JICA Baseline Report

September
2023

Submitted to:

Submitted by:

intellecap
AAVISHKAAR GROUP

Table of Contents

Executive Summary **6**

a. Background 6

b. Major Findings 6

1 Introduction **10**

1.1 Context 10

1.2 Project Description 10

1.2.1 Project components 10

1.2.2 Geographical Coverage 11

1.2.3 Project Phasing 11

1.3 Objectives of the baseline assessment 12

1.4 Structure of the Report 13

2 Approach and Methodology **14**

2.1 Mechanism for baseline survey 14

2.2 Evaluation design 14

2.3 Sampling 14

2.4 Reason to Revise Sample Size 15

2.5 Revised Sampling 15

2.5.1 Sample Size and sample selection for project group 15

2.6 Data collection 16

2.7 Process of collation and analysis 16

3 Household Profile **17**

3.1 Profile of the respondents and respondent households 17

3.1.1 Gender Proportion of the Respondents 17

3.1.2 Social Groups and Religion 17

3.1.3 Type of Ration Card Used 18

3.1.4 Type of house of respondent households 19

3.1.5 Drinking Water 20

3.1.6 Sanitation 22

3.1.7 Access to electricity 23

3.1.8 Source of energy for cooking 23

3.1.9 Proportion of members who feature in JFM committees 25

3.1.10 Internet Usage 25

3.1.11 Assets 26

3.2 Information on household members 27

3.2.1 Distribution of respondents by gender, age group and marital status 27

3.2.2 Education Status 28
3.2.3 Occupation 29
3.2.4 Migration 30
4 Household level Land Profile 33
4.1 Land Holding in project area 33
5 Income Generating Activities 36
5.1 Occupation and Income Generating Activities 36
5.1.1 Proportion Of Households in Different Occupations 36
5.1.2 Annual household income 37
5.1.3 Average Income from Different IGAs 38
5.2 Agriculture 39
5.3 Horticulture 47
5.4 NTFP 50
5.5 Livestock 55
5.6 Fisheries 60
6 Household Expenditure 62
7 Loan 63
8 Savings 65
4. Annexure 68
a. Logical Framework for SCATFORM 68

List of Figures

Figure 1: Project Area – Range Management Units 12
Figure 2: Caste Distribution of Households (N=6501) 17
Figure 3: Distribution of Households by Religion (N=6501) 18
Figure 4: Type of ration cards used (N=6296) 19
Figure 5: Types of houses found (N=6501) 19
Figure 6: Major Source of Drinking Water (N=6501) 20
Figure 7: Distance of drinking water point from house (N=6501) 21
Figure 8: Households reporting water availability throughout the year (N=6501) 21
Figure 9: Households reporting months in which water shortage happens (N=1552) 22
Figure 10: Sanitation Status (N=6501) 22
Figure 11: Access to Electricity (N=6496) 23
Figure 12: Primary sources of energy for cooking (N=6501) 24
Figure 13: Types of Stoves used for Cooking (N=6823) 24
Figure 14: Daily Firewood required in different seasons (avg. value in Kg) 25
Figure 15: Proportion of family members in JFM committees (N=1768) 25
Figure 16: Proportion of households using internet (At least one member apart from respondent) (N=6501) 26
Figure 17: Gender of the household members (N=25919) 27
Figure 18: Marital status of respondents (N=18104) 28
Figure 19: Gender distribution in the workforce of the respondent HHs (N=12833) 31
Figure 20: Age distribution of the earning members 31
Figure 21: Male respondents reporting participating in fuelwood collection (N=13086) Figure 22: Female respondent participation (N=12833) 32
Figure 23: Duration of migration (N=309) 32
Figure 24: Places of migration (N=309) 33
Figure 25: Percentage of HHs reporting types of landholdings 33
Figure 26: Avg. landholding reported by DMU HHs (in ha) 34
Figure 27: HHs reporting status of homestead land (N=6823) 34
Figure 28: Annual Household income of the respondents (N=6823) 38
Figure 29: Yearly cropping pattern (N=2378) 39
Figure 30: Reason for cultivating only once a year (N=860) 40
Figure 31: Proportion of households reporting different ways of growing crops (N=3705) 40
Figure 32: Sources of seeds (N=1724) 42
Figure 33: Proportion of households using fertilizers (N=3705) 42
Figure 34: Type of fertilizer used (N=2376) 43
Figure 35: Proportion of households using pesticides (N=3705) 43
Figure 36: Market for selling produce 45
Figure 37: Last harvest in comparison to a normal year (N=3705) 46
Figure 38: Uses of fruits (N=2071) 48
Figure 39: NTFP primarily collected by (N=8227) 51
Figure 40: Key points of sale for NTFPs (N=1502) 54
Figure 41: HHs selling milk (N=464) 56
Figure 42: Average quantity of milk sold annually (per HH, in kL) (N=464) 56
Figure 43: Annual income from sale of milk (in INR) 57
Figure 44: HHs selling meat (N=2412) 57
Figure 45: Annual income from sale of meat 58
Figure 46: HHs selling egg (N=304) 58
Figure 47: Annual income from sale of eggs 58

Figure 48: Proportion of households who have owned ponds (N=5309) 60
Figure 49: Proportion of households who have leased in ponds (N=5309) 60
Figure 50: Average Quantity of fish produced in a year (Kg) 61
Figure 51: Total amount received from own/leased pond (INR) 61
Figure 52: Average amount received from leased out ponds (INR) 61
Figure 53: Places for selling fish (N=517) 62
Figure 54: Average per capita monthly expenditure (in Rs) 63
Figure 55: HHs currently repaying loans (N=1812) 63
Figure 56: Loan disbursing entities (N=816) 64
Figure 57: Average rate of interest levied 65
Figure 58: Purpose of accessing loan (N=1126) 65
Figure 59: Proportion of HH practicing savings (N=6491) 66
Figure 60: Preferred institutions of savings (N=4594) 66
Figure 61: Average savings at different institution 67

List of Tables

Table 1: Sample size 16
Table 2: Asset ownership at study area (N=6501) 27
Table 3: Distribution of age groups (N=25919) 28
Table 4: Status of education among respondents (N= 15195) 29
Table 5: Percentage of the HHs reporting being engaged in various livelihood activities 30
Table 6: Percentage of HHs reporting various uses of homestead land (N=5580) 35
Table 7: Percentage of HHs reporting various uses of RoFR/Patta land (N=2522) 35
Table 8: What is being cultivated/planted on encroached land (N=1644) 36
Table 9: Occupation of the Households (N=6492) 37
Table 10: DMU wise Income Generating Activities (N=3676) 39
Table 11: Proportion of households growing different crops (N=3705) 41
Table 12: Type of land used for different crops 41
Table 13: Average productivity per hectare of different crops (in KG/Ha) 44
Table 14: Total sold quantity (in Tonnes) 44
Table 15: Average amount received from sold produce (in Rs) 45
Table 16: Issues faced by households for crop production (N=3705) 46
Table 17: Factors as reported by households that can help improve production (N=1641) 47
Table 18: Proportion of households growing different type of horticulture product (N=2418) . 47
Table 19: Average harvested quantity of fruits 48
Table 20: Average produce sold (in Kg) 49
Table 21: Average proportion of sold quantity of the total harvested fruits 50
Table 22: Details of various NTFPs collected (N=8227) 50
Table 23: Place of NTFP collection (N=8227) 50
Table 24: NTFP collection over months (N=8227) 51
Table 25: Annual harvest quantity (in Kgs) 52
Table 26: Proportion of HHs who sell NTFP (N=8227) 52
Table 27: NTFP sold quantity (in Kgs) 53
Table 28: Average proportion of sold quantity of total harvested (in percent) 54
Table 29: Average income from selling NTFP last year (in INR) 55
Table 30: Types of Livestock Owned (N=3674) 55
Table 31: Source of fodder for livestock (N=3674) 55
Table 32: Market for sale of milk (N=321) 57

Table 33: Market for sale of eggs (N=218) 59
Table 34: Average loaned amount from different institutions 64
Table 35:Perceived benefits of savings 67

List of Abbreviations

APL	Above Poverty Line
BPL	Below Poverty Line
DMU	Divisional Management Unit
EDC	Eco-development committees
HH	Household
IGA	Income Generating Activity
JFM	Joint Forest Management
JFMC	Joint Forest Management Committee
JICA	Japan International Cooperation Agency
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MPCE	Monthly Per Capita Expenditure
NTFP	Non-Timber Forest Products
OBC	Other Backward Classes
PMU	Project Management Unit
ROFR	Recognition of Forest Rights
SC	Scheduled Caste
SCATFORM	Sustainable Catchment Forest Management in Tripura
SHG	Self-help groups
ST	Scheduled Tribe
TFIPAP	Tripura Forest Environmental Improvement and Poverty Alleviation Project
WLS	Wildlife Sanctuary

Executive Summary

a. Background

Between 2002 and 2022, Tripura experienced a significant loss of 114 hectares of its valuable humid primary forest, representing a 9.6 percent reduction in the overall area of such forests. This loss poses substantial challenges, notably heightened vulnerability to soil erosion in hilly regions, with approximately 34 percent of Tripura's land area facing a significant risk of severe soil erosion. This, in turn, affects land productivity and leads to issues like sediment buildup in water bodies, riverbed siltation, and limited access to clean water for rural communities. Despite sufficient rainfall, geographic constraints, especially the hilly terrain, contribute to ongoing water scarcity.

Between 2007 and 2017, the Tripura Forest Environmental Improvement and Poverty Alleviation Project (TFIPAP) granted forest use rights to tribal communities, facilitating their transition from slash-and-burn practices to agroforestry, Non-Timber Forest Products (NTFP), and ecotourism. To further enhance forest quality and management, Tripura secured a loan from the Japan International Cooperation Agency (JICA) for the Project for Sustainable Catchment Forest Management in Tripura (SCATFORM), spanning ten years from September 2018 to September 2028.

The primary objective of the SCATFORM project is to enhance the quality and management of the forest within the designated watershed area, consequently improving forest ecosystem services and addressing the livelihood needs of communities dependent on the forest by promoting sustainable utilization of both forest resources and water sources.

b. Major Findings

1. Household Profile

The survey primarily involved female respondents from different regions. Most Self-Help Group (SHG) members belong to the Scheduled Tribe (ST) population. The prevalence of Below Poverty Line (BPL) cards indicates economic challenges and a segment of extreme poverty. Notably, 67 percent of households reside in kutcha houses, which is higher than the 2011 Indian census data. Access to piped water supply is more common in Sepahijala (49 percent) and Gumti Wildlife Sanctuary (WLS) (51 percent) but lower in North (18 percent) and Gomati (20 percent). Fuelwood collection is highest during the winter and rainy seasons, with an average of 19 kg, and Unakoti and Gomati SHG households reported the highest collection during the rainy season at 29 kg. The majority of households own mobile phones (70 percent), followed by televisions (35 percent) and motorcycles (17 percent).

2. Income Generating Activities

Income-generating activities are essential for economic development and poverty reduction. In Gumti WLS, the predominant occupation is wage labor through the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) at 75 percent, highlighting limited livelihood options and land ownership. Agriculture, including cultivation, is the second most prevalent occupation, averaging 15 percent across different regions, with Gomati having the highest participation at 24 percent. Leasing land for agriculture is rare, except in South (7 percent) and Sepahijala (5 percent). Gumti WLS has the highest proportion of households with annual incomes between INR 24,001 and INR 60,000 at 68 percent, indicating a significant low-income segment. Gomati and Sepahijala also exhibit substantial percentages in this income range, suggesting low income and poverty. Unakoti and Sepahijala have the highest percentages (28 percent and 24 percent, respectively) of households with incomes up to INR 24,000, representing the lowest-income households. The highest income category, exceeding INR 240,000, is limited across

regions, with a maximum of 4 percent in Khowai. Only 17 percent of all SHG households in different regions report annual incomes above Rs. 1,20,000, with negligible representation in Unakoti, Gomati, and Gumti WLS.

3. *Land and Agriculture*

Many households across different regions primarily cultivate their land, with the highest percentages found in Sepahijala (90 percent), West (69 percent), and Khowai (81 percent) DMUs. They grow crops like rice, brinjal, and vegetables. RoFR/Patta land, recognized for cultivation, is notably present in Gumti WLS (69 percent) and Unakoti (40 percent), with tillage occurring on RoFR/Patta land in 50 percent of the households across DMUs. Encroached land use is less common, with Unakoti (43 percent) having the highest percentage, emphasizing the importance of secure land tenure in influencing agricultural practices. The majority of SHG households predominantly follow a once-a-year cropping pattern, with high percentages ranging from 73 percent to 92 percent, although South and Gomati have lower rates (78 percent and 73 percent, respectively). A smaller proportion of DMUs engage in twice-a-year cropping, ranging from 6 percent to 27 percent, indicating varying capacity or climate conditions to support multiple annual cropping seasons. Water scarcity is the primary reason for once-a-year cultivation, reported by 70 percent of SHG households. Jhum cultivation is prominent in North (69 percent), Unakoti (75 percent), and Gumti WLS (87 percent), while non-Jhum cropping practices are more common in West (83 percent), Sepahijala (94 percent), and Khowai (76 percent) regions, indicating a shift towards more conventional and potentially sustainable farming approaches. Some DMUs report a combination of both Jhum and non-Jhum cultivation, albeit in smaller percentages.

4. *Horticulture*

Mango is the dominant horticultural product, prominently grown in West, Sepahijala, and South, ranging from 50 percent to 62 percent. Other fruits like pineapple, jackfruit, and banana also exhibit significant cultivation. Fruits are mainly consumed locally (69 percent), with relatively low selling percentages (2 percent to 39 percent). Mango, jackfruit, and papaya have the highest selling rates across different regions (77 percent to 89 percent).

5. *Non-timber Forest Produce (NTFP)*

NTFPs, particularly bamboo, fuelwood, and bamboo shoots, play a vital role in the livelihoods of respondent households in the surveyed DMUs. The widespread collection and sale of these NTFPs demonstrate their significance as sources of income and essential resources. NTFP collection is active throughout the year, with the highest engagement observed during the monsoon months of June and July.

6. *Livestock*

Pig rearing the major livestock-based activity in the DMUs, contributing substantially to the DMU's meat production. It has gradually evolved into a vital source of income for non-tribal communities. The preference for selling milk, meat, and eggs in the village or nearby *haat-bazaars* is driven by the perishable nature of these products. This strategy helps minimize the risk of spoilage during transportation, particularly in areas where cold storage facilities are not readily available. It highlights the practical and localized approach taken by the community to preserve the quality and freshness of their poultry and livestock products while also facilitating their sale.

7. *Fisheries*

Ownership of ponds varies significantly among surveyed households in different DMUs. North Division (26 percent) has the highest proportion of pond-owning households, followed by Unakoti (14 percent), while Gumti WLS (2 percent) has the lowest. In total, approximately 8 percent of households across all DMUs own ponds. Regarding leased ponds, North leads with 2

percent, followed by Unakoti, Khowai, West, Sepahijala, and Gomati, all at 1 percent. However, in South and Gumti WLS, no households lease ponds. Sepahijala stands out with the highest average fish production in owned ponds at 5,346 Kg, followed by North (3,480 Kg), Gomati (3,726 Kg), and Gumti WLS (2,764 Kg). For leased ponds, Khowai reports exceptionally high average fish production at 38,026 Kg, surpassing all other DMUs. Income generated from leased ponds varies, with West reporting the highest average income. North reports the highest total sales amount from both owned and leased ponds.

8. Expenditure

The data on average monthly household expenditure across DMUs provides insights into regional spending patterns and economic well-being. Sepahijala has the highest average monthly household expenditure, indicating a relatively strong spending capacity. South and West DMUs also show higher expenditure levels, reflecting better economic conditions. In contrast, Unakoti and Gomati report lower average monthly household expenditures, suggesting lower income levels and higher poverty rates. Per capita monthly expenditure indicates variations in economic conditions across regions. Sepahijala has the highest per capita monthly expenditure, while Gomati has the lowest. The SHG household average per capita monthly expenditure is comparable to the national average, suggesting a comparable living standard between Tripura residents and their counterparts across the country.

9. Loan and Savings

Accessing loans through banks and micro-finance institutions indicates that loans play a significant role in the financial strategies of the study households. The data also underscores the predominant reasons for borrowing money that include educational purpose, purchasing livestock, treating unwell family members among others. Despite the existing disparity between the loans being accessed and household-level savings practices, certain DMUs show a notable emphasis on reinvestment in business, agriculture, and animal husbandry that reflect a strong focus on income generation and livelihood enhancement.

c. Key Indicator values

Outcome	Key Outcome Indicators	Means of Verification
Livelihood Improvement		
1. Improved Livelihoods of the Communities in the targeted catchments	3.a 20% increase in the income of JFMC members from sale of NTFPs 3.b Livelihoods of 50% SHG members in the targeted SHGs improved	*C.1 Proportion of households owning different assets:* Main assets include: Chair (74%), fan (71%), mobile (70%), cot/bed (54%), television (34%), water filter (26%). *D.1 Proportion of households involved in different occupations* Primary occupations include: Wage labour (MGNREGA) (43%), Wage labour (non-farm, non-MGNREGA) (21%), Jhum cultivation (17%), agriculture labour (17%), agriculture (own land) (15%). *D.16.A Proportion of households involved in key income generating activities* Piggery (36%), Rubber plantation (20%), Fisheries (8%), NTFP (8%).

