Vitamin A-rich fruits and vegetables across all Dzongkhags, indicating key gaps in micronutrient intake that require targeted nutrition intervention Women reporting minimum dietary diversity (MDD-W)

The average Minimum Dietary Diversity for Women (MDD-W) score across all respondents was 4.74, falling just short of the recommended minimum threshold of 5 food groups. As shown in the Table 37 above, only 53% of women reported consuming at least five out of ten food groups in the previous 24 hours, establishing the MDD-W baseline value at 53%.

4.6.3. Environmental Sustainability and Climate Resilience

The data reveals a significantly low adoption of Climate-Smart Agriculture (CSA) practices among the surveyed participants, with only 52 out of 1,152 individuals (approximately 4.5%) practicing at least one climate smart agriculture (CSA) practices. Among the various practices, stall feeding emerged as the most commonly adopted, yet it is still limited to only 24 respondents. Other essential practices such as drip irrigation, sprinkler irrigation, biogas use, sustainable land management (SLM), mulching and cover cropping, soil fertility management, crop rotation, and weed control have been adopted by an alarmingly small number of participants, ranging from just 2 to 14 individuals for each practice.

This indicates a critical gap in the promotion, accessibility, and uptake of sustainable agricultural practices that are essential for resilience against climate change. The findings highlight the urgent need for comprehensive awareness programs, hands-on capacity-building initiatives, and targeted support mechanisms such as financial incentives, technical assistance, and community-led demonstration projects to encourage wider adoption. Without concerted efforts, the potential for improving agricultural productivity, environmental sustainability, and climate resilience would remain largely untapped across four project landscape Dzongkhags.

Table 31: Household reporting adoption in climate smart (resilient) technologies

Dzongkhag	Respondents	HH Reporting Adoption of at least 1 technology	Stall feeding	Drip Irrigation	Sprinkler Irrigation	Biogas	SLM	Mulching & Cover Crop	Soil fertility management	Crop rotation	Weed control
Sarpang	421	52	5	5	17	2	18	15	36	15	15
Trongsa	228	8	-	-	-	2	1	-	2	-	-
Tsirang	330	5	-	-	1	2	1	-	-	-	-
Zhemgang	173	10	-	-	2	-	5	3	5	3	4
Total	**1152**	**24**	**2**	**2**	**7**	**2**	**8**	**6**	**14**	**6**	**6**

4.7. Empowerment Score

The empowerment scores for male and female participants are found to be broadly comparable, indicating that both genders experience similar levels of empowerment within the project areas. However, despite this parity, overall empowerment remains relatively low for both groups, particularly in the domain of Collective Agency, which is significantly lacking. This suggests that both men and women have limited opportunities to participate in group decision-making or collective action, which is crucial for building social capital and resilience. Moreover, the consistently low scores in "Autonomy in income," "Input in productive decisions," and "Control over use of income" highlight restricted economic agency among participants. A likely explanation for this pattern is the high proportion of young participants who are not household heads, limiting their decision-making power and financial control within their households.

A total of 295 households, representing 25.32% of the surveyed population (1,475 individuals), reported that they can influence decision-making by local authorities and project-supported service providers. This indicates that a quarter of households feel they have some degree of influence, while the majority still feel excluded from these processes. Strengthening participatory mechanisms could help to ensure that more households have a voice in local governance and service delivery, fostering greater community involvement and ownership of development projects.

The empowerment was assessed through **Intrinsic Agency**, **Instrumental Agency**, and **Collective Agency**, with varying levels of adequacy reported across these dimensions.

Intrinsic Agency

a) **Autonomy in income**: 25%reported adequate autonomy in income, indicating that less than one-third have control over their financial resources.

b) **Self-efficacy**: A high 77% demonstrate adequate self- efficacy, showing strong confidence in their ability to achieve personal goals.

c) **Attitudes about intimate partner violence against women**: 72%hold adequate attitudes rejecting intimate partner violence, reflecting substantial awareness and rejection of such violence.

Instrumental Agency

a) **Input in productive decisions**: A significant 28%reported adequate input in productive decisions, suggesting low participation in decisions related to production activities.

b) **Ownership of land and other assets**: A very high 75%reported adequate ownership, indicating robust asset control.

c) **Access to and decisions on financial services**: 50%have adequate access, meaning almost half may face challenges in this area.

d) **Control over use of income**: 31% demonstrate adequate control, suggesting a majority have autonomy over income use.

e) **Work Balance**: 84%reported adequate work balance, though a significant portion may struggle to balance work with other responsibilities.

Collective Agency

a) **Group membership**: Only 21%reported adequate group membership, indicating low involvement in groups that could enhance collective action.

b) **Membership in influential groups**: Just 5%%s) are in influential groups, underscoring a limited collective influence within the community.

Table 37: Empowerment Score

Component	Female	Male	Overall
Intrinsic Agency			
Autonomy in income	25%	24%	25%
Self-efficacy	77%	72%	75%
Attitudes about intimate partner violence	72%	73%	72%
Instrumental Agency			
Component	**Female**	**Male**	**Overall**
Input in productive decisions	28%	14%	22%
Ownership of land and other assets	75%	85%	79%
Access to and decisions on financial services	50%	57%	53%
Control over use of income	31%	12%	22%
Work balance	84%	81%	83%
Collective Agency			
Component	**Female**	**Male**	**Overall**
Group membership	21%	17%	19%
Membership in influential groups	5%	5%	5%
Empowerment Score (Average)	47%	44%	46%

4.8. Rural Enterprise

The survey result shows that there are about 73 rural enterprises owned by household themselves across the four project landscape Dzongkhags as shown in Table 39 below.

Table 38: Rural enterprises

Dzongkhag	Rural enterprise owned by HH
Sarpang	3
Trongsa	26
Tsirang	32
Zhemgang	12
Total	**73**

Among the enterprises, 54.55% of the enterprises are owned by the respondent themselves, followed by wife at 18.18%, daughter at 9.09%, mother at 7.95%, and son at 6.02%. In contrast, the result also shows that about 1 to 2% are also owned by husband or niece. However, the result indicates significant level of gender disparity in terms of the ownership of rural enterprises. For instance, in Sarpang, men exclusively own the rural enterprises, whereas in Trongsa, women dominate ownership with 92.31% of enterprises owned by women. Tsirang and Zhemgang also shows a high percentage of female ownership, with 76.47% and 83.33% respectively. This indicates a trend where men predominantly own enterprises in some Dzongkhags while women are the main owners in others, particularly in Trongsa.

The types of rural enterprises vary across Dzongkhags. Sarpang involves primarily in trade of agricultural products and processing of crops and livestock. Trongsa features a broader range including grocery shops, non-agricultural product trading, processing, repair services, and hospitality. Tsirang involves in general shops, repair services, restaurants, and trade of agricultural products. Zhemgang is more focused on non-agricultural products and hospitality. This variety in enterprise types reflects the diverse economic activities within each Dzongkhag. The list of enterprises along with the name, starting year of operation and area of businesses are shown in Table 40 below.

Table 39: Status of rural enterprise across four project landscape Dzongkhags

Name of enterprise	Start Year	Main Business
Sarpang Dzongkhag		
Dolongang Tshesey Tshongdrel Detshen	2021	Trading of Agricultural Products
Nana Enterprise	2013	Processing (Crop/Livestock)
Karba Restaurant	2023	Trade of Non-Agriculture Products
Trongsa Dzongkhag		
Mande Tshongkhang	2004	Trade of Non-Agriculture Products
Cheychey Restaurant	2023	Restaurant/Hospitality
Chuedhen Restaurant	2023	Restaurant/Hospitality
Y. Dee Restaurant	2023	Restaurant/Hospitality
Sonam Lhadon Fooding and Lodging	2014	Restaurant/Hospitality
Sonam Automobile Workshop	2016	Repair/Service
China Dema General Shop	2019	Restaurant/Hospitality
Tshering Pelden General Shop	2015	Trade of agricultural products
Tashi Dema General shop	2020	Restaurant/Hospitality
Pema Restaurant	2021	Restaurant/Hospitality
TT Restaurant	2021	Trade of Non-Agriculture Products
Tashi Zangmo Micro General Shop	2012	Trade of Non-Agriculture Products
Zangmo General Shop	1990	Trade of Non-Agriculture Products
Tshewang Lhamo General Shop and Bar		Trade of Non-Agriculture Products
Sonam Tshongkhang	2019	Trade of Non-Agriculture Products
Yeshi Lhamo Micro General Shop	2018	Trade of Non-Agriculture Products
Tshewang Lhamo General Shop	2005	Trade of Non-Agriculture Products
Karma KK Tshongkhang	2023	Trade of Non-Agriculture Products
Tobgay General Shop and Bar	1980	Trade of Non-Agriculture Products
Tashi General Shop	2020	Trade of Non-Agriculture Products
Tsirang Dzongkhag		
Nimig Enterprise	2022	Grocery Shop
Madhavi Tshongkhang	2022	Restaurant/Hospitality
Devi Maya Tshongkhang	2021	Restaurant/Hospitality
Sarita Tshongkhang	2021	Grocery Shop
Bishnu General Shop	2023	General Shop
Chamlagai Shop	2024	General Shop
Sun Rise enterprise	2021	Whole Seller
Bhim Maya Tamang	2023	General Shop

Bhu Maya Restaurant	2023	Restaurant/Hospitality
Kumar Restaurant	2023	Restaurant/Hospitality
Timsina Tshongkhang	2010	Restaurant/Hospitality
Lal Maya Restaurant	2022	Restaurant/Hospitality
Tamang Tshongkhang	2008	Restaurant/Hospitality
Anita Tshongkhang	2021	Restaurant/Hospitality
Deo Raj Tshongkhang	2016	Restaurant/Hospitality
Mon Maya Panda Tshongkhang	2022	Restaurant/Hospitality
Tshering Norbu Tshongkhang	2017	Restaurant/Hospitality
Sherpa Tshongkhang	2013	Restaurant/Hospitality
High Way Tshongkhang	2023	Restaurant/Hospitality
MBK Tshongkhang	2010	Restaurant/Hospitality
AB Tshongkhang	2017	Restaurant/Hospitality
Sirijana Tailoring Tshongkhang	2017	Repair/Service
Sarjana Darjee Tshongkhang	2021	Restaurant/Hospitality
Lachi Maya Restaurant	2021	Restaurant/Hospitality
Rita Tshongkhang	2010	Restaurant/Hospitality
Yam Maya Restaurant	2022	Restaurant/Hospitality
KB Tshongkhang	2021	Restaurant/Hospitality
Chandra Kumar Timsina Tshongkhang	2023	Restaurant/Hospitality
Ugyel Tshongkhang	2014	Restaurant/Hospitality
Ajal Tshongkhang	2014	Restaurant/Hospitality
BB Tshongkhang	2000	Restaurant/Hospitality
Zhemgang Dzongkhag		
Cheychey Restaurant	2004	Restaurant/Hospitality
Tashi Choden Tshongkhang	2009	Restaurant/Hospitality
Tandin Restaurant	2022	Restaurant/Hospitality
Pema Restaurant	2017	Restaurant/Hospitality
Tenzin Lhamo Tshongkhang	2009	Restaurant/Hospitality
Tshering Yangkhil Restaurant	1994	Restaurant/Hospitality
Kesang Shop	2022	Restaurant/Hospitality
Yangzom General Shop	2019	Trade of Non-Agriculture Products
Choden General and Restaurant	2020	Trade of Non-Agriculture Products
Pemo General Shop	2022	Trade of Non-Agriculture Products
Yangden Restaurant and Bar	2019	Trade of Non-Agriculture Products
Peldon Enterprise	2017	Trade of Non-Agriculture Products
Dema Tshongkhang	2015	Trade of Non-Agriculture Products

Financially, the average income and operating costs from rural enterprises shows substantial differences between Dzongkhags. Sarpang has the highest average income of Nu. 390,000 and an operating cost of Nu. 130,000 with the net income of Nu.260,000. On the other hand, Zhemgang has the lowest income of Nu. 58,214 and operating cost of Nu. 51,428 with the net income of Nu. 6,786.

Table 40: Average income and expenditure from enterprises

Dzongkhag	Total Sales (Nu.)	Total Operating Cost (Nu.)	Net Profit (Nu.)
Sarpang	390,000.00	130,000.00	260,000.00
Trongsa	179,166.00	168,291.00	10,875.00
Tsirang	253,783.00	168,324.00	85,459.00
Zhemgang	58,214.00	51,428.00	6,786.00
Total	**881,163.00**	**518,043.00**	**363,120.00**

In terms of decision-making for the use of income earned from rural enterprises is closely aligned with the ownership patterns. In Sarpang, decisions are solely made by men, while in other Dzongkhags, women are predominantly responsible for decisions on the use of enterprise funds. Specifically, it is the respondent themselves who are owning majority of the enterprises and also takes majority of the decisions indicated by 42.86%. Then there is other household member who also takes similar decisions on the earnings from the enterprise such as wife represented by 19.05%, husband 11.90%, daughter 9.52% and mother 7.14%. Other members are father, sister and son who also takes same decisions, as depicted in Figure 21 below.