Outcome	Key Outcome Indicators	Means of Verification
		D.15 Proportion of households in different annual household income groups Up to Rs. 24000 — 18.8% Rs. 24001 to Rs. 60000 — 43.1% Rs. 60001 to Rs. 120000 — 27.5% Rs. 120001 to Rs. 180000 — 6.7% Rs. 180001 to Rs. 240000 — 2.2% More than Rs. 240000 — 1.7% **Section E** *Monthly Per Capita Expenditure* Average mean per capita expenditure-Rs. 2162. **Section F** *F.1 Proportion of households that have taken any loan and are repaying currently:* 29% *F.2.x Proportion of households reporting doing savings:* 71%

1 Introduction

1.1 Context

From 2002 to 2022, Tripura lost 114 ha of humid primary forest, making up < 0.1 percent of its total tree cover loss in the same time[1]. Total area of humid primary forest in Tripura decreased by 9.6 percent in this time. Loss of forest cover and forest degradation highly increases the vulnerability of hilly areas to soil erosion, especially in upper catchment areas. About 34 percent of the land area in Tripura is prone to severe soil erosion, where the annual soil loss is more than 80 tons per hectare. High erosion adversely affects land productivity. Soil and water run-off due to forest degradation has resulted in formation of ravines, gorges, or gullies along banks of running water bodies. In heavy erosion areas, sediment accumulation in water beds has led to a reduction in the widths and depths of water courses. Riverbed siltation makes the river shallow resulting in flooding in rivers especially during monsoons. Further, soil erosion reduces the capacity of irrigation facilities due to sedimentation as well as access to drinking water in rural communities. Despite adequate rainfall, water scarcity remains a matter of concern in many regions due to unfavourable geographic features. Presence of a sloppy terrain in most areas provides less scope for water retention and absence of proper watershed management plans accentuate the problem.

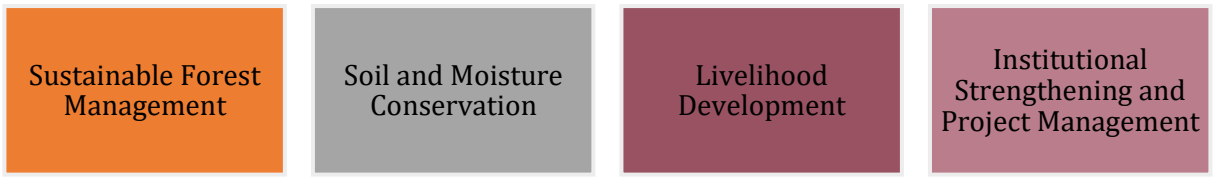
1.2 Project Description

Between 2007 and 2017, Tripura Forest Environmental Improvement and Poverty Alleviation Project (TFIPAP) was implemented to issue forest use right to the tribal community which provided a basis for transforming the slash and burn practice to agroforestry, Non-Timber Forest Products (NTFP), ecotourism etc. To further enhance and augment the quality of the forest and its management, the government of Tripura received a loan from the Japan International Cooperation Agency (JICA) to finance the Project for Sustainable Catchment Forest Management in Tripura (SCATFORM) in the state of Tripura. The duration of this project is 10 years (from September 2018 to September 2028).

The project objective of SCATFORM is to enhance quality of forest and its management in the targeted catchment, thereby improving forest ecosystem services and meeting the livelihoods needs of forest dependent communities by ensuring sustainable utilization of forests and, water resources.

1.2.1 Project components

The 10-year SCATFORM project period has three phases including, Preparatory Phase (18 months), Implementation Phase (84 months), and Phase out Phase (18 months). SCATFORM has four key components including (1) Sustainable Forest Management, (2) Soil and Moisture Conservation, (3) Livelihood Development, and (4) Institutional Strengthening and Project Management.



[1] Global Forest Watch (n.d). https://www.globalforestwatch.org/dashboards/country/IND/33/?location=WyJjb3VudHJ5IiwiSU5EIiwiMzMiXQ%3D%3D&map=eyJjYW5Cb3VuZCI6dHJ1ZX0%3D

Sustainable Forest Management includes improvement of forest nurseries, application of plantation models, habitat improvement in Gumti Sanctuary, establishment of decentralized people's Nurseries, application of plantation models and eco development. **Soil and Moisture Conservation** includes construction of check dams, erosion prevention works combined with check dams, assessment of soil and moisture conservation models. **Livelihood Development** includes community organizations for livelihood development, NTFP based livelihoods, agro forestry-based livelihoods, livestock and fish farming-based livelihoods, ecotourism development and generating revolving fund to JFMC/ EDC for small Income Generating Activity (IGA).

Monitoring & Evaluation (M&E) is an essential component for ensuring the efficient implementation of the project and for assisting project partners in tracking the progress throughout the project period. It is an important area of focus in the project for enhancing the quality of project planning and management.

The current report is at the first phase of evaluation, assessing socio-economic components at the baseline stage in the project area.

1.2.2 Geographical Coverage

The state of Tripura, with a geographical area of 10491 km^2 is predominantly hilly (60 percent) and is surrounded on three sides by a deltaic basin of Bangladesh. The state is situated between 22o57' & 24o32'N and 91o10' & 92o20'E with the tropic of cancer passing through it. The State is situated in the south-western extremity of the North-East region of the country. It shares its border (1001 km in perimeter) with Bangladesh, Assam, and Mizoram. International border with Bangladesh is 856 km, which is almost completely open and porous. The forests in the state are mainly tropical evergreen, semi evergreen, and moist deciduous. A Sizable area is covered with bamboo brakes which virtually form a "Sub climax" resulting from shifting cultivation from time immemorial. The percentage of forest area to geographical area is 60%

The project is implemented across 8 forest DMUs of the state. The project forest DMUs (called Divisional Management Unit or DMU in the project) are: North, Unakoti, Khowai, West, Sepahijala, Gomati, South and Gumti Wildlife Sanctuary. The DMUs have been selected based on the criteria of forest degradation and the proportion of poor households in the division. The project target area does not include Protected Areas.

1.2.3 Project Phasing

To reach the project objective, 135 forest beats have been selected in seven districts. Forest Beat is the unit for prioritizing the project target catchment and 135 Forest Beats in 33 ranges of 15 territorial subdivisions of seven districts have been selected for project intervention. Within each Forest Beat, roughly three Joint Forest Management Committees (JFMCs) have been formed. Besides, 27 Eco-development committees (EDCs) in 13 beats of Gomati Wildlife Sanctuary are being worked with in the project. In all, a total of 450 JFMCs/EDCs are to be worked with in the project across 8 DMUs. Further, it is planned that three Self-help groups (SHGs) will be formed/ worked with in each JFMC and EDC making a total of 1350 SHGs.

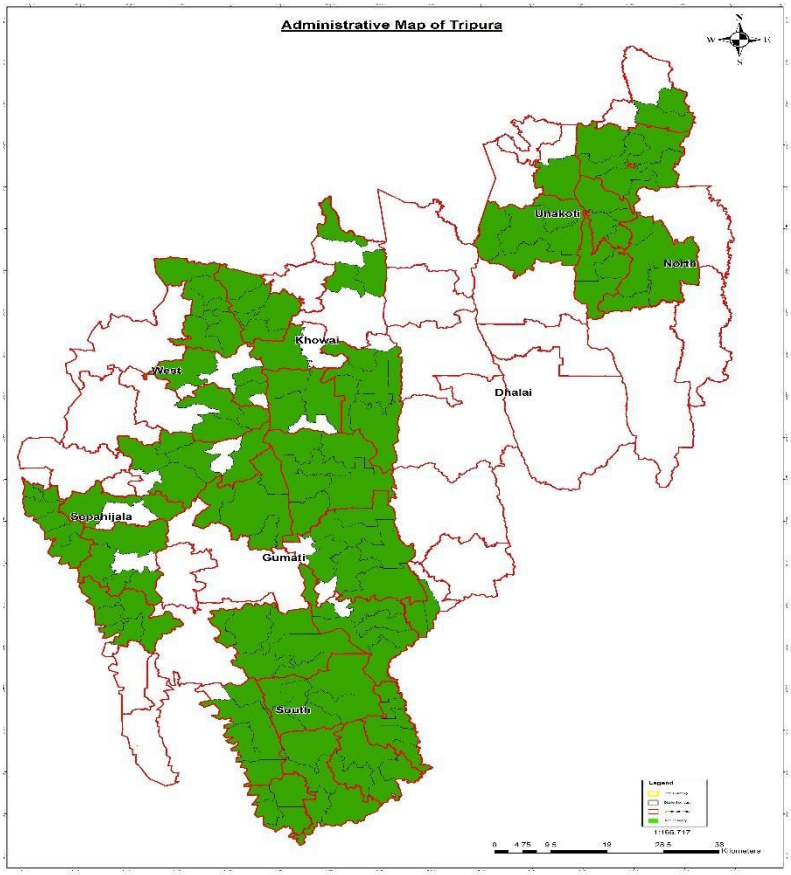


Figure 1: Project Area – Range Management Units

1.3 Objectives of the baseline assessment

Image 1: Teak plantation area under Tripura SCATFORM

Baseline assessment is an integral part of JICA supported forestry projects in different states of India. This baseline assessment is meant to understand the socio-economic status of the intervention areas relevant to the project objective of livelihood improvement. The objective of the baseline study is to establish values of the project indicators (frame of reference) at the start of the project in the intervention areas. The study aims to set the baseline benchmarks for the outcome and intermediary outcome indicators and understand the current socio-economic scenario in the program area. The findings of the baseline assessment will act as a reference point to examine the impact and direction of the project at later stages as well as contribute to the planning process. The frame of reference, established by the baseline, will allow the project to measure the change in the socio- economy of the project households, especially SHG members with whom the project is working directly for livelihood improvement.

1.4 Structure of the Report

The document comprises a total of ten chapters, including the introductory chapter.

- Chapter 1 serves as the introduction, providing an overview of the project's context, detailing its components, specifying its geographical coverage, outlining the phasing, and elucidating the objectives of the baseline assessment.
- In Chapter 2, the project's approach and methodology are discussed, encompassing aspects such as evaluation design, sample size determination, data collection methods, and the process of data collation and analysis. Data analysis commences following this chapter.
- Chapter 3 focuses on the household profiles of the respondents, offering detailed information about the surveyed households.
- Chapter 4 delves into the land profile within the project area, providing a comprehensive analysis.
- Chapter 5 explores the various occupations and income-generating activities of the households, further categorizing them into distinct sectors, including Agriculture, Horticulture, Non-Timber Forest Products (NTFP), Livestock, and Fisheries.
- In Chapter 6, attention is given to the household expenditure of the DMUs, aiming to assess the economic conditions and spending capacity in these regions.
- Chapters 7 and 8 are dedicated to Loans and Savings, respectively, providing insights into the financial aspects of the respondents.
- Chapter 9 offers the conclusion, summarizing the key findings and insights from the preceding chapters.

The final chapter, Chapter 10, is designated as the annexure, housing the Log-frame for SCATFORM, along with relevant secondary information. Figure, table, or annexure numbers are included in parentheses throughout the report as needed for reference.

2 Approach and Methodology

In the project, formation of JFMCs and EDCs was to be done in phases and therefore baseline assessment was also planned to be grouped into three batches:

1. 106 JFMCs and 13 EDCs for Batch 1,
2. 211 JFMCs and 14 EDCs for Batch 2 and
3. 106 JFMCs for Batch 3

2.1 Mechanism for baseline survey

Project documents suggested that a baseline survey be conducted by a third party and that 10 percent of the project JFMCs may be taken as a sample for preparing a baseline. However, the project decided to work with 450 JFMCs/EDCs in a batch wise manner over three batches. Identification of JFMCs and EDCs in each batch happened over a period of three years. In such a scenario, hiring of a third party for conducting baseline assessment could have led to cost escalation and/or ineffective sampling/sample frame.

In order to overcome these issues, it was decided by the PMU that the baseline assessment will be conducted internally by the project using project staff. This will not only ensure that the baseline information is collected over time from all the batches but also exercise control on the quality of baseline assessment. Household surveys by PMU contractual staff (LC/CO) contributed to enhanced data collection as they engaged directly with households in the villages, providing information about the project, its goals, and its ongoing activities.

2.2 Evaluation design

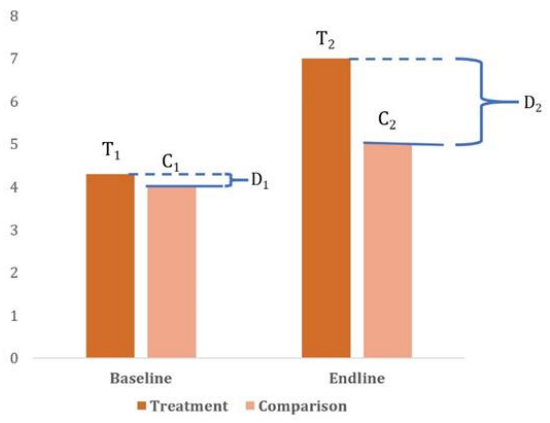
The project aimed to answer the following questions

2. The shift in baseline, midterm and endline on specific indicators
3. Contribution of the project in achieving the shift

While the first question relates to finding a difference between baseline and midterm, and baseline and endline values on key indicators (such as income), the second question pertains to causality or attribution of this difference or change to the project.

For answering both the questions, the evaluation followed a quasi-experimental pre-post, intervention-comparison group research design. Hence for the sample baseline households, similar households for comparison were identified in villages where the project is not functioning. The evaluation design had three components, namely:

a. Baseline survey before start of work in the JFMCs and similar comparison areas
b. Mid Term Review
c. End-line at the completion of the program



The design would use the **Difference-in-Difference** technique for the evaluation of the impact. The comparison group will be selected so as to take care of social, cultural and demographic counterfactuals.

2.3 Sampling

Initially, the baseline survey was planned to be carried out in both project Joint Forest Management Committees (JFMCs) and comparison group villages and all SHG members in the

project JFMCs were to be surveyed, up to a maximum of 30 SHG members in each JFMC. The project aimed to form and work with 450 JFMCs and around 1350 SHGs, resulting in an expected sample size of 13,500 SHG members upon completion of the baseline survey. This sample size was sufficient for analysis/ comparison till the beat level and was expected to provide broad comparison even at the JFMC level.
In addition to the project JFMCs, a sample size of **2160** was to be surveyed from the comparison group villages. This sampling strategy was designed to ensure that valid comparisons could be made between the project and comparison groups at the DMU level, and to allow for accurate assessment of the project's impact.

2.4 Reason to Revise Sample Size

The baseline survey was getting delayed due to following reasons and the PMU decided to revise the sampling to expedite and complete the baseline survey.

a. Delay in completion of baseline survey due to COVID

The COVID-19 pandemic has had a significant impact on the SCATFORM project, including delays in the completion of the baseline survey. The pandemic has caused disruptions in the movement of field staff, as well as in the overall survey process. In particular, the pandemic has made it difficult for surveyors to access some of the more remote areas where the project is being implemented.

b. Change in the field staff

Another reason behind the revision in the baseline survey sample size is the change in the field staff working on the project. Post-COVID, there has been a period of 6-7 months when work in the field was hampered due to non-availability of field staff which led to further delays in the baseline survey.

c. Upcoming mid-term review

The PMU is currently envisaging to undertake mid-term review of the project. For the mid-term review to happen, the baseline information needs to be available. Therefore, in order to address these issues and complete the baseline assessment in a short time period, the PMU decided to revise the sampling strategy for the baseline survey. The revised strategy aims to reduce the required sample size while maintaining the statistical rigor of the survey.

2.5 Revised Sampling

2.5.1 Sample Size and sample selection for project group

Sample calculation for the project and comparison group was done using a website sample size calculator[2] for comparing two independent means[3]. For calculation of sample size, the expected difference between baseline value and endline value of a key indicator is required. Monthly Per Capita Expenditure was identified as a critical socio-economic indicator for the project and the baseline value for Monthly Per Capita Expenditure (MPCE) was taken as 1500[4] with an expected increase of 5 percent by midterm and 10 percent increase by end-term[5]. Assuming a true difference in means between the test and the reference group of 75 (for mid-term) – i.e., 5 percent

[2] http://statulator.com/SampleSize/ss2M.html Statulator used the input values of a power of 80 percent, a level of significance of 5 percent, a superiority margin of 0.1 units and equal group sizes for sample size calculation and adjusted the sample size for t-distribution and clustering. A design effect of 2 was used for clustering.

[3] We have taken Monthly Per Capita Expenditure (MPCE) as the key indicator for sample size calculation. The two means which will be compared are baseline MPCE and Mid-term MPCE. Comparison with end-term MPCE will be easily possible within this sample size as the difference in MPCE between baseline and endline will be larger than the difference between baseline and midterm.

[4] The baseline value was taken from MPCE of Rural Tripura from NSSO 68th round report http://mospi.nic.in/sites/default/files/publication_reports/KI-68th-HCE.pdf

[5] These figures are assumed and are lower than what the project may expect to achieve. We will have a larger sample with these assumed figures which will also be more than valid sample size for higher values.

of the baseline value of MPCE (1575 - 1500) units, a pooled standard deviation of 350 units and a design effect (DEFF) of 2, the study would require a sample size of **436** for each group – treatment and comparison. This sample will be required to achieve a power of 80 percent and a level of significance of 5 percent, for declaring that the midterm/ end term MPCE of the treatment group is higher than the comparison group at these stages at 0.1 units margin of superiority (assuming that a larger mean is desirable).

The sample size of 436 is valid for comparing two groups at a particular level. For e.g., if we want to compare the overall project MPCE with its comparison group then a sample of 436 from the project and 436 from the comparison group is statistically valid. However, if we want to compare the MPCE of a particular DMU with another DMU, then the same sample size i.e., 436 will have to be drawn at each DMU level. Considering that a large number of data has already been collected from different batches (batch 1 to batch 5) in different DMUs, the PMU decided to adopt sampling at DMU level and therefore 8 DMUs (7 territorial and one Gumti wildlife division) and 8 x 436 = 3,488 sample households were covered from each, the project and comparison villages. In order to spread the sample and to have representation, not more than 10 SHG members from one JFMC were selected for household survey. Efforts were made to distribute these JFMCs in RMUs proportionate to the JFMC number in that batch across different RMUs in the DMU. Also, those JFMCs were selected where the baseline survey had not happened earlier. Sample size for comparison group was estimated at 436 at the PMU level. The sample size has been distributed across DMU and the remaining sample of both project and comparison group is provided in Table 1.

DMU	Total Sample Needed (Project)	Total Sample Achieved (Project)	Total Sample Needed Non-Project	Total Sample Achieved Non-Project
Gumti WLS	436	1105	53	70
Gomati	436	888	87	9
Khowai	436	1077	57	25
North	436	767	42	0
Sepahijala	436	585	44	14
South	436	670	70	66
Unakoti	436	810	42	134
West	436	599	41	4
Total	3488	6501	436	322

Table 1: Sample size

2.6 Data collection

Data collection at the SHG member household level in project and comparison villages was done by LC/CO using their smartphones. The software application for data collection was prepared in-house by the M & E team of PMU. KOBO[6] software was used for designing the software app.

2.7 Process of collation and analysis

The data uploaded on the software/project platform was cleaned by the M&E team of PMU. Once the survey was completed for a particular batch and the clean dataset was available, M&E expert of PMC conducted relevant analysis and prepared DMU wise presentations and this report.

[6] KOBO is a free app in which form design is easy and data can be filled on-line or off-line. Data collected is updated in real time which helps in continuous monitoring of the data collection process and in taking quick decisions in case any issue emerges.

3 Household Profile

The household profile of the respondents serves as a crucial component in understanding the contextual framework of the study. By delving into the demographic and socioeconomic characteristics of the households, we gain valuable insights into the broader context in which our data and findings are situated. This introductory section aims to provide a comprehensive overview of the households under examination, offering a snapshot of their composition, income levels, educational backgrounds, and other pertinent factors that contribute to the multifaceted dynamics of our study.

3.1 Profile of the respondents and respondent households

3.1.1 Gender Proportion of the Respondents

Almost all the respondents for the survey across DMUs were women.

3.1.2 Social Groups and Religion

The SHG members in the project belong to the Scheduled Tribe (ST) population predominantly, with percentages ranging from 70 percent to 99 percent. Gomati, and Gumti WLS have the highest ST concentration, with 99 percent, and 98 percent, respectively. This highlights the precise selection of target groups under the project and its focus on marginalized communities. The Scheduled Caste (SC) population in the surveyed regions has considerable variation. Sepahijala has the highest percentage of SC at 10 percent, while South, Gumti WLS and Gomati DMUs have the lowest SC concentration at 1 percent. Most DMUs have a low percentage of Other Backward Classes (OBC) except North, Unakoti and Sepahijala regions, both having the highest OBC concentration at 11 percent, 8 percent and 9 percent, respectively. General category represents the smallest portion of households, with percentages ranging from 0 percent to 8 percent. Sepahijala has the highest representation at 8 percent, while other regions have significantly lower percentages or no General category households at all.

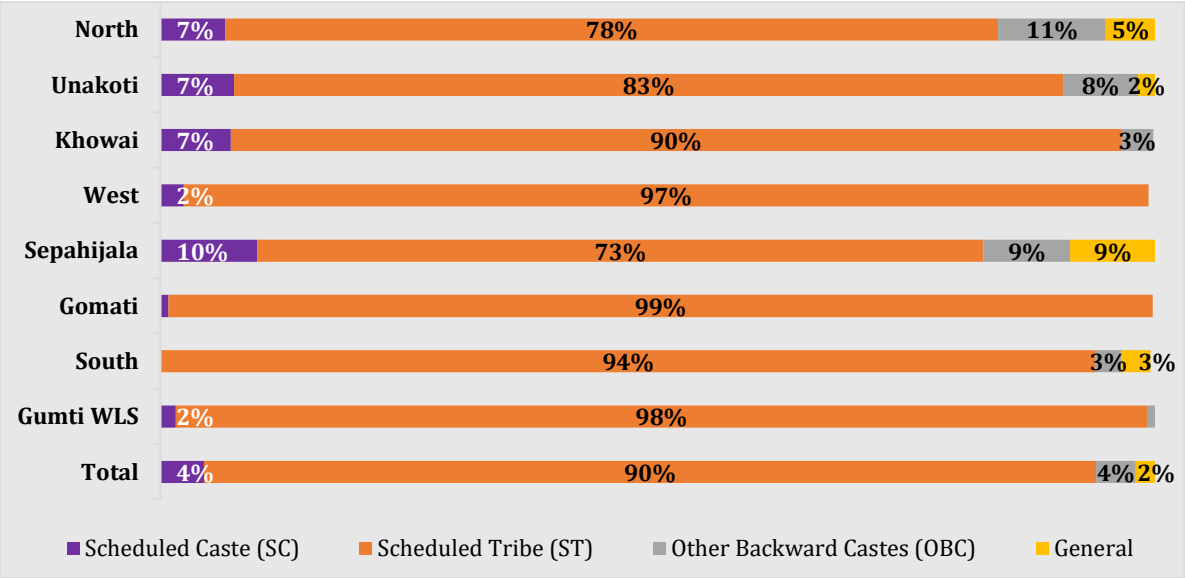


Figure 2: Caste Distribution of Households (N=6501)

Most of the SHG members are Hindus, with percentages ranging from 65 percent to 89 percent. South DMU has the highest percentage of Hindu SHG member households at 89 percent, while Gumti WLS and Unakoti have the lowest representation at 65 percent. Second most prevalent religion of SHG member households is Christianity, with percentages ranging from 9 percent to 34 percent. West has the highest percentage of Christian SHG member households at 34 percent, while South has the lowest at 9 percent. Buddhism has varying degrees of representation across

SHG member households, with an average of 6 percent across DMUs. Gumti WLS has the highest percentage of Buddhist SHG member households at 18 percent, while other regions have either no Buddhist SHG member households or very low percentages. Muslim households represent a relatively small portion of the SHG members across DMU's, with percentages ranging from 1 percent to 7 percent. Sepahijala has the highest Muslim SHG member households at 7 percent, while other regions have either very low percentages or none at all.

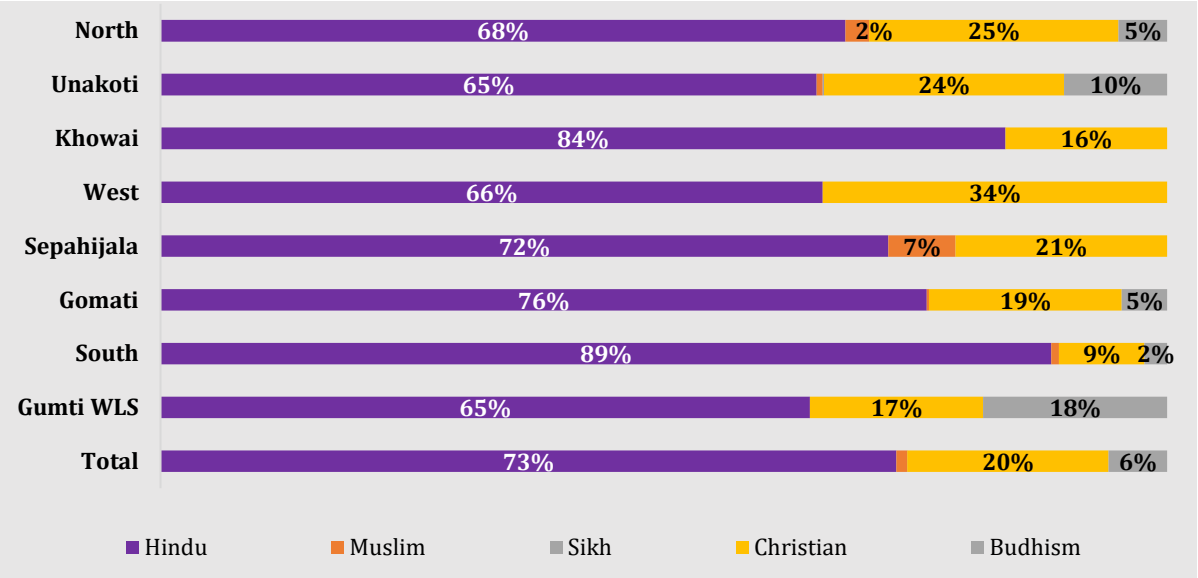


Figure 3: Distribution of Households by Religion (N=6501)

3.1.3 Type of Ration Card Used

The type of ration card used by respondents can provide valuable insights into their socio-economic status and eligibility for government welfare programs related to food security. The percentage of BPL cardholders ranges from 29 percent in Gumti WLS to 60 percent in Gomati, with an average of 40 percent across DMUs. The relatively high percentage of BPL cards indicates a considerable portion of households experiencing economic challenges and relying on government assistance for food security. The percentage of Antyodaya card holders in the DMU are from 11 percent in South DMU to 19 percent in Gumti WLS, with an average of 14 percent across DMUs. The significant presence of *Antyodaya Anna Yojana* (AAY) cards suggests a segment of households in the DMU face extreme poverty highlighting accurate targeting of project interventions. The percentage of APL cardholders ranges from 14 percent in Gomati to 32 percent in Gumti WLS, with an average of 26 percent across DMUs. The percentage of Ad Hoc BPL cardholders ranges from 9 percent in Gomati to 28 percent in Sepahijala, with an average of 21 percent across DMUs. This category highlights households that may require targeted assistance during difficult times such as during the monsoon period. Gumti WLS stands out with a notably lower percentage of BPL cardholders (29 percent), indicating potentially stable economic conditions in the region.

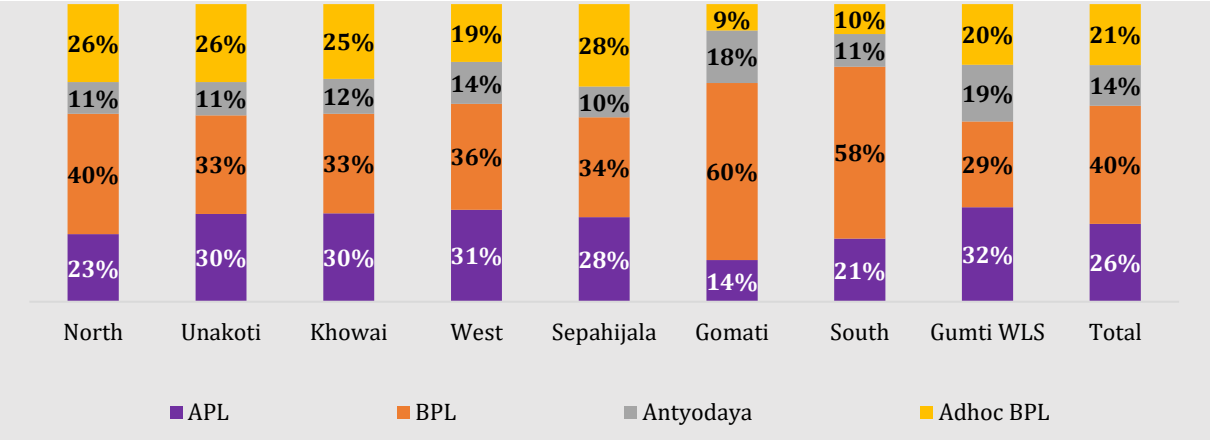


Figure 4: Type of ration cards used (N=6296)

3.1.4 Type of house of respondent households

Three broad classifications (as per census definition[7]) are used to differentiate the type of respondent households, a pucca house is one, which has walls and roof made of quality material such as bricks, stones, cement, concrete. Houses made from mud, thatch, or other low-quality materials are called kutcha houses and houses made from a combination of both the materials are classified as semi-pucca houses.

The percentage of kutcha houses varies from 46 percent in West to 84 percent in South, Gumti WLS, with an average of 67 percent across DMUs. This is significantly higher than the 2011 Indian census data, where kutcha houses constitute a 30 percent proportion. The percentage of pucca houses ranges from 2 percent in Gomati to 22 percent in North, with an average of 13 percent across DMUs. Compared to the national average, pucca houses are less prevalent in Tripura. The percentage of semi pucca houses ranges from 9 percent in South to 38 percent in West DMU, with an average of 20 percent across DMUs. The percentage of semi pucca houses in Tripura is also higher than the national average.

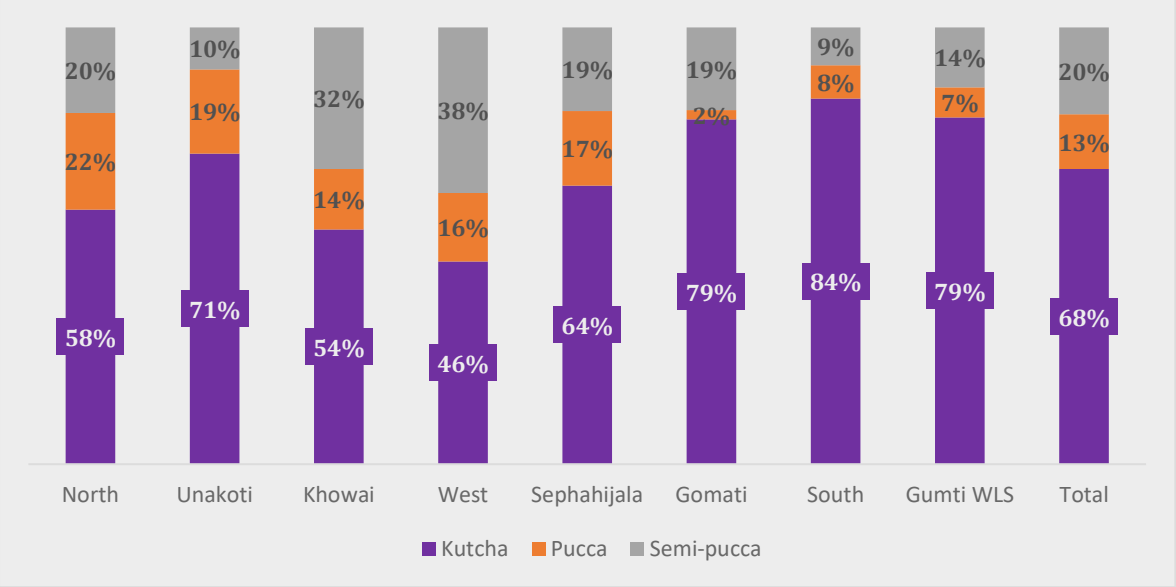


Figure 5: Types of houses found (N=6501)

[7] https://mospi.gov.in/sites/default/files/Statistical_year_book_india_chapters/HOUSING-WRITEUP_0.pdf

3.1.5 Drinking Water

The table provides insights into the primary sources of water supply in various regions of DMUs, shedding light on the availability and accessibility of water resources. Access to piped water supply within SHG member households is higher in Sepahijala (49 percent) and Gumti WLS (51 percent), indicating better infrastructure for in-house water supply. In contrast, regions like North (18 percent) and Gomati (20 percent) have a lower percentage of households with piped water supply. Wells (*kuan*) are a primary water source for most households across all regions, with an average of 29 percent. North has the highest usage of wells at 54 percent, while Sepahijala has the lowest at 8 percent. The use of public stand posts as a water source is relatively consistent across regions, with an average of 7 percent. This suggests that public stand posts play a supplementary role in providing water access, particularly in areas where in-house piped water supply is limited. Hand-pumps within households are prevalent in regions like Sepahijala (35 percent) and West (29 percent), indicating a reliance on groundwater resources. In contrast, Unakoti and Gumti WLS have negligible percentages for the same. The usage of public hand-pumps is relatively low across regions, with an average of 4 percent. Rainwater harvesting is limited, with an average of 1 percent. River or stream water is a significant source in Unakoti (23 percent) and Khowai (20 percent), indicating a reliance on surface water sources. In contrast, South DMU has 7 percent of households using this source.

The reliance on well water (kuan) is a common feature across Tripura, indicating the importance of groundwater sources for water supply. Regions like Sepahijala and Gumti WLS have better access to in-house piped water supply, suggesting improved infrastructure in these areas. The use of river or stream water varies significantly, with some regions heavily dependent on surface water sources.