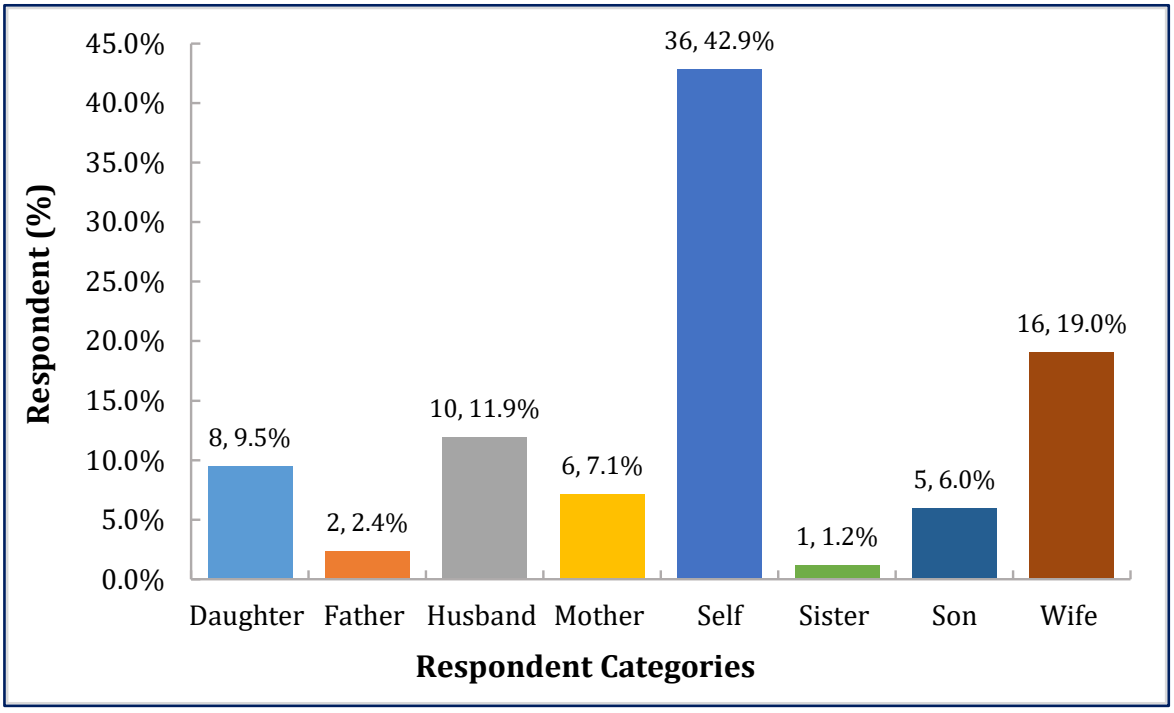


Figure 21: Decision on the use of earnings from enterprises

Employment within these enterprises shows gender-based disparities. Female members are employed more frequently than males across all Dzongkhags, with a total of 55 females and 16 males are permanently employed among the household members. Breakdown of household members employed in the enterprises shows that it is mostly the respondent themselves as indicated by 51.81%. The other members are wife 13.25%, daughter 9.64%, mother 8.43% including the rest like father, grandfather and son who are also employed within the enterprises, as shown in Figure 22 below.

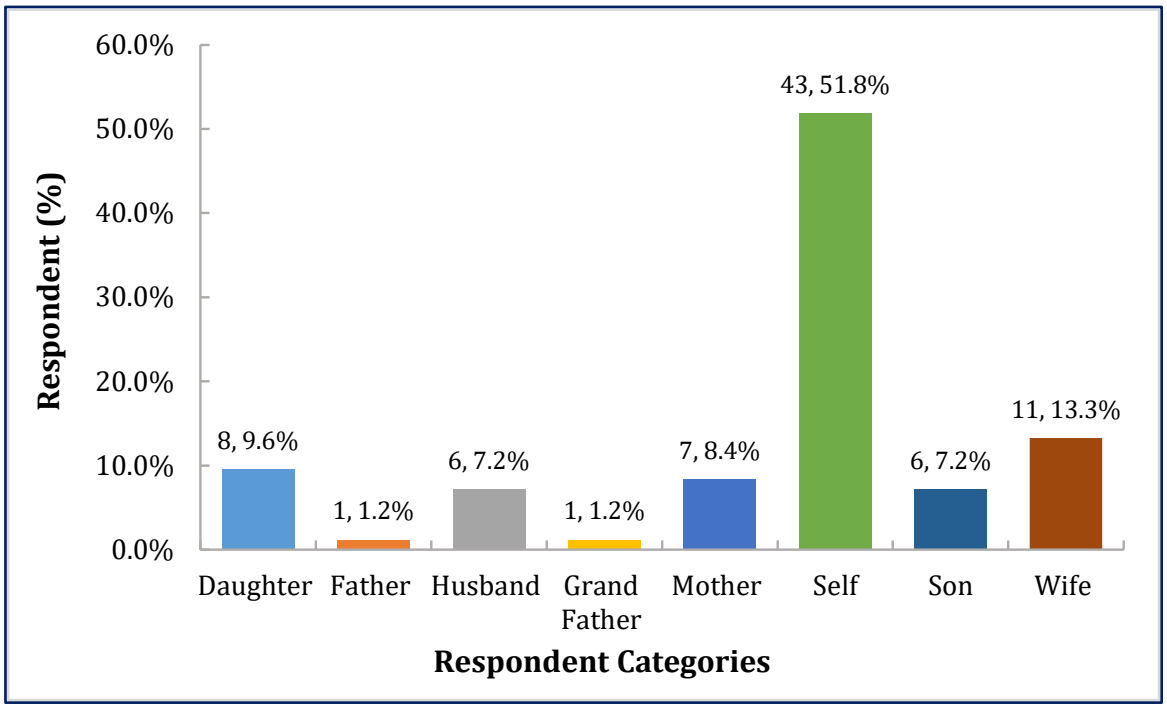


Figure 22: Household members permanently employed

There are also employees engaged in rural enterprises outside of the households mainly as co-managers constituting about 37 people, consisting of 13 female, 14 male and 10 young people.

Regarding employment, 71 new jobs have been created, with a notable gender disparity: 55 of these jobs are held by men, while only 16 are held by women. Additionally, 11 of these job holders are young individuals, highlighting some level of youth involvement in the newly created employment opportunities.

In terms of rural enterprises, 30 supported enterprises have reported an increase in profit, representing 41.09% of the total enterprises, as shown in Table 41. This indicates that nearly half of the supported enterprises are experiencing positive financial outcomes, reflecting the potential effectiveness of the support provided. Furthermore, 16 producer organizations (POs) have engaged in formal partnerships, agreements, or contracts with public or private entities. Lastly, 17 rural producers' organizations have reported an increase in sales, signaling improved market performance for these groups.