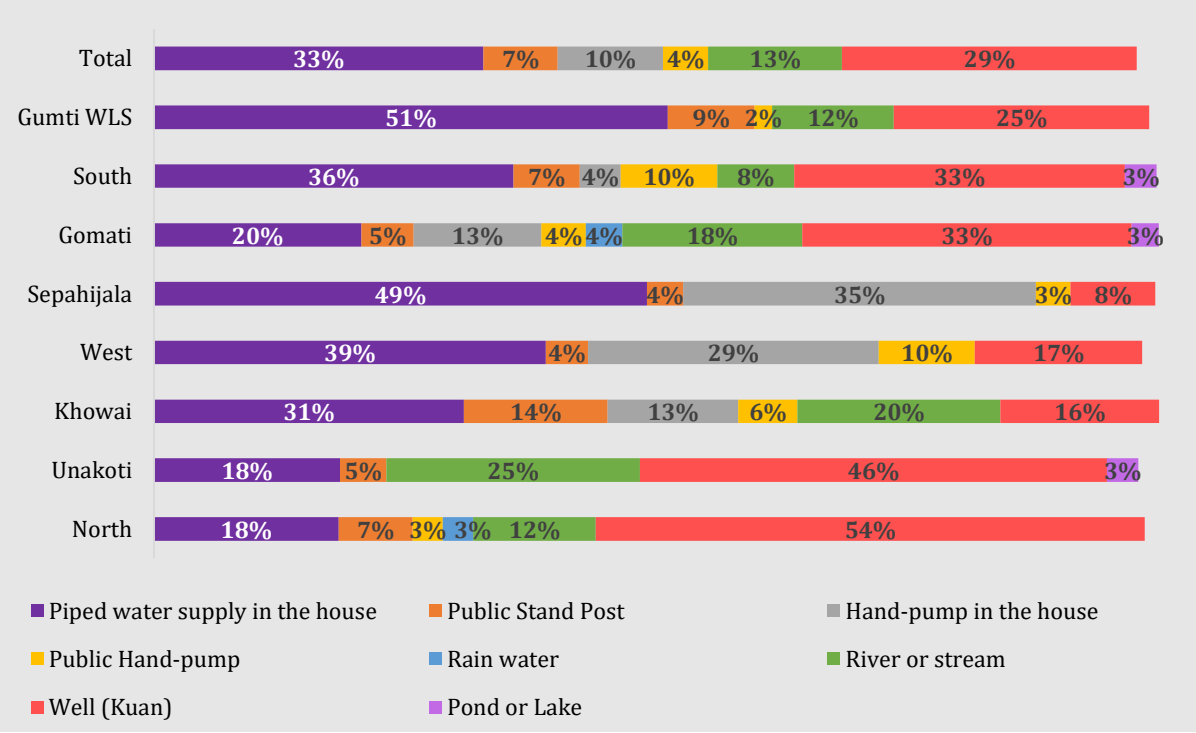


Figure 6: Major Source of Drinking Water (N=6501)

Access to drinking water within the SHG households is notably high in regions like Sepahijala (82 percent), West Tripura (67 percent), and Khowai (49 percent). 42 percent of households across DMUs, have access to drinking water from sources located within a short distance (less than 200 meters) from their houses. North has the highest percentage in this category at 55 percent. A

smaller proportion of households, on average 14 percent, access drinking water from sources situated at a slightly greater distance (between 201 to 500 meters) from their homes. Khowai and Unakoti have higher percentages in this category. Only a small percentage of households, on average 3 percent, access water sources located at distances ranging from 501 meters to 1 kilometre from their houses.

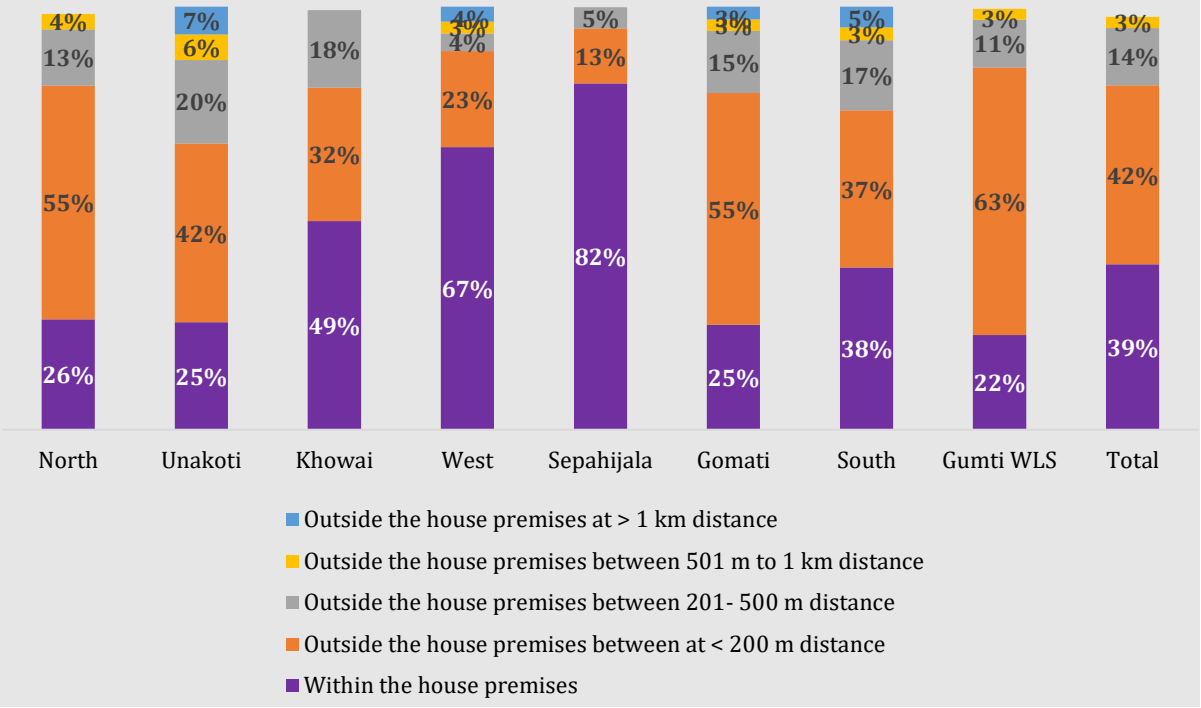


Figure 7: Distance of drinking water point from house (N=6501)

While most SHG member households in the DMUs have access to drinking water (76 percent), Sepahijala and Khowai having the highest percentage at 92 percent and 84 percent respectively, a large portion of households still lacks this access, with an average of 24 percent reporting no access to drinking water. North Tripura and Unakoti have the highest percentages of households without access at 36 percent and 35 percent, respectively.

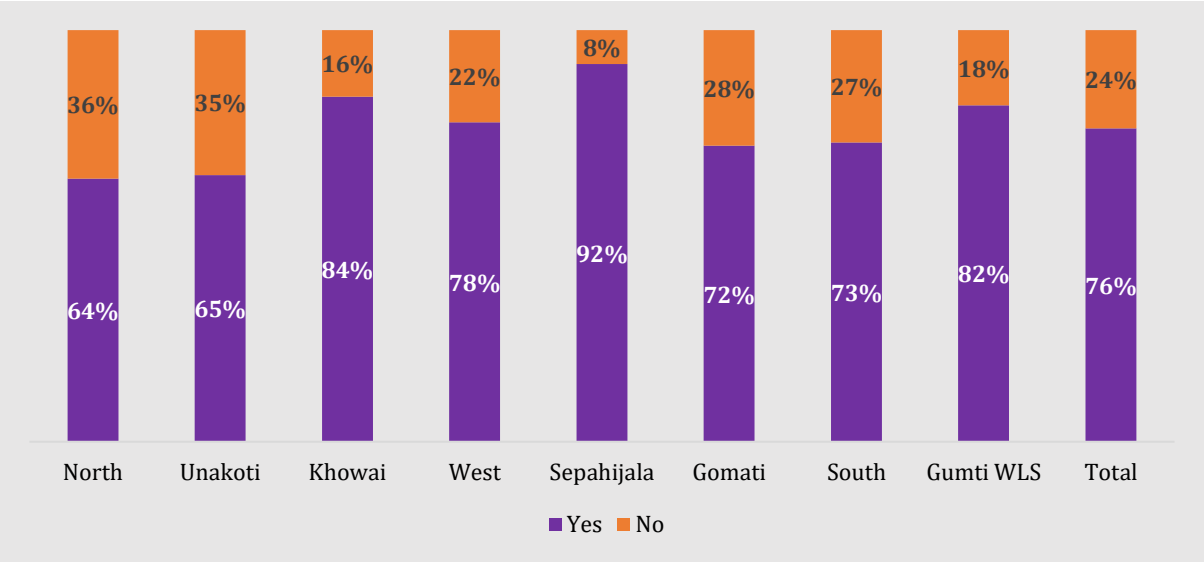


Figure 8: Households reporting water availability throughout the year (N=6501)

The graph below provides an overview of water shortage in different months across various regions across DMUs as reported by SHG household members. The data highlights fluctuations in

water scarcity throughout the year. Generally, the months of January, February, and March tend to experience higher levels of water shortage, with percentages ranging from 30 percent to 89 percent across regions. The regions of North, West, and Gumti WLS consistently experience significant water shortages, with high percentages of scarcity during these months. In contrast, the shortage decreases during the monsoon months of June, July, and August, with some regions reporting as low as 3 percent shortage in July. However, it is important to note that water scarcity remains a concern, even during the wetter months, in some regions, as indicated by the percentages in June and August. Regions like North and Gumti WLS still face water scarcity, with 32 percent and 54 percent shortages, respectively.

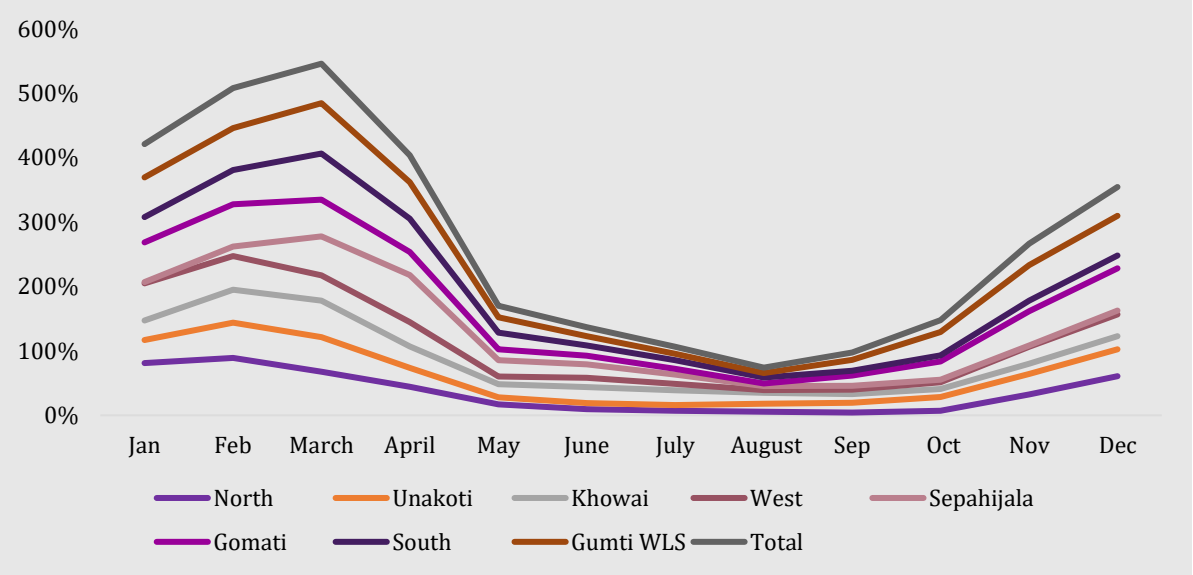


Figure 9: Households reporting months in which water shortage happens (N=1552)

3.1.6 Sanitation

The graph below provides an overall picture of toilet facilities in various regions across SHG member households in DMUs. Across the state, there is a high percentage of households with individual household latrines, averaging at 93 percent. However, it is important to note that open defecation remains a concern, even with relatively high latrine coverage, with regions like Gomati and South reporting almost 6 percent of SHG households practicing open defecation. Additionally, the prevalence of community toilets is relatively low across regions, with an average of 2 percent.

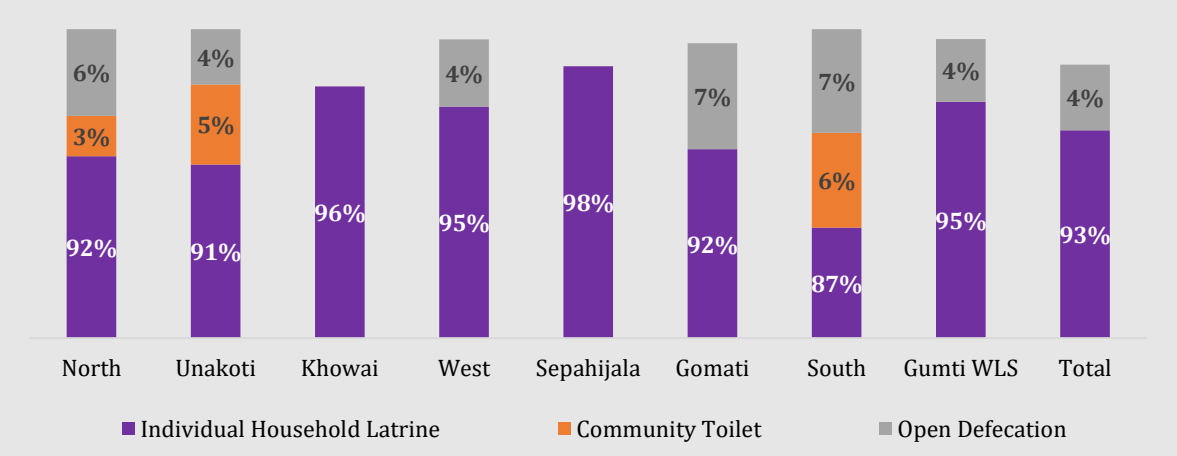


Figure 10: Sanitation Status (N=6501)

3.1.7 Access to electricity

The majority of SHG member households across DMUs have access to electricity for lighting, with an average of 93 percent. Highest being in the West with 99 percent of households having electricity, indicating robust electrical infrastructure. However, the prevalence of kerosene lamps is relatively high in some regions, such as Gumti WLS at 55 percent, which may indicate a reliance on alternative sources of lighting due to electricity accessibility challenges in remote areas. Candle usage is also notable in regions like West (36 percent), suggesting variations in lighting sources across the state. The presence of solar lanterns is limited, averaging at 3 percent.

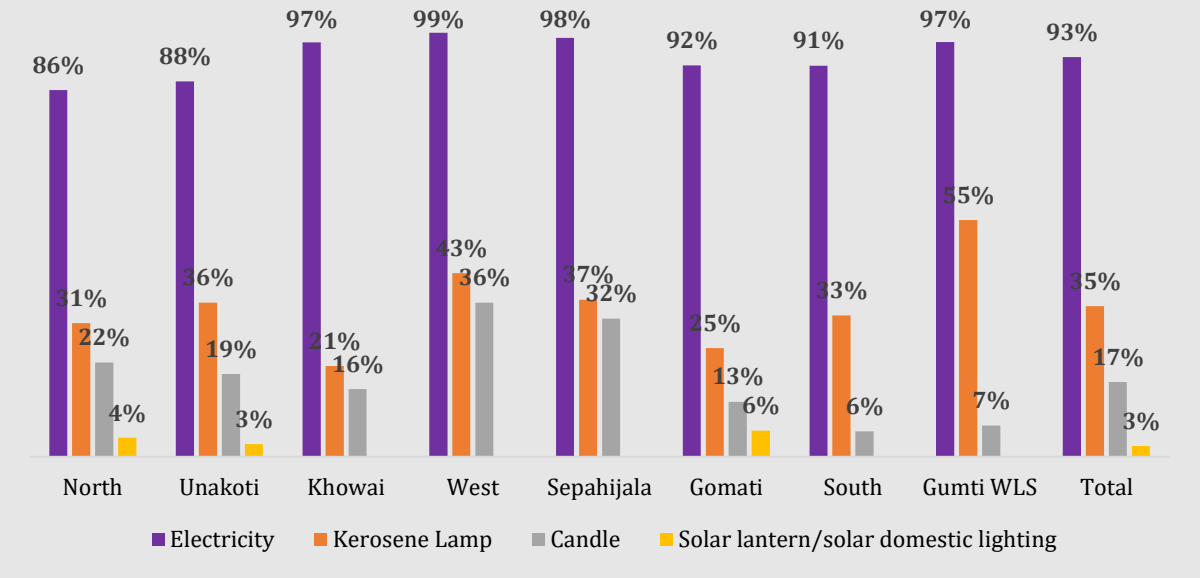


Figure 11: Access to Electricity (N=6496)

3.1.8 Source of energy for cooking

The chart below provides an overview of cooking fuel sources in various SHG member household across DMUs, highlighting the diversity in fuel choices and indicating important implications for energy access and environmental considerations. Fuelwood is the dominant cooking fuel in the area, with an average of 90 percent of households using it. Gumti WLS has the highest usage at 95 percent, suggesting a heavy reliance on biomass. LPG usage is prevalent in some regions, particularly in Gumti WLS (50 percent) and Sepahijala (64 percent), indicating better access to clean cooking alternatives in these areas. However, in some regions, like Unakoti (28 percent) and South (21 percent), LPG adoption is lower. The usage of kerosene and electricity for cooking is relatively low across the state, with an average of 4 percent across DMUs. The minimal usage of dung cakes, crop residue, and coal/charcoal signifies a gradual shift towards cleaner cooking practices.