Table 41: Employment and income of producer organizations

2.2.1	**Beneficiaries with new jobs/employment opportunities (IFAD12)**
Mandatory Disaggregation	New jobs = 9738 Job owner – men = 5373 Job owner – women = 2950 Job owner – young = 3115
2.2.2	**Supported rural enterprises reporting an increase in profit**
Mandatory Disaggregation	Number of enterprises = 30 Percentage of enterprises = 41.09
2.2.3	**Producers' organizations engaged in formal partnership, agreements or contracts with public or private entities**

Mandatory Disaggregation	Number of POs =12 Total number of POs members = 842 Women PO members = 87 Men PO members = 755 Young PO members = 4
2.2.5	**Rural producers' organizations reporting an increase in sales**
Mandatory Disaggregation	Number of Rural POs = 17 Total number of POs members = 1116 Women PO members = 182 Men PO members = 859 Young PO members = 75

4.9. Producer Organizations

The result indicates that main activities of the producer organizations, groups and cooperatives are forestry, crop production, trading, livestock rearing, processing, financial services and water user group. Among the various sectors where producer organizations, groups and cooperatives focus, 43.3% respondents reported focusing on forestry (n=117), followed by financial services and crop production at 18.1%, livestock production at 11.5%, trading at 5.9%, water users and processing at 1.5% (n=4), as shown in Figure 23. The predominant existence of groups and cooperatives focused on community forest management clearly indicates significance of forest and natural resources on rural livelihood.

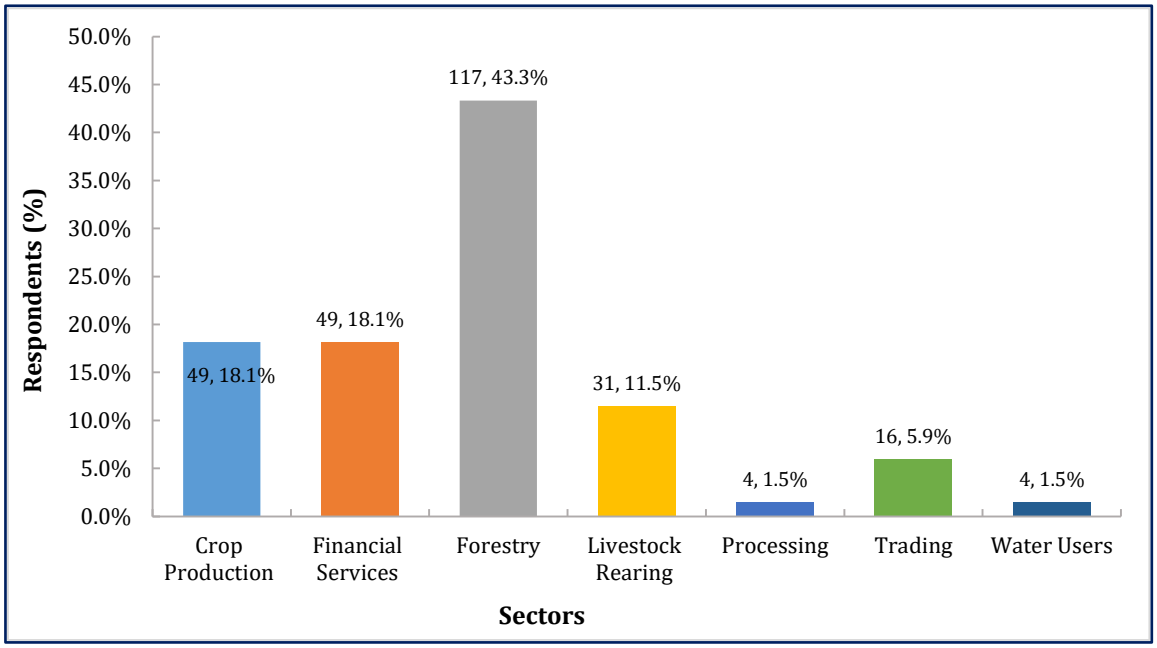


Figure 23: Household reporting members of producer organizations in different sectors

Among the different members of the households interviewed, more than 60.4% reported that the respondent themselves are active members of the producer organizations, cooperative and groups, while the rest of the members such as husband, mother, son, wife, daughter, father and sister are also member of the producer organizations, as shown in Figure 24.

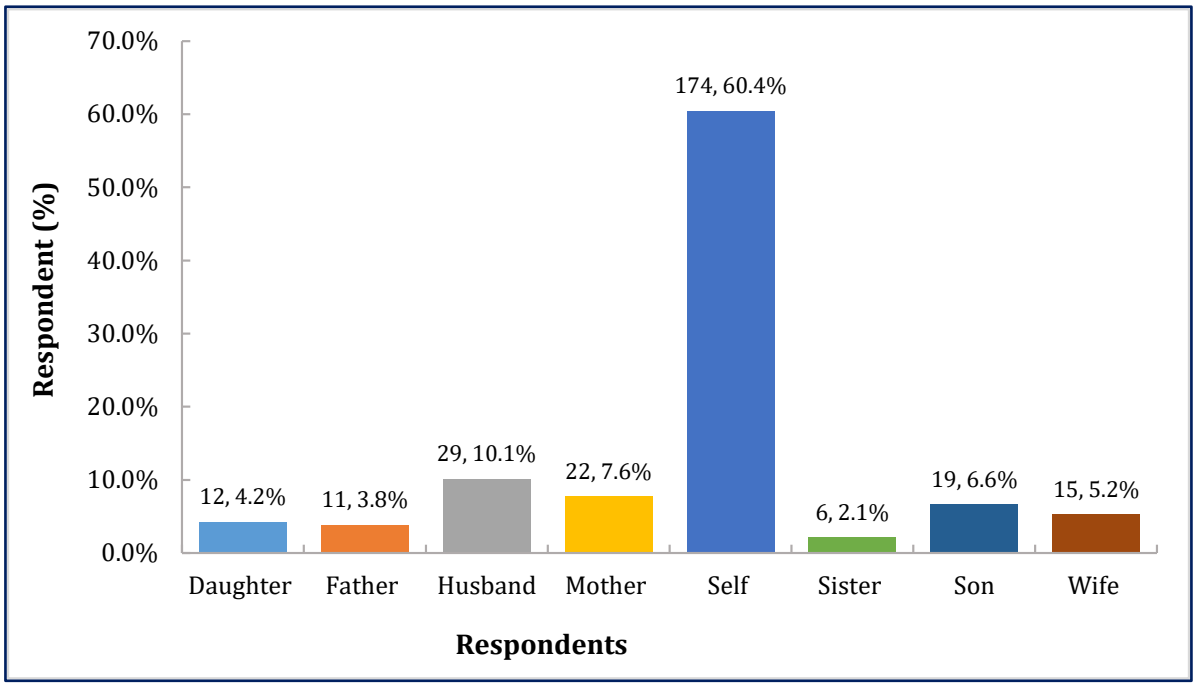


Figure 24: Household reporting members in organizations/groups/cooperatives

In terms of the gender representation, men are predominantly represented across all Dzongkhags. For instance, in Sarpang, men account for 82.35% of active members, while in Tsirang, they make up 87.21%. Women are significantly underrepresented, with their highest share in Trongsa at 93.83% but still trailing behind men in terms of overall participation.

Table 42: Household reporting membership in producer organization by gender

Gender	Sarpang	%	Trongsa	%	Tsirang	%	Zhemgang	%
Men	14	82.35	5	6.17	75	87.21	7	22.58
Women	3	17.65	76	93.83	11	12.79	24	77.42

Overall, in terms of the membership of the producer organizations, only 6% are members and the majority 64% are not while 30% are neutral.

In terms of the women in leadership position in the producer organizations, among the members surveyed, the survey recorded that only 4.4% of the women in leadership position serve as chairperson of the producer organizations while vast majority of women members at 93% were found to be just the members of the respective producer organizations and just over 1.8% of the women members interviewed were found serving as coordinator in the producer organizations as shown in Figure 25.

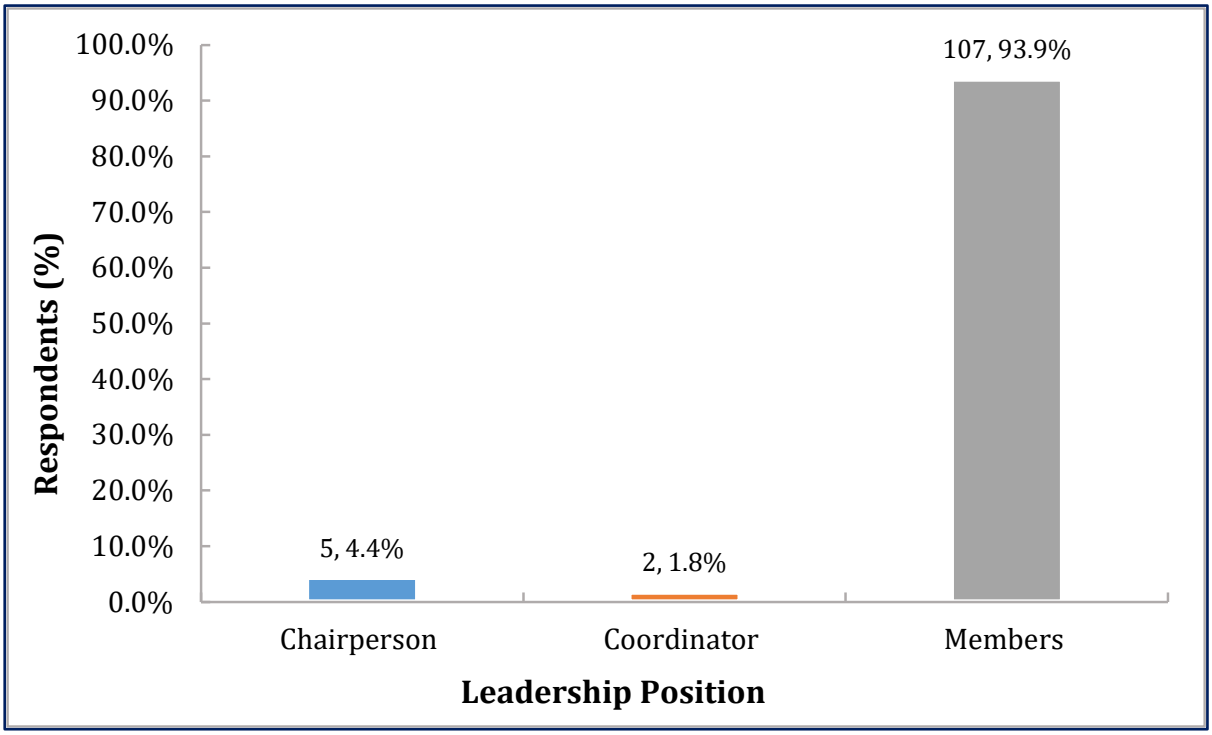


Figure 25: Role of Women in Leadership Position in Producer Organizations

In contrast, the about 36% of the women in leadership position were found to be in the age range of 20-30 years and 30-40 years, respectively, while only 16% of the women in leadership position were observed to in the age range of 40-50 years, followed by 9% women in leadership position in the age range of 60-70 years and only a meagre proportion of the women in leadership position were found to be in the age range of 50-60 years, as shown in Figure 26.

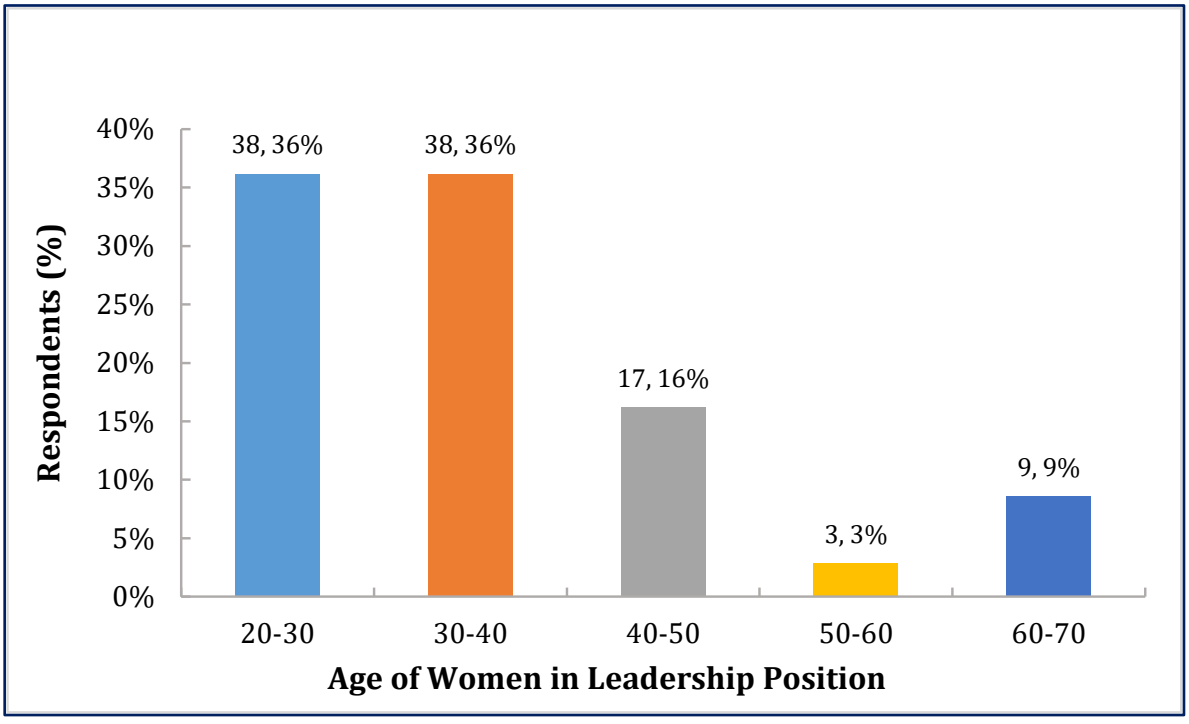


Figure 26: Age of Women in Leadership Position in Producer Organizations

These findings clearly indicate that education and consistent leadership development effort put in by the government has proven successful in empowering women in rural areas to take up leadership position and play crucial role in rural development, as shown in Figure 26.