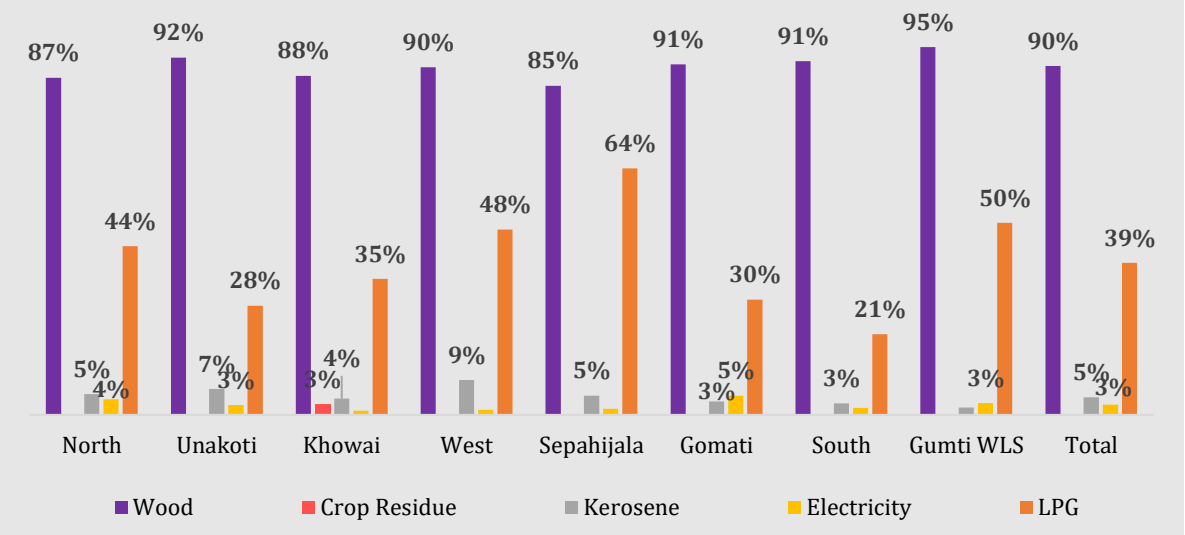


Figure 12: Primary sources of energy for cooking (N=6501)

The majority of households in the state use normal chulhas, with an average of 92 percent. However, there is a shift towards improved and smokeless chulhas in some regions, particularly in West (4 percent) and Sepahijala (5 percent). These improved chulhas are designed to reduce smoke emissions and improve cooking efficiency, addressing both health and environmental concerns. Conversely, a proportion of households, averaging at 6 percent, do not use chulhas indicating some degree of modern appliances in use in the region particularly in North region (12 percent).

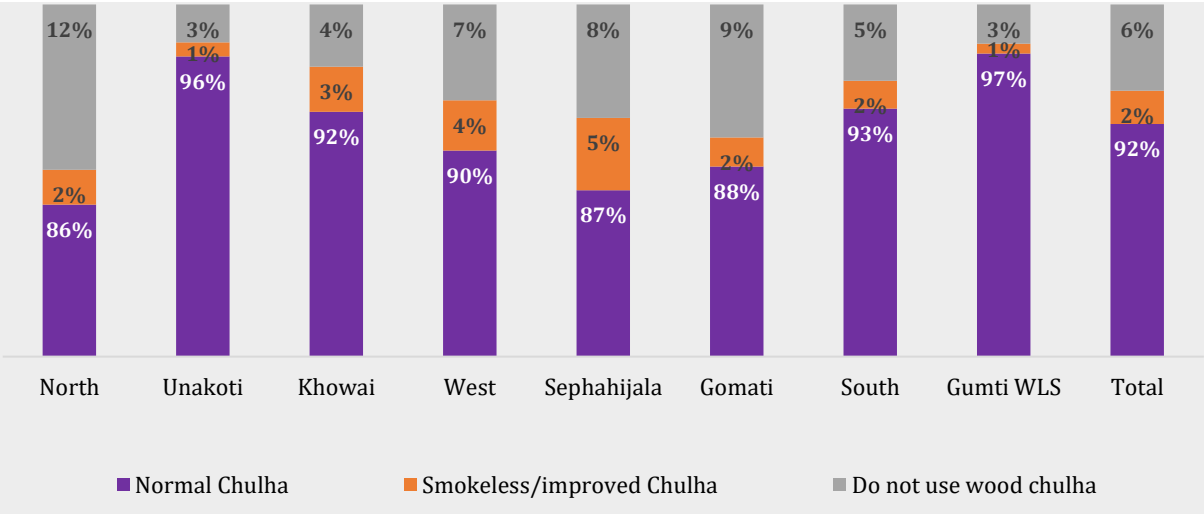


Figure 13: Types of Stoves used for Cooking (N=6501)

The mean kg of fuelwood collected by SHG member households across DMU's vary from season to season. With the highest collection during the winter and rainy season, with a mean weight of 19 kg indicating colder monsoon. In contrast, the summer season sees a lower mean weight of 15 kg, suggesting reduced reliance on firewood during warmer months. There are notable regional variations, with Unakoti and Gomati SHG households reporting the highest collection in the rainy season at 29 kg, due to its forested environment. Unakoti region also has the highest consumption of firewood in the summer season at 17 kg on average.

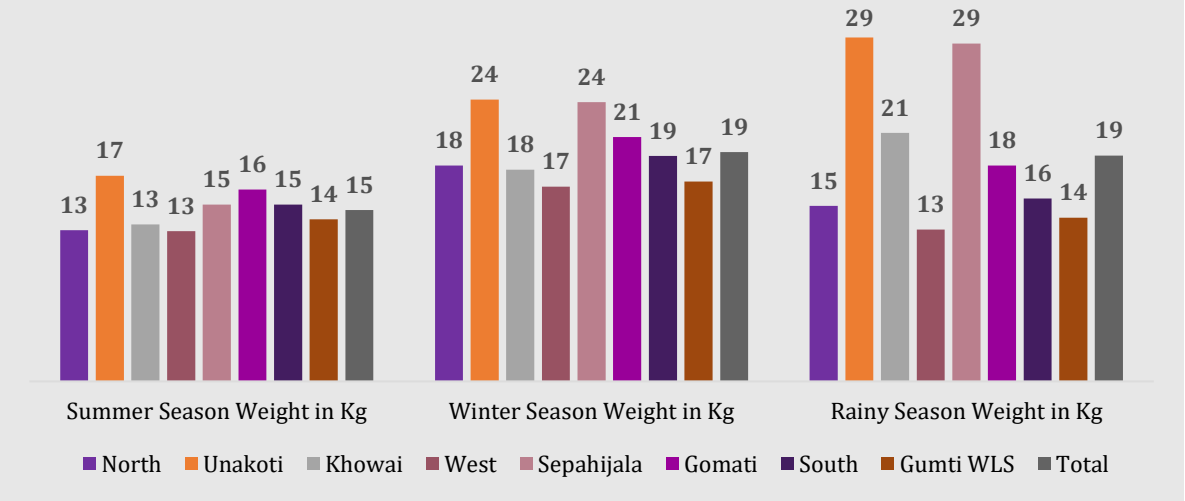


Figure 14: Daily Firewood required in different seasons (avg. value in Kg)

3.1.9 Proportion of members who feature in JFM committees

A substantial proportion of SHG member households do not have any family members as JFMC members, with an average of 68 percent. However, South stands out with 74 percent of families having JFMC members, indicating a strong presence of community engagement in forest management. In contrast, regions like Khowai, Gomati and West Tripura have a higher percentage of households without JFMC members, at 81 percent and 83 percent, respectively.

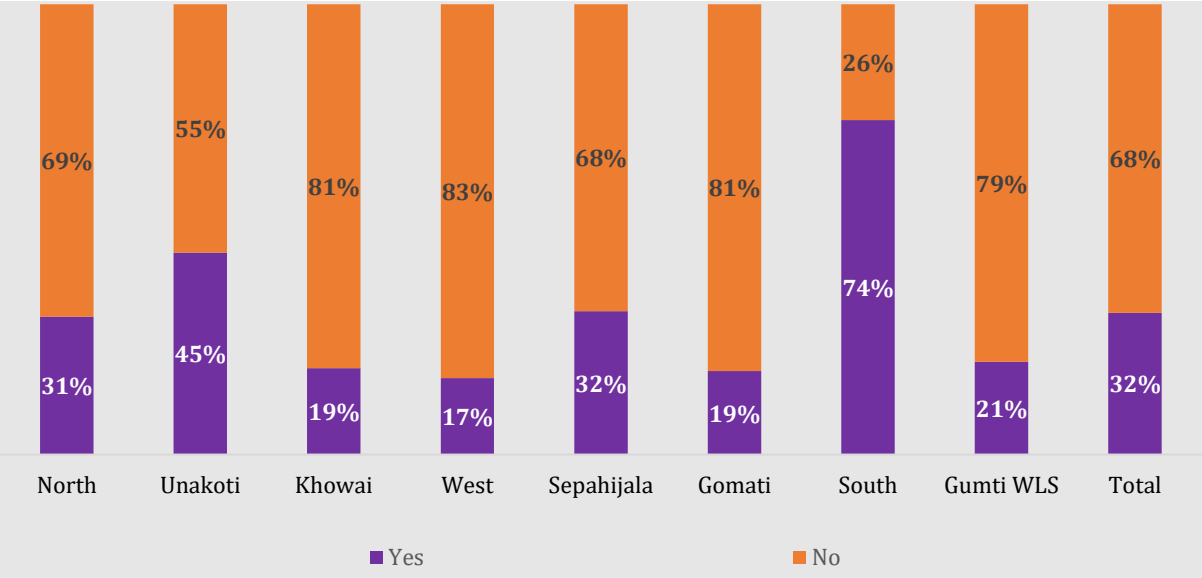


Figure 15: Proportion of family members in JFM committees (N=6501)

3.1.10 Internet Usage

The Internet is a valuable tool for information, empowering the consumers with knowledge. It is important to understand the medium people generally use for connecting to the larger world. On average, approximately 34 percent of the SHG member households have internet access, with Sepahijala reporting the highest percentage at 47 percent. However, a major portion of households, averaging 66 percent, still lacks internet access. Notably, Unakoti and Gomati have relatively low internet usage rates, at 20 percent and 22 percent respectively.

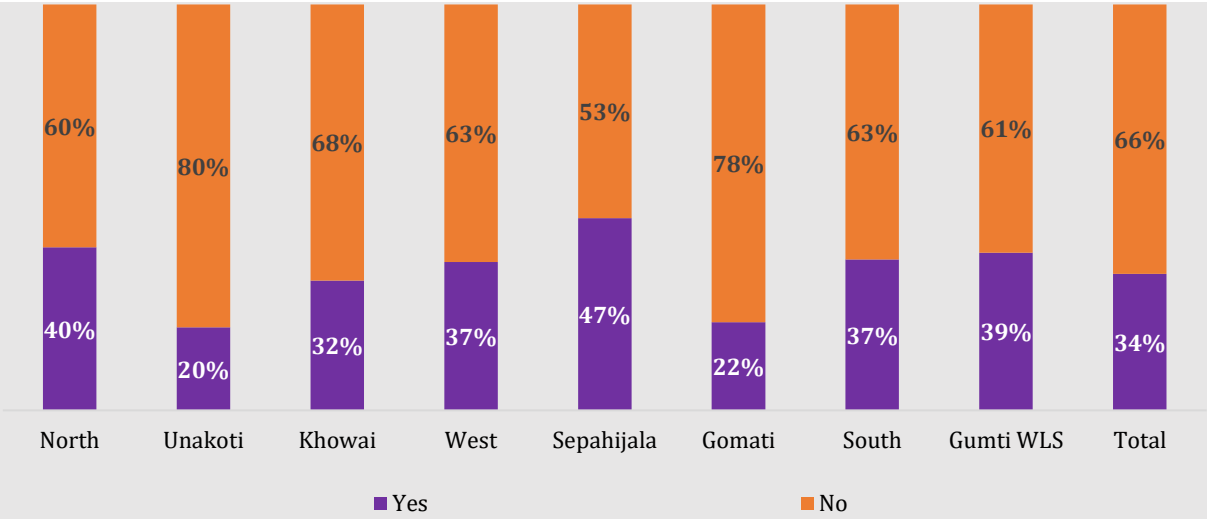


Figure 16: Proportion of households using internet (At least one member apart from respondent) (N=6501)

3.1.11 Assets

The asset ownership of households in the study areas of Tripura reveals that the majority of households possess mobile phones, with a high ownership rate of 70 percent, followed by televisions at 34 percent, and motorcycles at 17 percent. While mobile phone ownership is relatively consistent across the regions, television ownership varies significantly, with the highest rate in the West (59 percent) and the lowest in Gomati (23 percent). Motorcycles are most prevalent in West (41 percent) and Sepahijala (31 percent). It is evident that access to certain assets like cars and tractors is limited across all regions. Durable goods (like beds, chairs, fan, water filters) have an average ownership of 56 percent indicating the general inclination towards maintaining a moderate standard of life.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Bi-cycle	24%	19%	35%	23%	29%	9%	30%	10%	22%
Motorcycle	22%	13%	14%	41%	31%	9%	16%	7%	17%
Car	4%	5%	2%	3%	4%	2%	1%	2%	3%
Tractor	0%	0%	1%	1%	0%	1%	1%	0%	1%
Hand Tractor	0%	0%	0%	1%	0%	0%	0%	0%	0%
Radio	2%	3%	1%	3%	1%	2%	4%	1%	2%
Television	44%	26%	36%	59%	52%	23%	29%	21%	34%
Mobile	77%	59%	68%	77%	83%	65%	74%	66%	70%
Refrigerator Fridge	18%	8%	9%	29%	29%	6%	6%	9%	13%
Dish TV/ Cable Connection	26%	5%	12%	29%	19%	8%	6%	6%	13%
Thresher	1%	0%	0%	0%	0%	0%	0%	0%	0%
Sewing Machine	3%	1%	2%	4%	2%	1%	1%	0%	2%
Cot/Bed	57%	44%	50%	83%	67%	33%	22%	76%	54%
Chair	79%	72%	63%	85%	82%	69%	65%	82%	74%
Fan	72%	62%	64%	85%	82%	72%	65%	74%	71%
Compost Pit	1%	0%	0%	1%	0%	0%	0%	0%	0%
Khamar	1%	0%	4%	15%	2%	0%	0%	0%	3%
Poly House	0%	0%	0%	1%	0%	0%	0%	0%	0%

Water filter	31%	11%	34%	59%	41%	17%	21%	10%	26%
Chaff Cutter	0%	0%	0%	0%	0%	0%	0%	0%	0%
Rubber Pasting	2%	0%	0%	2%	0%	1%	1%	0%	1%
Water pump	5%	0%	9%	12%	21%	5%	1%	0%	6%

Table 2: Asset ownership at study area (N=6501)

3.2 Information on household members

During household survey, information on several aspects was collected for all the members of the households. These aspects were gender, age, marital status, education, occupation, migration, membership of SHG and responsibility in household chores. The survey also included household members who are not currently residing in the house but have migrated out (except for women who migrated after marriage) so as to assess the migration status of the population.

3.2.1 Gender distribution in the population of respondent households

The data presented illustrates the gender distribution of the respondents across the DMUs in Tripura. In Unakoti, Khowai, Sepahijala, and Gomati, there is a higher share of male population, with approximately 51 percent of the population being male and 49 percent female. Gumti WLS displays a higher female population, with 51 percent females and 49 percent males.

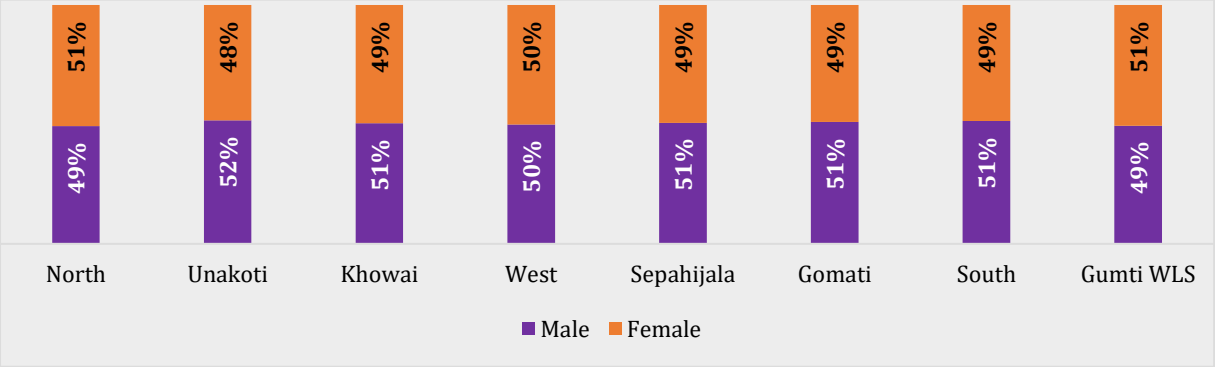


Figure 17: Gender of the household members (N=25919)

Unakoti has the highest proportion of individuals aged 0-12 years, making up 22 percent of its population, followed closely by Gomati at 22 percent. Meanwhile, West has the highest percentage of individuals aged 26-35, with 25 percent in this age bracket, potentially reflecting a more youthful demographic in this region. The data also reveals a balanced distribution of age groups 18 to 45 across the DMUs which indicates a robust and employable population group. Some key reasons why such a population can impact livelihoods development:

- A larger working-age population can contribute to higher per capita income and improved living standards
- A predominantly young and working-age population can attract businesses and investments, as there is an available workforce to support growth and development
- Working-age individuals are often more likely to start new businesses
- A young population tends to have different consumption patterns compared to older populations. They often spend a portion of their income on goods and services, which can stimulate demand for various industries

However, it is important to note that a predominantly working-age population also comes with challenges, such as the need for job creation, skills development, and ensuring that economic opportunities are accessible to all members of the workforce. Effective policies and investments in education, healthcare, and job creation are essential to harness the potential benefits of a

youthful population for livelihoods development. Additionally, as this population ages, planning for retirement and social support systems become important considerations to maintain economic stability and well-being.