The list of producer organizations along with their names and sex are shown in the table below.

Table 43: List of producer organizations

Producer organization	Gender
Community Forest Management Group	Male
Loten Om Detshen	Male
Community Forest Management Group	Male
Community Forest Management Group	Male
Community Forest Management Group	Male
Dairy Milk Production Group	Male
Community Forest Management Group	Male
Dangling Community Forest Management Group	Male
Community Forest Management Group	Male
Community Forest Management Group	Male
Community Forest Management Group	Male
Community Forest Management Group	Male
Community Forest Management Group	Male
Taktse Tshesey Tshongley Detshen	Female
Community Forest Management Group	Male
Community Forest Management Group	Male
Community Forest Management Group	Male
Jigmecholing Community Forest Management Group	Male
Sershong Farmers Group	Male
Community Forest Management Group	Male
Dairy Milk Production Group	Male
Lhayul Community Forest Management Group	Male
Sarpang Layer Cooperative	Male
Sarpang Piggery Yargay Cooperative	Male
Samtenthang Water Association	Female

Financially, producer organizations (Pos) vary in their economic contributions across Dzongkhags with Sarpang leading over other Dzongkhags with an average sales value of Nu.1,620,000, followed by Trongsa at Nu. 607,500, while Tsirang recorded an average annual sale of Nu. 483,333 and Zhemgang at Nu. 600,500, as shown in Table 44 below.

Table 44: Average annual sales of producer organizations

Dzongkhag	Average Value of Sales from Producer Organizations (Nu.)
Sarpang	1,620,000.00
Trongsa	607,500.00
Tsirang	483,333.00
Zhemgang	600,500.00

5. Conclusion

The project supports small holder agriculture value chains to transform smallholder agriculture into inclusive and resilient agriculture food systems that are increasingly profitable, and food and nutrition secure. The project targets to benefit about 12,074 farmers households in 539 villages of Sarpang, Tsirang, Zhemgang and Trongsa Dzongkhags with strong potential for commercial farming. The project is also aiming to benefit women, youth and also about 600 persons with disability. The focus of the project is on both the livelihood enhancement and commercialization of resilient agriculture production through value chain coordination, market segment and enhancing the competitiveness of the agriculture sector in the target Dzongkhags. It is also going to boost equitable employment and income generating opportunities for smallholder farmers especially women and youth through capacity building and investment support.

Following are the main findings from the survey:

a) Only 72.84% have access to agriculture land while 27.16% do not since land is essential for production in agriculture is farming. This suggest either proper utilization of small land of the households or to provide state land on lease to the farmers.

b) As per the market, farm products are sold in the nearby markets as well as to institutions such as colleges or schools. In some cases, people or traders come and collect from their homes and other times, they sale by themselves while proceeding for other activities in the nearby town or to local shops within the vicinity. However, only 15.13% are able to sale their produce and majority produced are used for their own consumption.

c) In terms of market access, only 37.27% can easily reach to the market facility within less than an hour, 40.88% reaches within an hour, 20.04% reaches within 2 hours and about 1.80% takes more than 2 hours. Thus, 358 households, representing 30.82% of the population (comprising 1,790 members), reported improved physical access to markets. This suggests that nearly one-third of households have better access to essential market places.

d) Access to financial services varies significantly across Dzongkhags. In Tsirang, almost everyone (98.82%) avails financial services, Sarpang is notably lower at 17.58%, Zhemgang shows a relatively higher access rate of 80.11% and Trongsa is 40.35%. In terms of their ability to repay the loan from the farming activities, 40.13% are able to manage loan repayment from the farming activities while 59.82% are not. This indicates that majority of households are either not utilizing the services or do not have access.

e) There are about 73 rural enterprises in the four Dzongkhags owned by households. The average income and operating costs show substantial differences between Dzongkhags. Sarpang has the highest average income of Nu. 390,000 and an operating cost of Nu. 130,000 with the net income of Nu.260,000 while Zhemgang has the lowest income of Nu. 58,214 and operating cost of Nu. 51,428 with the net income of Nu. 6,786. Among the enterprises, 30 reported an increase in profit indicating that nearly half of the enterprises are experiencing positive financial outcomes with the potential for further effective support.

f) Among the producer organizations, there are more members in the forestry sector as indicated by 43.33% followed by crop production 18.15%, financial services 18.15% and livestock 11.48%. However, only 7.72% are members and among the members, only 4.15% are chairperson of the producer organizations. In terms of economic contributions, Sarpang

leads with an average sale of Nu.1620, 000, Trongsa with Nu. 607,500, then Tsirang with Nu. 483,333 and Zhemgang with Nu. 600,500.

6. Recommendations

6.1. Food Security and Vulnerability

The project approach of increasing household food production and consumption is appropriate. In addition, to increasing food production, emphasis should be put on promoting food diversity to guarantee access to food with required nutrients. Information on consuming balanced meals will be valuable in this regard. The project should also build household capacity to use positive coping strategies in the event that they experience food insecurity.

6.2. Enhancement of agriculture production

The adoption of improved farming technologies and practices is low. It is therefore not surprising that agricultural productivity is low. The low productivity is also influenced due to their objective to self-consumption. Thus, there is low production not even sufficient for self-consumption in some cases. Accordingly, only 15.08% are storing their harvested agriculture products and further only 15.13% are able to sale their surplus products in the market. Accordingly, there is a need to boost agriculture production through introduction of various technologies, agriculture product diversification, improvement on seeds or seedlings and promotion of various best practices in farming.

6.3. Access to Financial Service

Access to financial services varies across different Dzongkhags. Some are having problem with the lengthy procedures to avail those services. Accordingly, there is a need to sensitize farmers on those financial services available in the community along with the benefits of availing those rural financial schemes mainly for agriculture production and income enhancement programmes.

Facilitate formation and organization of community-based saving groups within supported farmers groups that are engaged in production. Incentives schemes ought to be inbuilt within the supported groups that promote savings. For example, farmers who are beneficiaries of input distribution should be targeted to be members of a saving group. This would also promote integration of the project components. The project should support and train more community members in enterprise development including farming as a business and micro business enterprises management. This would facilitate community members to capitalize on locally available business opportunities, as well as promoting community members to save and borrow for investment in value adding processes to improve household welfare.

6.4. Improving market access and enhancements

Although, there is inadequate production for supply to market but still it is a problem for the farmers since even if they want to sale, there is no proper established value chain. Reliable market access boosts productivity, increases incomes and strengthens food security. It can contribute to reducing poverty and hunger for producing families and their communities, if appropriate measures are taken to reduce market risks and unequal market power. Many rural producers often face serious difficulties as they are constrained by their remote location, high transportation costs, limited knowledge, and the lack of business skills. So, it is also important to have proper

value chain being established for the agriculture farming to access proper market as well as to enhance the whole value chain in the agricultural farming.