Age Group	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
0-12	21%	22%	19%	19%	16%	22%	20%	20%	20%
13-17	10%	10%	10%	8%	9%	11%	10%	11%	10%
18-25	18%	14%	18%	16%	18%	17%	19%	19%	17%
26-35	21%	22%	21%	25%	21%	21%	20%	21%	21%
36-45	14%	15%	17%	15%	17%	15%	15%	16%	16%
46-55	9%	9%	10%	9%	11%	9%	9%	7%	9%
More than 55	7%	7%	6%	8%	8%	5%	5%	6%	6%

Table 3: Distribution of age groups (N=25919)

It is evident that a significant portion of the population above the age of 18 in these DMUs are married, up to 83 percent. Unmarried individuals constitute a substantial portion as well, with percentages ranging from 14 percent in Unakoti to 19 percent in the North. Meanwhile, the percentage of widows and widowers is relatively low, accounting for only 1 percent to 2 percent of the population in most DMUs which could be an indication of stable health and less incidences of health-related deaths among the respondents.

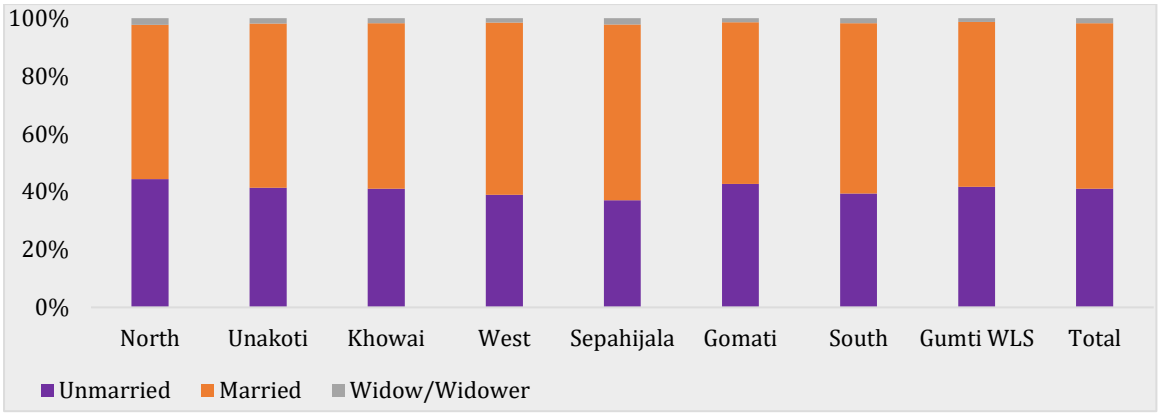


Figure 18: Marital status of respondents (N=18104)

3.2.2 Education Status

The data below represents the education status of responding individuals aged 22 years and above in different DMUs of Tripura.

- Within the DMUs, Khowai and Gomati report 12 percent and 15 percent of respondents who have not received any formal education. The highest percentage of individuals without formal education is found in Gumti WLS (16 percent).
- Primary education (classes 1 to 5) is the most prevalent level of education among the surveyed individuals, with respondents in Unakoti reporting the highest rate at 42 percent and West and Sepahijala at 27 percent each.
- On average, 21 percent of the respondents have completed their education up to the secondary and upper secondary standard (classes 9 to 10).

- Percentage of individuals who have responded to pursuing education beyond the higher secondary level is relatively low, with all regions reporting figures between 3% and 5%.

While formal education may have concluded for many in this age group, lifelong learning and skill development remain important. Assessing the availability and participation in continuing education and training programs among individuals above 22 years of age can contribute to ongoing efforts to enhance skills and adapt to changing labour market demands.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Iliterate	7%	10%	12%	4%	8%	15%	5%	16%	10%
Primary	36%	42%	28%	27%	27%	37%	39%	40%	35%
Secondary (6-8 Class)	23%	22%	21%	24%	21%	18%	19%	12%	20%
Upper Secondary (9-10 Class)	22%	18%	29%	32%	31%	20%	24%	14%	23%
Higher Secondary (11-12 Class)	6%	3%	4%	6%	8%	4%	6%	3%	5%
More than Higher Secondary	4%	3%	4%	5%	5%	3%	5%	3%	4%
Literate but no formal education	1%	0%	0%	3%	0%	2%	1%	12%	3%

Table 4: Status of education among respondents (N= 15195)

3.2.3 Occupation

Wage labour under the MGNREGA is a significant source of employment, with Gumti WLS having the highest percentage at 75 percent. The West also stands out with a substantial portion of households (39 percent) engaged in non-farm, non-MGNREGA wage labour, indicating a variety of non-agricultural job opportunities. Business and trading activities are prevalent in the West (14 percent) and Khowai (11 percent), suggesting a relatively higher entrepreneurial presence in these areas. Fishing appears to be a preferred occupation in Gumti WLS (6 percent) and private sector jobs are relatively more common in North (7 percent).

Agriculture plays a significant role in the livelihoods of residents, both through ownership and leasing. In particular, Gomati exhibits a high percentage (24 percent) of households engaged in agriculture as owners, while Unakoti (29 percent) shows a steady reliance on the traditional practice of jhum cultivation. Additionally, Sepahijala and Gomati have a substantial percentage (23 percent and 22 percent respectively) of households engaged in agricultural labour. Rubber cultivation is a prominent choice in West, with 17 percent of households involved in this occupation.

Pig rearing emerges as a dominant source of livelihood with a substantial presence in West (19 percent) and Gomati (14 percent). This is in tandem with the pig breeding policy of the state wherein they have 10 pig breeding centres across seven districts. Poultry farming is more evenly distributed across DMUs, with the West reporting the highest percentage at 5 percent. Dairy farming shows a modest presence across DMUs, with an average of 1 percent.

NTFP collection for both consumption and sale are prevalent in the North (8 percent), West (7 percent), and Gomati (7 percent), suggesting a significant reliance on gathering and selling forest products for household income and sustenance. In contrast, NTFP collection for wages paid by others is negligible except for Gomati where 3 percent of households reported it as one of their occupations.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Agri (own)	20%	12%	11%	14%	20%	24%	22%	4%	15%
Agri (lease)	1%	2%	2%	2%	4%	1%	7%	1%	2%
Jhum	23%	29%	14%	2%	0%	28%	5%	16%	16%
Agri Labour	8%	9%	16%	12%	23%	22%	21%	18%	16%
Horti (Rubber)	9%	3%	8%	17%	5%	9%	13%	0%	7%
Horti (other)	2%	1%	0%	1%	0%	0%	0%	0%	1%
Handicrafts	0%	0%	2%	3%	0%	0%	0%	0%	1%
Dairy	1%	1%	0%	2%	2%	2%	1%	0%	1%
Poultry	4%	1%	1%	5%	1%	2%	1%	0%	2%
Piggery	11%	12%	11%	19%	13%	14%	13%	7%	12%
Other Livestock	4%	1%	2%	1%	2%	4%	1%	1%	2%
Wage labour (MGNREGA)	30%	22%	52%	52%	31%	36%	30%	75%	43%
Wage Labour (non-farm, non MNREGA)	20%	12%	16%	39%	15%	14%	22%	35%	22%
NTFP (for others, wages paid)	1%	0%	0%	1%	1%	3%	1%	0%	1%
NTFP (for consumption and sale)	8%	1%	1%	7%	0%	7%	5%	1%	4%
Business	8%	3%	11%	14%	9%	4%	2%	4%	7%
Fishing	6%	2%	0%	2%	1%	3%	1%	6%	3%
Private Job	7%	6%	3%	8%	5%	1%	2%	2%	4%
Government Job	6%	2%	1%	4%	3%	1%	4%	2%	3%
Others	6%	8%	8%	2%	3%	2%	6%	1%	4%

Table 5: Percentage of the HHs reporting being engaged in various livelihood activities

3.2.4 Status of Earning Member

In the DMU region of Tripura, the distribution of male and female earners varies across units. Gumti WLS has the highest percentage of both male and female earners at 61 and 63 percent respectively. On average, while male earners constitute 53% of the respondent households, female earners make up 48% of the total workforce.

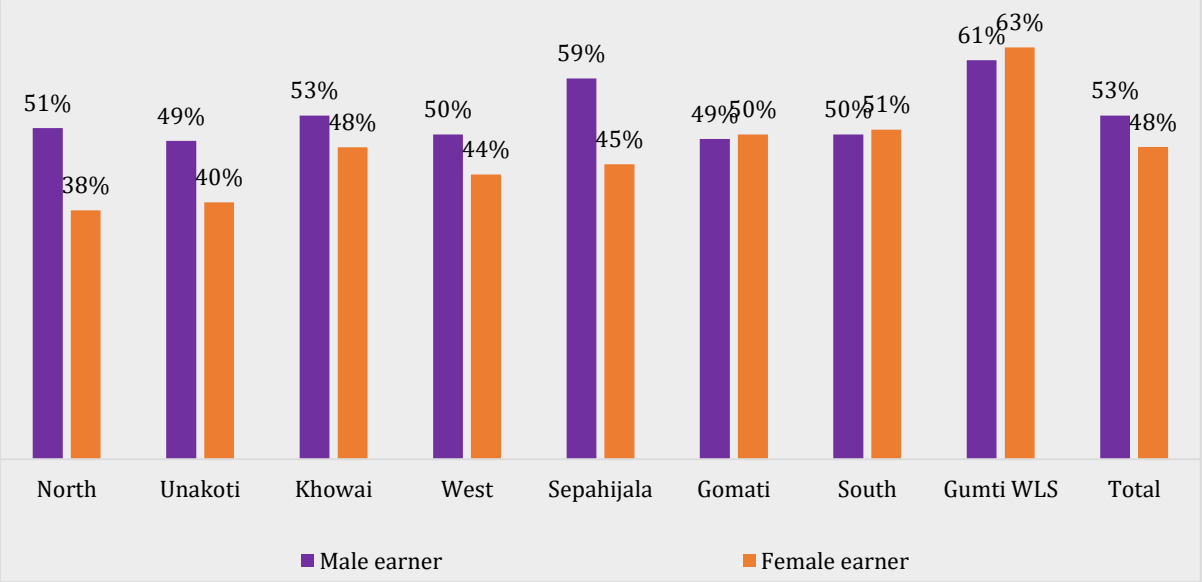


Figure 19: Gender distribution in the workforce of the respondent HHs (N=12833)

The distribution of earners varies across different age groups. Among the DMUs, Gumti WLS constitutes the highest proportion of earning members aged 26-35 years (94 percent). Data indicates the possibility of underage children at labour in Sepahijala wherein 8 percent of the responses are for the 0-12 years bracket. The age group of 36-45 years comprises the highest percentage of earners, accounting for 82 percent. Meanwhile, the age group of 13-17 years makes up a small portion. This data depicts that individuals in their late twenties to mid-forties play a key role in the workforce. The age group with 55 years and above represents a range of earners (49-82 percent) across the DMUs. This highlights the contribution of elderly individuals to the workforce. This could be due to limited retirement options and the need for additional income in later years.

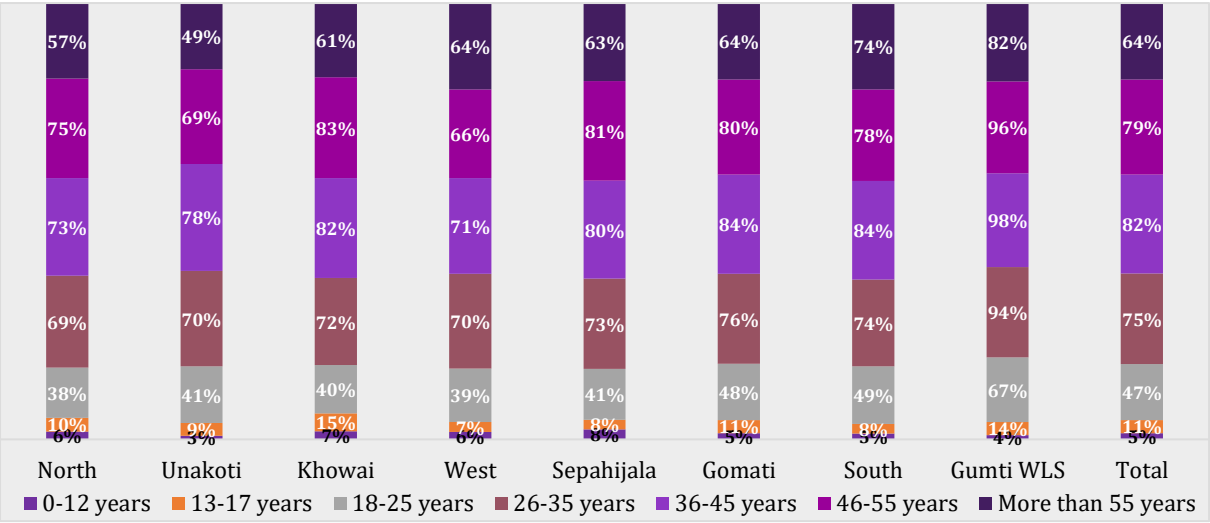
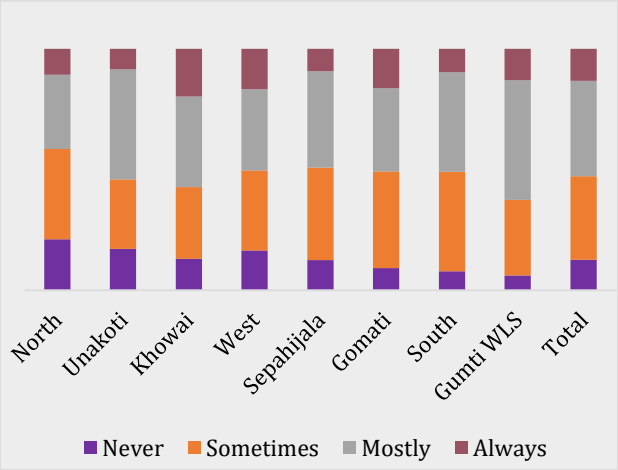


Figure 20: Age distribution of the earning members

3.2.5 Fuelwood collection

Fuelwood collection emerges as a chore with dominant participation from the female respondents of the HH. 18 percent of the average responses from women aligned towards quick readiness to leave for collection. On the contrary, an average 13 percent of the males reported never venturing to collect fuelwood. Collecting wood, bundling it and efficiently carrying it, is regularly practiced by the women of the community. Limited options for women's formal

employment and their household responsibilities make the task of fuelwood collection appear as a natural extension of their unpaid labour.



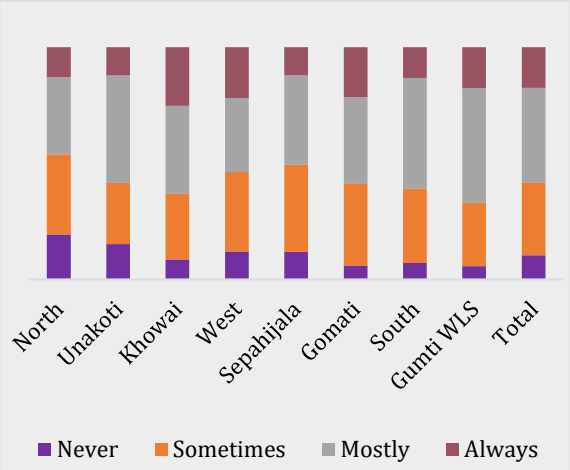


Figure 21: Male respondents reporting participating in fuelwood collection (N=13086) *Figure 22: Female respondent participation (N=12833)*

Migration

The data highlights the clear patterns of migration across the region. Sepahijala constitutes 44 percent of individuals who migrate for less than a month, whereas Gumti WLS reports a significant proportion of respondents (92 percent) who migrate for more than 6 months annually, indicating a more prolonged and potentially seasonal migration trend in here.

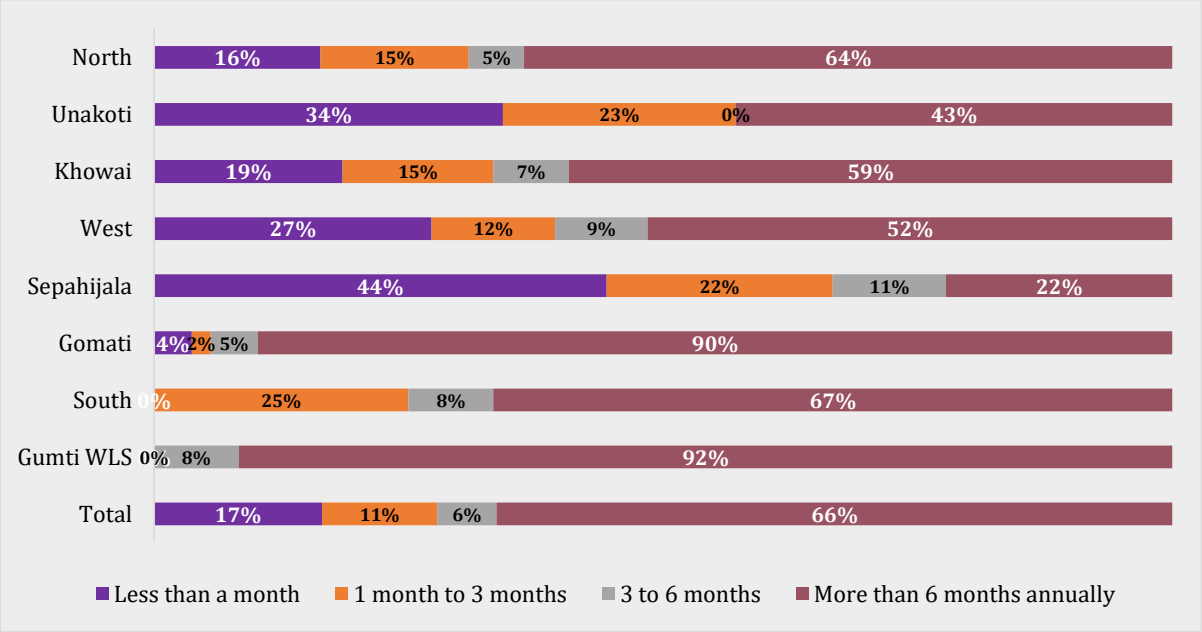


Figure 23: Duration of migration (N=309)

Gomati fares as the intra-district migratory hub, with 89 percent of respondents choosing to migrate within the district itself. The Southern district exhibits a dominant portion of the (80 percent) respondents opting for migration outside their district but within the state of Tripura, possibly reflecting the presence of economic opportunities in nearby areas. Furthermore, the data reveals that Gumti WLS reports all of the respondents migrating outside the state. This could be for jobs in the private sector followed by the members who accompany people seeking jobs.