6.5. Livelihood improvement

a) Enhancement of business skills

Even, among those who have undergone various types of trainings related to women are not utilizing the skills gained from the trainings. This is because although most of the women are willing to venture into all types of activities but there is lack of incentives and motivation to encourage women into business ventures. Even to run homestays or eco-lodges, there is need of support and motivation to improve their livelihood through various interventions and promotional activities. The communities especially women need to be trained to operate and manage the available products in a most efficient way such as through provision of on-the-job trainings with the successful entrepreneurs, assists in obtaining financial assistance to start the business as well as market linkages for sustainable business operation.

b) Institute technologies to improve efficiency

Since most of the farmers are still using old traditional methods of farming including post-harvest and processing methods. It is equally important to introduce latest methodologies to improve their production as well as yield. For this, first farmers should be introduced to various technologies of farming and then assist in procurement and implementation of those technologies or methods.

c) Encourage people to join groups or cooperatives

There are lesser number of farmers as members in the groups or cooperatives. It was found that by joining the groups, there are various benefits such as sharing of information, knowledge and skills among the members which in turn benefits the team for income generation. Thus, it is important for these men and women to motivate them to join the groups so that they are equally being benefited from the groups. For example, in some groups, there are group savings schemes being created which allows borrowing of money in times of need for the members with low interest rates. It will also ease access to finance since there are opportunities to avail group loans from the financial institutions without the collateral requirements. Thus, people should be encouraged to join various groups in different sectors to boost their livelihoods and to gain from those groups.

d) Advocacy and awareness

Both women and men have limited understanding about the various climate resilient technologies and practices. Thus, prior to any trainings or workshops, communities should be given more advocacy and awareness on such modern technologies of farming. The farmers should be adequately briefed about the best practices in farming with the inclusion of climate resilient methodologies and practices which can boost their production.

e) Study tours for farmers

Most of the communities in the project landscapes are situated in isolated remote areas who have lesser exposure to various economic activities specially the women. So, the farmers from rural communities should be provided with opportunities to go on study tours to other rural areas for

exposure and to learn from other successful entrepreneurs. Such arrangements will also empower and motivate them to become entrepreneurs or to start self-help groups.

f) Women empowerment and encouragement

Enhance collective agency by forming, consolidating, and strengthening farmer groups, cooperatives, and producer organizations to promote joint decision-making, resource sharing, and improved market access. Improve financial literacy and expand access to financial services, especially for youth and women, to empower effective management of household income and participation in productive economic.

Annexure 1: Household Level Survey

i. CID No:
ii. Household No:
iii. Enumerator Name:
iv. Interview date:
v. Location: Villag:……Chiwog:…….. Gewog:……..
Dzongkhag/Dungkhag:
GPS coordinate: Altitude (msl):…….
General information
i. Respondent category: 1: Adult, 2: Youth, 3: Persons with disability
ii. Sex:1: Male/Female/Other…….
iii. Weight; Height:…..
iv. Head of household: …..
v. List of individual members in the household (Note* Adult: Above the age of 24 years. Youth: Between 15- 24 years, Children: Below 15 years)
A) Normal person
Adult: Male/ Female
Youth: Male/Female
Children: Male/Female
B) Persons with Disabilities:
Adult: Male/Female
Youth: Male/Female
Children: Male/ Female
C) Civil Servants:
Adult: Male/Female
Youth: Male/Female
D) School going children
Youth: Male/female
Children: Male/Female
Members who are actually in the village/House:
Adult: Male/ Female
Youth: Male/Female
Children: Male/Female
E) Persons with Disabilities who are actually in the village/house:
Adult: Male/Female
Youth: Male/Female
Children: Male/Female
F) Education Level:
1: No Education/Non-Formal Education/Primary Education/ Secondary Education/Diploma/Certificate/Tertiary Education/Masters/Others
G) Marital Status:
1: Single/Married/Divorce/Widow/ Others
H) Assets
1. What type of house does this household live in?
a) Semi-Permanent 2: Permanent 3: Temporary Structure, 4: Other (Specify)
2. Who owns the house?

3. On what basis does the household occupy the house? 1: Privately Owned, 2: Rent free, 3: Rented, 4: Other (specify)
4. How many separate rooms (excluding kitchen, toilet and bath room) do the members of your household occupy?
5. What material are the walls of the main house predominantly made of? 1: Mud and sticks, 2: Mud bricks, 3: CGI sheets, 4: Stone/Clay Bricks, 5: Concrete/Cement Blocks, 6: Wood or Timber, 7: Poles/Bamboo/leaves, 8: Tarpaulin/Plastic Sheet, 9: Other (Specify)
6. What material is the roof of the main house predominantly made of? 1: Concrete/Cement, 2: Roofing Tiles, 3: CGI sheet, 4: Tarpaulin / Plastic Sheet, 6: Straw, Grass, Bamboo Or Thatch, 7: Other (Specify)
7. What material is the floor of the main house predominantly made of? 1: Earth/Mud, 2: Concrete/Cement, 3: Tiles, 4: Wood/Planks, 5: Other (Specify)
8. Who makes the decision about purchase and use of those assets? Select from the household member
9. Who owns the plot? Select from the household member
I) Outreach
1. Is there an increased in total income during last year and the year before as follows?
a. Last year (Nu.) b. Year before (Nu.)
Annexure 2: Farm activities and non-farm activities
1. What lead to increase in income?
2. How much land do you own for agricultural activity? Please specify in decimal/acre/ha
3. What are the major agriculture products being produced from your land? Please list as per priority.
4. What is the total value of self-consumption of the produce? Nu
5. Do you have homestead kitchen garden? Yes-1, No-0. If yes, is it adequate for consumption as well as to sale surplus? Please explain.
6. From the homestead kitchen garden, how much do you earn from the sale of surplus in a year? Nu. what approximate quantity is sold kg/ltr/dozen
Production and market
1. Who participates in the crop cultivation? Select from the household member
2. Who in the household makes the decisions concerning crops to be planted, input use and the timing of cropping activities on the plot? Select up to 2 from the list of household members
3. Who participates to the harvest of the crops? Select from the household member
4. Are there any changes in the production over the years? a) increased, b) decreased, c) same
5. What are the supports required from the project in some of the following areas?
a) Input supplies (such as seeds/seedlings, vermi-compost, liquid fertilizer etc.)
b) Human wildlife conflict management (e.g., electric fencing)
c) Irrigation and water management
d) Production and technology
e) Market access and financial access
f) Value chain enhancement
g) Market linkages and networking
h) Processing, packaging and storage
i) Innovation and business management