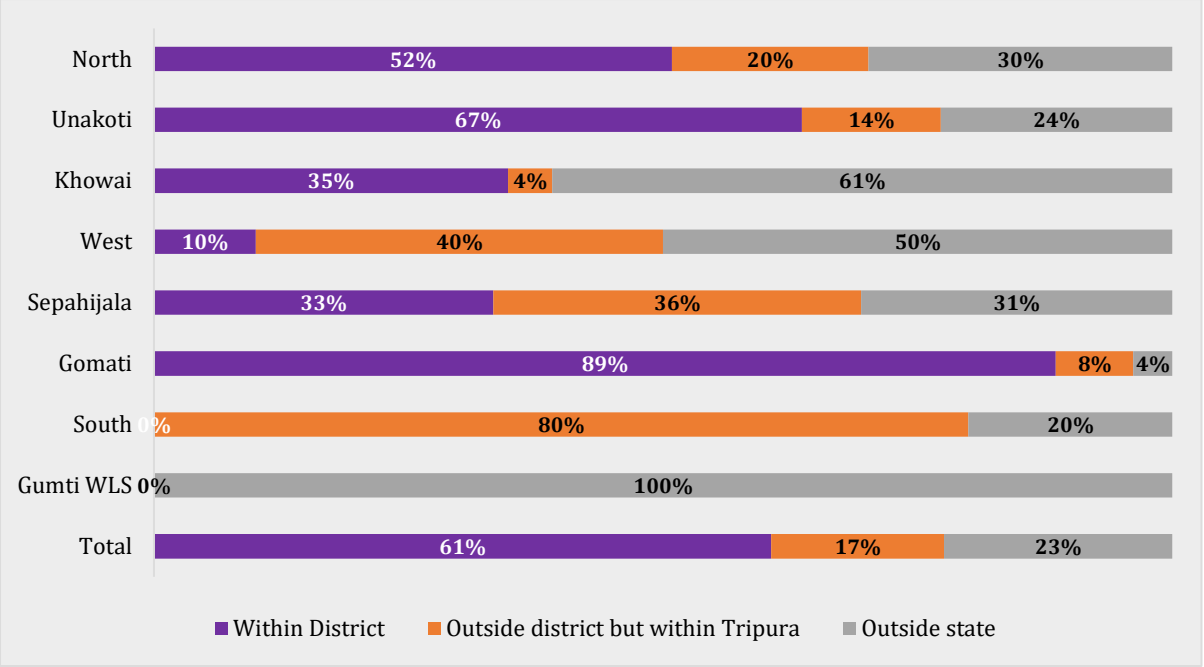


Figure 24: Places of migration (N=309)

4 Household level Land Profile

4.1 Land Holding in project area

The data provides an overview of land ownership status among respondents in various DMUs of Tripura where the study was conducted. A portion of respondents report owning land (excluding patta and encroached land), with percentages ranging from 25 percent in Gumti WLS to 60 percent in Khowai and North. Land ownership recognized under Scheduled Tribes & Other Traditional Forest Dwellers Act, 2006 (RoFR land) or patta land ownership is commonly found, with Gomati showing the highest percentage at 49 percent. An average of 24 percent of the respondent HHs shared having encroached landholding. When considering all three categories of land ownership (owned, RoFR/patta, and encroached), 76 percent of the DMU HHs have a minimum of one form of land ownership with North reporting the highest of response (87 percent). Data also shows possibilities of landlessness among households that have not shared any land share data (approximately 20 percent).

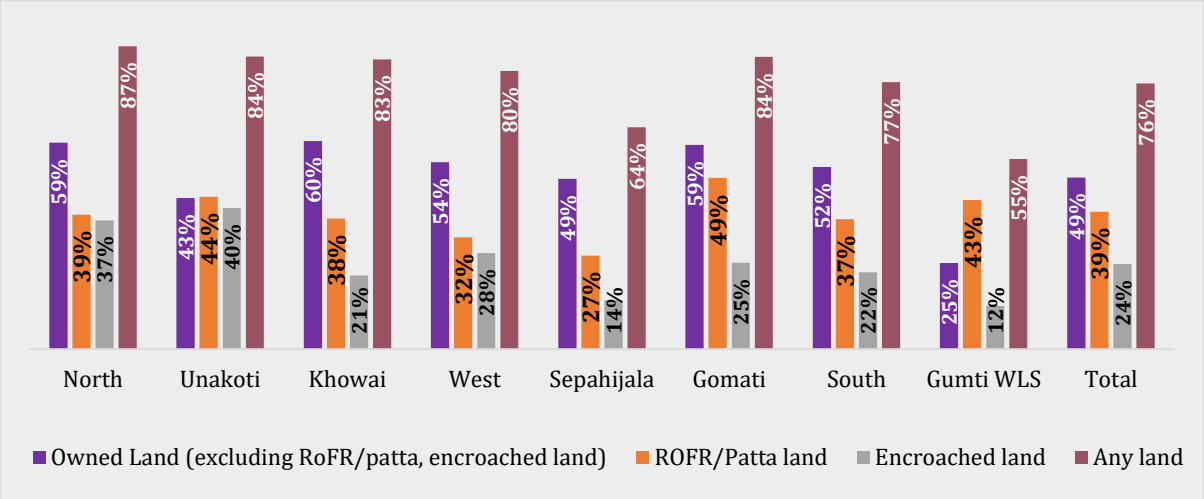


Figure 25: Percentage of HHs reporting types of landholdings

Overall landholding scenario among the DMU households depict:

- On average, respondents in these DMUs have landholdings ranging from 0.4 to 1.6 ha land.
- Respondents who own RoFR/Patta land have landholdings ranging from 0.9 ha in West 1.6 ha in Gumti WLS.
- For encroached land, the average landholding ranges from 0.5 ha in Khowai and West to 1 ha in Unakoti and Gumti WLS.

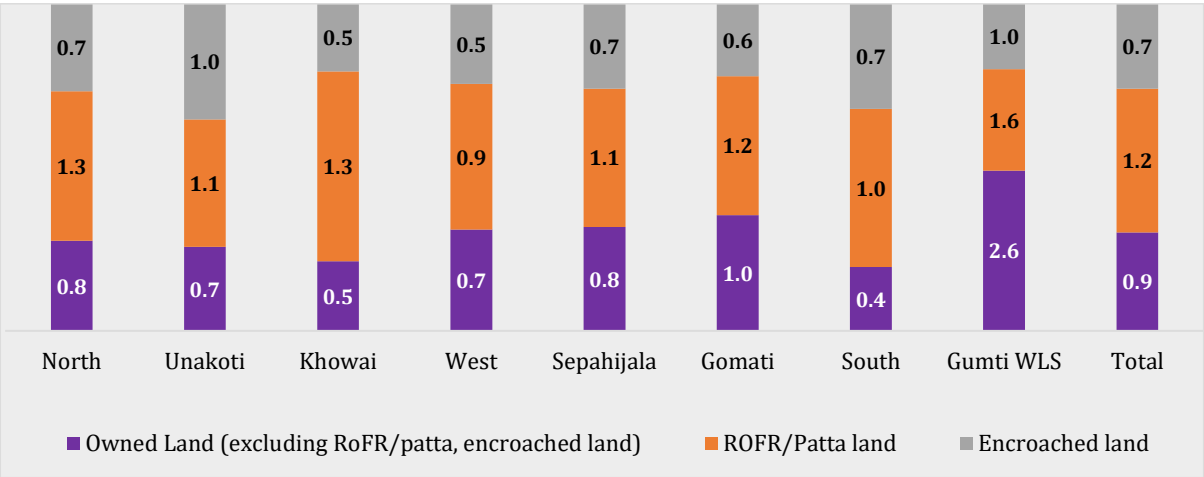


Figure 26: Avg. landholding reported by DMU HHs (in ha)

A significant proportion of households in the DMUs do not possess land titles (patta), with percentages of response ranging from 46 percent in Gumti WLS to 71 percent in the West. Conversely, some exhibit a higher incidence of households with Patta, such as Unakoti and Gumti WLS (33 percent) indicating lesser disparity in title distribution. A notable proportion of respondents across DMUs report not having homestead land at all, with the Sepahijala recording the highest percentage at 22 percent.

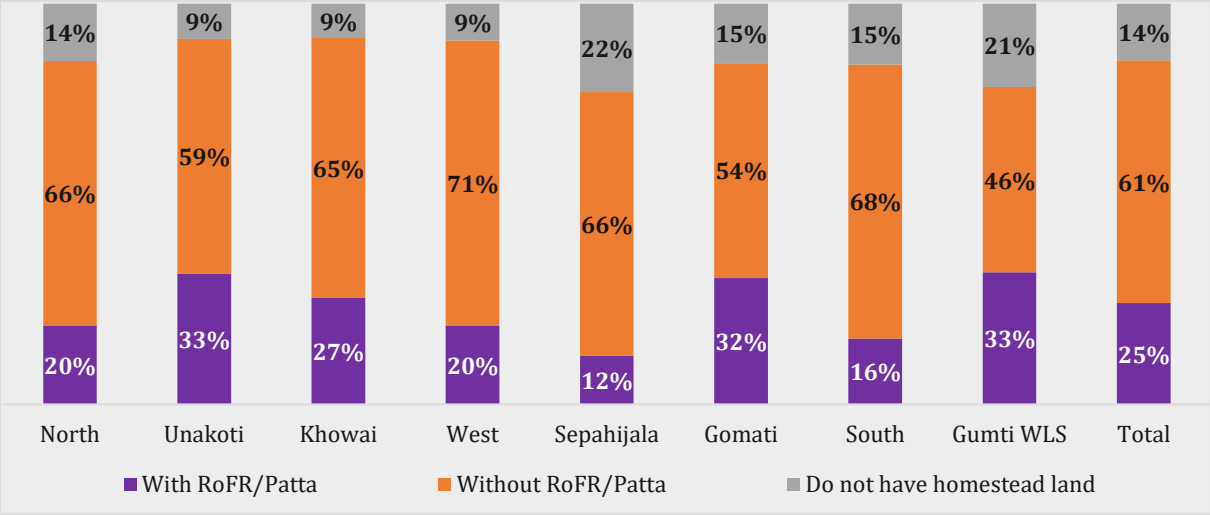


Figure 27: HHs reporting status of homestead land (N=6823)

Households in the DMUs share the multiple ways of utilising the homestead land:

- Vegetable cultivation is a common practice among households, with notable prevalence in West (66 percent) and Khowai (61 percent)
- Backyard poultry is frequently reported by households in Sepahijala (19 percent) and North (17 percent)
- Piggery activities are majorly reported by South (37 percent) and Gomati (34 percent)
- Responding households in Sepahijala (14 percent) also mentioned the utilization of their homestead land for duckery

- Some households in these DMUs do not use their homestead land for any specific purpose, with a minimum of 3 percent of households indicating so.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Backyard Poultry	17%	2%	6%	13%	19%	3%	2%	3%	7%
Vegetable cultivation	41%	44%	61%	66%	32%	59%	48%	82%	56%
Other Plantation	11%	6%	4%	20%	2%	6%	6%	4%	7%
Piggery	22%	26%	30%	27%	24%	34%	37%	12%	26%
Duckery	5%	8%	3%	2%	14%	2%	10%	1%	5%
Cattle shed	6%	6%	5%	6%	7%	5%	4%	1%	5%
Any other use	15%	17%	7%	3%	13%	6%	10%	3%	9%
None	3%	8%	2%	0%	4%	1%	1%	2%	3%

Table 6: Percentage of HHs reporting various uses of homestead land (N=5580)

Grazing is a common activity to be undertaken on patta land as reported by 28 percent of the HHs in West. Respondents across the DMUs also engage in farming on patta land, with the Sepahijala recording the highest percentage at 31 percent. Agro-forestry is also practiced in various DMUs, as shared by 42 percent HHs in North. Plantation activities are largely practices in South and the West.

Traditional shifting cultivation, or jhum cultivation is particularly prevalent in Unakoti and Gomati. Approximately 48 percent of the respondents in the project group rely on patta land for jhum cultivation, indicating a larger dependence on this traditional practice. In contrast, 35 percent of households in the comparison group reported using patta land for jhum cultivation.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Grazing	8%	5%	27%	28%	16%	14%	17%	20%	17%
Jhum cultivation	39%	65%	53%	6%	5%	67%	27%	59%	48%
Farming	16%	13%	6%	15%	31%	7%	19%	9%	12%
Agro-Forestry	42%	17%	16%	35%	20%	8%	8%	17%	19%
Plantation	14%	10%	7%	25%	33%	10%	40%	3%	14%

Table 7: Percentage of HHs reporting various uses of RoFR/Patta land (N=2522)

The following findings were observed regarding plantation on encroached land:

- 18 percent of the respondents reported engaging in agricultural crop cultivation to varying extents. Gumti WLS had the highest percentage at 53 percent.
- Among respondents in West, 47 percent reported that rubber cultivation is a prominent practice on encroached land.
- In North, 55 percent of respondents reported cultivating areca nuts on encroached land.
- South exhibited a practice of planting vegetables on encroached land, with 37 percent of respondents engaging in this activity.
- A portion of respondents in these DMUs stated not planting any of the mentioned vegetables or crops on encroached land. The percentages for this group ranged from 26 percent in West to 50 percent in Gomati.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Agriculture Crops	21%	11%	6%	7%	25%	24%	19%	53%	18%
Rubber	14%	13%	24%	47%	25%	18%	38%	3%	21%
Vegetables	7%	7%	37%	9%	1%	15%	22%	11%	14%
Areca Nut	55%	38%	5%	14%	0%	2%	5%	2%	22%
Other horticulture	8%	4%	2%	3%	1%	3%	6%	2%	4%
Other	4%	1%	1%	7%	14%	0%	1%	1%	3%
None	20%	35%	32%	26%	35%	50%	27%	28%	32%

Table 8: What is being cultivated/planted on encroached land (N=1644)

5 Income Generating Activities

Income-generating activities encompass a diverse array of activities aimed at creating financial opportunities and sustaining livelihoods. Income-generating initiatives are essential drivers of economic development, offering individuals and communities the means to achieve financial stability, reduce poverty, and foster sustainable growth in both rural and urban settings.

The section comprises of key income-generating activities across the DMUs in Tripura, including Agriculture, Horticulture, Non-Timber Forest Products (NTFP), Livestock, and Fisheries. These IGAs are vital for economic development as they create jobs, improve income levels, enhance food security, and contribute to the overall well-being of its people. Moreover, they can promote sustainable practices, mitigate rural-urban migration, and reduce pressure on the state's forests through diversified income sources.

5.1 Occupation and Income Generating Activities

5.1.1 Proportion Of Households in Different Occupations

The table provides a detailed overview of the various occupations in which SHG households (HH) in different DMUs are involved in. Wage labour through the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is the most common occupation in Gumti WLS SHG households (75 percent). This occupation is also prevalent in other DMUs like the West (50 percent) and Khowai (52 percent). High dependence on MGNREGA highlights lack of livelihood options and limited land ownership among the respondent households. The second most prevalent occupation is agriculture, including own cultivation, with an average of 15 percent across DMU. Gomati has the highest SHG household participation at 24 percent. Taking land on lease and undertaking agriculture on that is negligible except in South (7 percent) and Sepahijala (5 percent).

Jhum cultivation is most prominent in Unakoti (32 percent), Gomati (30 percent) and North (23 percent) DMUs, where households practice this traditional farming method. Animal husbandry, particularly piggery, is substantial in several regions, averaging at 12 percent. The highest participation in piggery is observed in West DMU, with 21 percent of households involved in this occupation. Collection of NTFP for both consumption and sale are most common in Gomati, where 7 percent of households are involved in this activity. Other regions such as North and West also have substantial NTFP collection. Lower proportion of households are involved in business, fishing, trading, and private/government jobs.