j) Others specify
6. What is the annual gross income from the agriculture and non-agricultural activities and the net income/profit per year?
a) Agriculture (gross income and profit in Nu.)
b) Non-agriculture (gross income and profit in Nu.)
Storage facilities
1. Did you store any of the crop harvested during the last year? Yes-1, No-0
2. What quantity of crop harvested was stored during the last year?
3. What is your main storage facility for the crop? 1: Unprotected pile, 2: Metal boxes, 3: wooden boxes, 4: Heaped in house, 5: sacks, 5: Traditional Granary, 6: Improved Granary, 7: Others specify
4. Is the storage facility functional? 1: Very functional, 2: Somewhat functional, 3: Somewhat unfunctional, 4: Very unfunctional
5. Who owns the main storage facility? 1: Self, 2: Community/village, 3: Producer organizations, 4: Other, specify
6. What is the distance between home and the main storage facility? Minutes/hours
7. Who makes decision concerning the use of crop harvest? Select up to 2 from the member list
8. Who in your household decides the use of the earnings from crop sales? Select up to 2 from the member list
Livestock
1. Do your household own any livestock? Yes-1, No-0
2. Who owns the livestock? Select up to 2 from the member list
3. Who takes care of livestock? Select up to 2 from the member list
4. Who generally makes decisions about the livestock rearing? Select up to 2 from the member list
5. Who makes decision concerning the use of livestock production, self-consumption or for sale? Select up to 2 from the member list
6. Who in your household decides what to do with the earnings from livestock? Select up to 2 from the member list
7. Have you ever heard about the following: livestock rearing practices, input or technologies?
8. Yes-1, No-0
Fishery
1. Do you or any member of your family engage in fishing activities? Yes-1, No-0
2. Who generally makes decisions about fishing production: self-consumption or sale? Select up to 2 from the member list
3. Who in your household decides what to do with earnings from fishing? Select up to 2 from the member list
4. Where do you do most of the fishing activities? 1: pond, 2: lake, 3: river, 4: others
5. Do you have fishing pond on your farm? Yes-1, No-0
Processing and market access
1. Do you have access to market? Yes-1, No-0. If so, where do you supply your products?
2. Do you think that the access to market has increased over the years? Yes-1, No-0, Don't know-2
3. Do you process part of your production at a processing facility? Yes-1, No-0
4. What type of processing facility is it? Fruit, dairy, vegetables, cereals, spices, others
5. Is the processing facility functional? 1: Very functional, 2: Somewhat functional, 3: Somewhat unfunctional, 4: Very unfunctional
6. What is the distance to the processing facility? Minutes/hours

7. To whom you sell to most of the production?
1: Sales to private individuals, 2: Traders/middlemen, 3: Cooperatives, 4. Agro-Industry, 5: Other producers, others
8. Do you sell part of your production at a market? Yes-1, No-0
9. What type of market is this market? 1: Daily, 2: Weekly, 3: Bi-weekly, 4: Monthly, 5: Other, specify
10. Is the market functional? 1: Very functional, 2: Somewhat functional, 3: Somewhat unfunctional, 4: Very unfunctional
11. What is the distance to the market facility you use? Minutes/ hours
Other facilities and infrastructure
1. Are there any new roads being constructed, rehabilitated or upgraded in your area? Yes-1, No-0, If yes, please provide the details in km.
2. Out of the total road that are being constructed, rehabilitated or upgraded, how many are climate resilient (km)?
3. Which types of post-harvest facilities are being established in the area?
a) New or rehabilitation processing in numbers
b) New or rehabilitation storage facilities in numbers
c) New or rehabilitation quality control facilities in numbers
d) New or rehabilitation market outlets in numbers
4. Do you avail facilities like market outlets, storage and processing facilities?
Yes-1, No-0. If No, why?
5. What is the primary source of water for irrigation? 1. River/stream, 2. Pond/lake, 3. Others
6. Is the amount of water from the irrigation system adequate for production? Yes-1, No-0
7. What type of irrigation system is used for the production? 1. Canal irrigation, 2. Drip irrigation, 3. Pipe irrigation 4. None
8. What are the issues and problems with regard to facilities and infrastructure?

Annexure 2: Nutrition (MDDW)

	Question	Guide	Answer	Thres hold
F.1	**NUTRITION BACKGROUND**			
F.1.0	Has any member of the Household participated in any project-supported activity designed to help improve nutrition?	If No, skip Module F1	1: Yes – 0: No	
F.1.1	Who participated in any project-supported activity designed to help improve nutrition?	Choose within list of HH members		
F.1.2	Who usually takes care of routine household purchases (food for daily consumption or other household needs)	Select from HOUSEHOLD MEMBER		
F.1.3	Who usually decides what to buy for routine household purchases (food for daily consumption or other household needs)	Select up to 2 from HOUSEHOLD MEMBER		
F.2	**DIET DIVERSITY**			

F.2.1	Is there a woman aged 15-49 in this household who can answer a few nutrition questions?	If yes identify within list of HH members If No, skip question F.2.2	1: Yes – 0: No	
F.2.2	Can I ask you about the food you consumed yesterday from early morning to the time until you went to sleep in your home or elsewhere? Please tell me what you ate and drank from early morning after you woke-up in the morning to the time you went to bed at night. Mention any food that is more than 15 gm. e.g. spoon full, handful etc: Yes if >15mg and No if <15mg	Yes if >15mg and No if <15mg	1: Yes – 0: No	
1	Any food made from grains and any white roots or tuber or plantains,	Thukpa, khuley/roti/puri, rice, jangbaley/Chowmen/noodles/Shingjogtang,/ tarul/Jogtang/Parule	1: Yes – 0: No	15 g
2	Any beans or peas such as:	Dal/ beans/ peas/Kalo dal/Kinima/Kideney beans/Soya beans (fresh or dried seed)	1: Yes – 0: No	15 g
3	Any nuts or seeds, like:	Tago/Katus/sunflower seed/Pumkin Seed/peanut,	1: Yes – 0: No	15 g
4	Any milk or milk products, such as:	Milk/cheese/yogurt/Dachu/Tarwa/Daw/Paneer/	1: Yes – 0: No	15 g
5	Any meat, poultry and fish products, such as:	Liver/kidney/heart/Juma/Phang-gu/Beef/pork/Chicken/duck/ lamb/ goat/mer-ga/Borang-phagpa/Ka-sha/ Shaw/ wild birds/fish/dried fish	1: Yes – 0: No	15 g
6	Any eggs:	Eggs from poultry, duck, turkey, Guinea fowl	1: Yes – 0: No	15 g
7	Any dark green leafy vegetables, such as:	Saag/Sim-Saag/Yungka/Damru/Nakey/Payka Sag/Buckwheat leaves/kale/	1: Yes – 0: No	15 g
8	Any vitamin A rich fruits, vegetables and roots	Pumpkin/carrots/squash/sweet potatoes/mango, papaya, apricots, Guava, Passion fruit, water melon, (ripe)/	1: Yes – 0: No	15 g
9	Any other vegetables	Pacha/mushroom/Banana flower/	1: Yes – 0: No	15 g
10	Any other fruits	Apple/Kiwi/Plum/Avocado/grape/Pineapple/Banana/Peach/	1: Yes – 0: No	15 g
	Write any food mentioned by the respondent not listed in any category, or the enumerator is unsure on where to categorize the food.			