Occupation	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Agriculture own	20%	11%	11%	15%	22%	24%	22%	4%	15%
Agriculture lease	1%	1%	2%	2%	5%	2%	6%	1%	2%
Jhum (shifting) Cultivation	23%	32%	14%	3%	0%	30%	6%	16%	17%
Agriculture Labor	8%	10%	17%	13%	25%	22%	20%	19%	17%
Horticulture – Rubber Plantation	9%	3%	8%	18%	6%	9%	13%	0%	8%
Horticulture – Other	2%	1%	0%	1%	0%	0%	0%	0%	1%
Handicrafts	0%	0%	2%	4%	0%	0%	0%	0%	1%
Dairy	1%	1%	0%	2%	2%	2%	1%	0%	1%
Poultry	4%	1%	1%	6%	1%	1%	1%	0%	2%
Piggery	11%	13%	11%	21%	14%	14%	13%	7%	12%
Other Livestock Rearing	4%	1%	2%	1%	2%	3%	1%	1%	2%
Wage labour (MGNREGA)	30%	23%	52%	50%	27%	36%	30%	75%	43%
Wage Labor (non-farm, non MNREGA)	20%	10%	16%	37%	14%	15%	22%	35%	21%
NTFP collection (for others, wages paid)	1%	0%	0%	2%	1%	3%	1%	0%	1%
NTFP (for consumption and sale)	8%	1%	1%	8%	0%	8%	5%	1%	4%
Business	8%	3%	12%	14%	10%	4%	2%	4%	7%
Fishing	6%	2%	0%	2%	2%	3%	1%	6%	3%
Trading	0%	1%	0%	1%	1%	0%	1%	0%	0%
Private Job	7%	6%	3%	8%	6%	1%	2%	2%	4%
Government Job	6%	2%	1%	4%	3%	1%	3%	2%	3%
Others	6%	7%	8%	1%	3%	2%	6%	1%	4%

Table 9: Occupation of the Households (N=6492)

5.1.2 Annual household income

SHG member households in Gumti WLS has the highest proportion of households earning between INR 24,001 to INR 60,000, at 68 percent. This indicates that a significant proportion of households in Gumti WLS fall into the low-income category. Additionally, Gomati and Sepahijala households also have substantial percentages in this income range, suggesting low income and poverty levels in these regions. Unakoti and Sepahijala have the highest percentages (28 percent and 24 percent, respectively) of households earning up to INR 24,000 annually. These regions have a notable concentration of lowest-income households. The highest income category, which is more than INR 240,000, has the lowest concentration in all regions, with a maximum of 4 percent in Khowai. Only 17 percent of the total SHG member households across DMU's have annual income above Rs. 1,20,000, and is negligible in the Unakoti, Gomata and Gumti WLS DMU's.

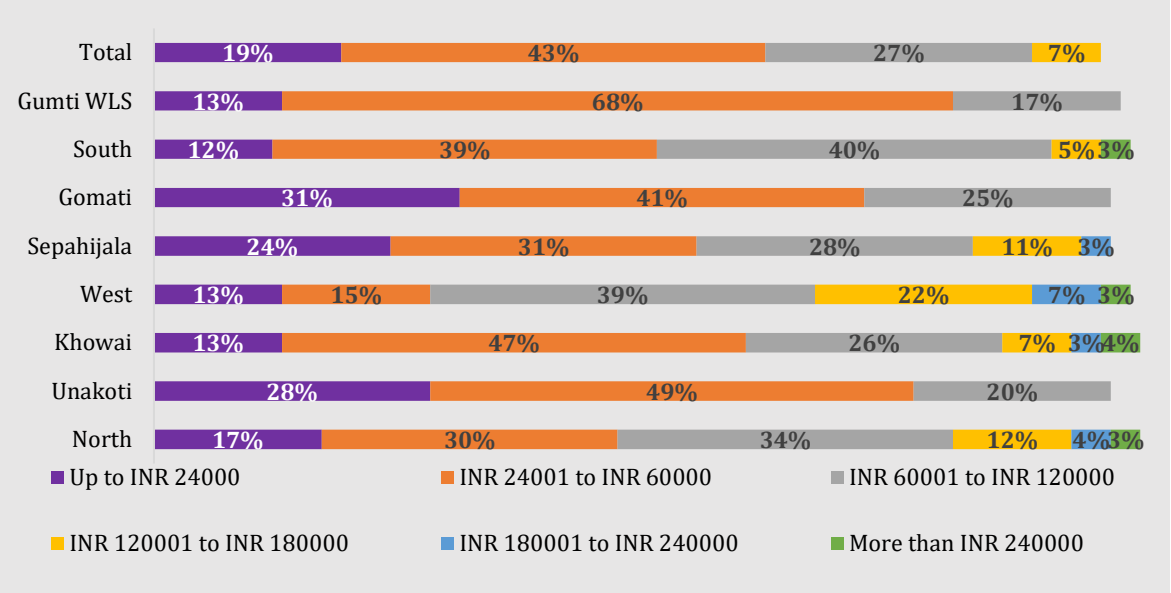


Figure 28: Annual Household income of the respondents (N=6823)

5.1.3 Average Income from Different IGAs

The DMUs exhibit a diverse range of income-generating activities.

- The highest participation is in activities like piggery (35 percent across DMUs), rubber plantation (20 percent), business activities (8 percent), fisheries (8 percent) and NTFP selling (8 percent).
- There are notable regional variations in IGA participation. For instance, rubber plantation is most prominent in South (31 percent) and West (26 percent) SHG member households, suggesting a concentration of rubber cultivation in these areas. On the other hand, pig rearing is prevalent across most regions, with the highest percentage in South (42 percent) and Gomati (40 percent).
- Some SHG member households in the Gomati DMU, show relatively high participation in NTFP sale (26 percent).
- Non-traditional activities like mushroom cultivation, floriculture, and medicinal plants have no participation across all regions.
- Households in West have a high percentage (28 percent) of households involved in business activities.

The table also highlights that a significant portion of households in various regions is not involved in any activity (ranging from 17 percent to 48 percent). This signifies limited economic opportunities, unemployment, or a high dependence on other income earners in these households.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Dairy	4%	4%	2%	3%	6%	6%	4%	2%	4%
Poultry	9%	2%	6%	13%	3%	2%	5%	1%	6%
Other Livestock	14%	6%	7%	3%	4%	10%	6%	5%	7%
Fisheries	20%	17%	3%	4%	3%	5%	2%	4%	8%
NTFP Selling	5%	4%	6%	6%	1%	26%	5%	3%	8%
Traditional crops	0%	8%	4%	7%	4%	3%	3%	3%	4%
Piggery	27%	30%	32%	39%	37%	40%	42%	36%	35%
Rubber Plantation	17%	11%	23%	30%	26%	20%	31%	1%	20%

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Other - Horticulture/ Agroforestry	10%	3%	0%	1%	0%	1%	1%	0%	3%
Business	5%	2%	13%	28%	5%	3%	3%	0%	8%
Not involved in any activity	19%	27%	19%	23%	23%	18%	18%	48%	23%

Table 10: DMU wise Income Generating Activities (N=3676)

5.2 Agriculture

The figure below highlights the yearly cropping pattern across DMUs. The majority of the SHG households in the DMUs predominantly follow a once-a-year cropping pattern, with notably high percentages, ranging from 73 percent to 92 percent. Some variations with South and Gomati are noted, reporting lower percentages of once-a-year cropping (78 percent and 73 percent, respectively). The data also indicates that a smaller proportion of DMUs engage in twice-a-year cropping, with percentages ranging from 6 percent to 27 percent, suggesting that certain regions have the capacity or climate conditions to support multiple cropping seasons annually. No DMUs reported thrice-a-year cropping except for Khowai (2 percent).

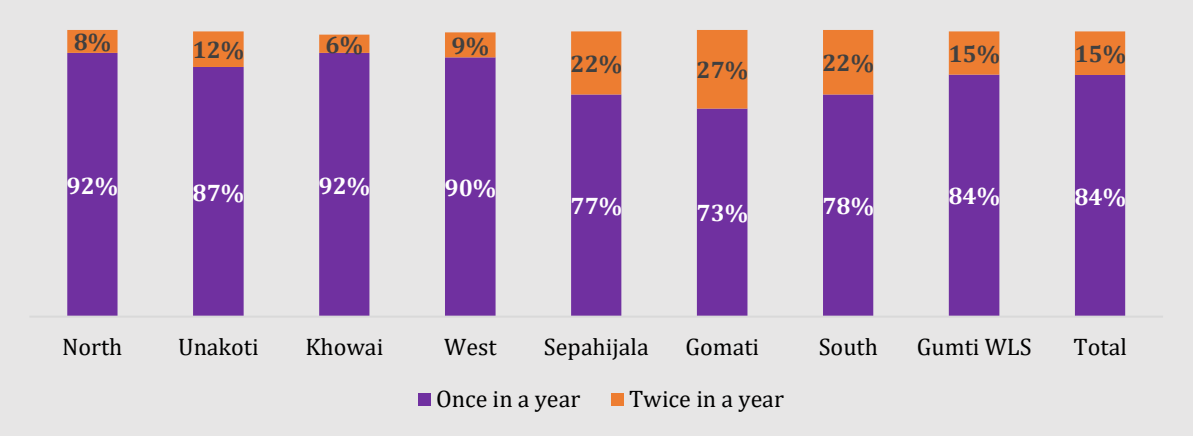


Figure 29: Yearly cropping pattern (N=2378)

The predominant reason for once-a-year cultivation across most DMUs is the water crisis, as reported by 70 percent of the SHG households across DMU's. This reason is reported the highest in Sepahijala (98 percent), West (84 percent), and Unakoti (82 percent). This indicates that the availability and management of water resources are significant challenges in these regions, leading to single season cropping. Seasonal or Jhum season, a traditional shifting agriculture practise, is another common explanation, as land is not available for cultivation during the jhum season due to the slash and burn that occurs throughout the time, resulting in less area for cultivation. This is prevalent in North (66 percent) and Gumti WLS (39 percent) regions, suggesting cultural and historical influences on agricultural patterns.

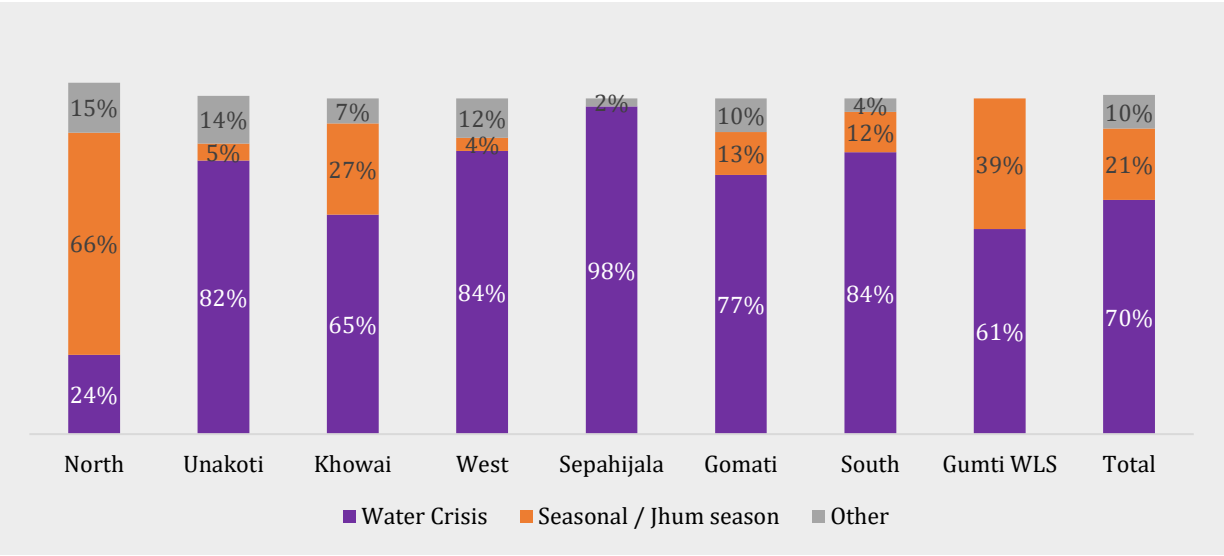


Figure 30: Reason for cultivating only once a year (N=860)

The data on the proportion of households reporting different cropping patterns in various DMUs highlights the prevalence of traditional Jhum cultivation practices in several regions. Notably, Jhum cultivation is prominent in North (69 percent), Unakoti (75 percent), and Gumti WLS (87 percent). In contrast, non-Jhum cropping practices are more common in West (83 percent), Sepahijala (94 percent), and Khowai (76 percent) regions, indicating a shift toward more conventional and potentially sustainable farming approaches. Some DMUs report a mix of both Jhum and non-Jhum cultivation, albeit in smaller percentages.

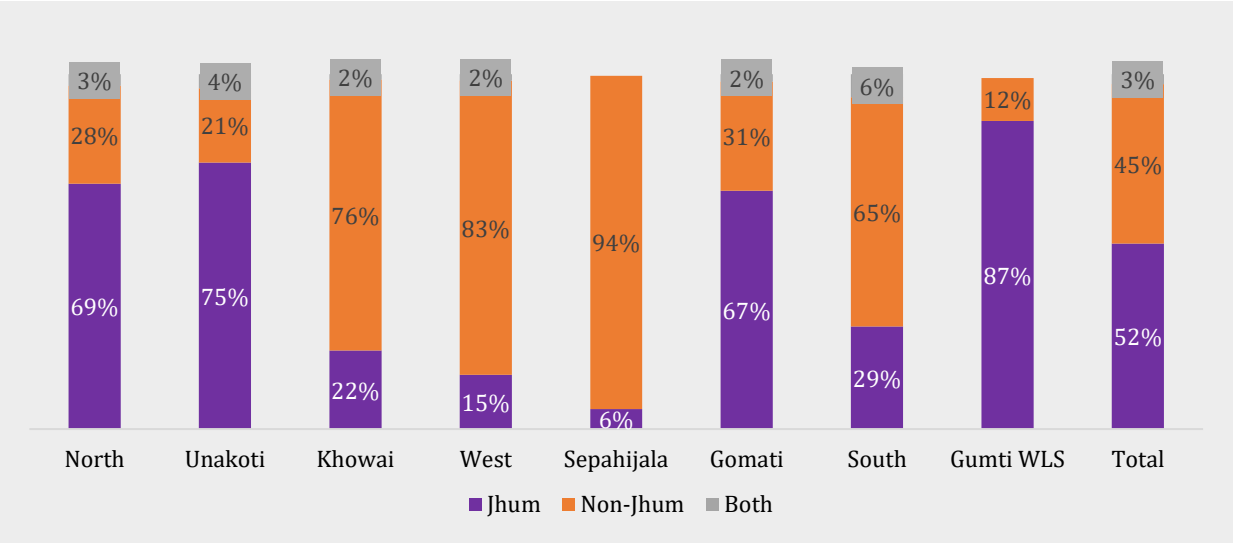


Figure 31: Proportion of households reporting different ways of growing crops (N=3705)

Majority of respondents reported cultivating rice with largest proportion of respondents reporting in South (67 percent), Gumti WLS (66 percent), and Sepahijala (59 percent) regions. Pumpkin is also a notable crop across DMU's, with relatively higher cultivation in Unakoti (17 percent) and West (20 percent). Additionally, other vegetables show substantial cultivation in several DMUs, including North (14 percent) while Brinjal is predominantly grown in West DMU (16 percent). The focus on rice can be attributed to several interconnected factors, including the prevalence of subsistence farming, small landholding sizes, limited access to irrigation facilities, and predominantly single-crop farming practices. Many farmers in these DMU's prioritize rice cultivation due to its role as a staple food that ensures food security for their households and its suitability for rain-fed agriculture. While other crops like pumpkin, vegetables, and brinjal are

also grown, the importance of rice in the local diet and its adaptability to the prevailing agricultural conditions make it a practical choice for the farmers in these regions.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Rice	52%	47%	50%	27%	59%	53%	67%	66%	51%
Pumpkin	10%	17%	16%	20%	6%	13%	8%	16%	14%
Ash gourd	3%	8%	3%	7%	8%	10%	4%	7%	6%
Till/Sesame	7%	5%	0%	0%	0%	4%	1%	0%	3%
Brinjal	3%	4%	9%	16%	6%	2%	4%	1%	5%
Green Chilly	2%	8%	9%	9%	5%	7%	2%	1%	6%
Other Vegetables	10%	6%	9%	14%	9%	7%	8%	5%	9%
Other Crops	14%	5%	4%	6%	6%	5%	6%	3%	6%

Table 11: Proportion of households growing different crops (N=3705)

A significant portion of households across most DMUs cultivate on their own land, with the highest percentages in Sepahijala (90 percent), West (69 percent), and Khowai (81 percent). Rice, Brinjal and other vegetables are cultivated on own land of the households. RoFR/Patta Land is another prevalent category, especially in Gumti WLS (69 percent) and Unakoti (40 percent), suggesting the use of officially recognized or titled land for cultivation. Till or sesame is cultivated on RoFR/ Patta land in 50 percent of the households across DMU's. Encroached land is used in smaller proportions across most DMUs, with Unakoti (43 percent) reporting the highest percentage. These findings underscore the importance of land tenure security and its impact on agricultural practices in the region.

	Own Land	RoFR/Patta Land	Encroached land
Rice	53%	30%	23%
Pumpkin	35%	34%	34%
Ash Gourd	38%	29%	37%
Till/Sesame	15%	50%	47%
Brinjal	59%	17%	26%
Green Chilly	38%	29%	34%
Other Vegetables	60%	23%	20%
Other Crops	41%	31%	31%
Total	48%	30%	27%

Table 12: Type of land used for different crops

N (owned land) =175
N (RoFR/Patta land) =1095
N (Encroached land) =1000

The data on the sources of seeds for crop cultivation across DMUs reveals a significant reliance on own seeds by households in most regions. Own seeds are the primary source in the majority of DMUs, with particularly high percentages in Gomati (96 percent), Khowai (91 percent), North and Unakoti (90 percent both respectively). This reflects the practice of saving seeds from previous harvests, indicating self-sufficiency in seed supply. In contrast, some DMUs report the use of seeds from private sources, with the highest percentage in Sepahijala (34 percent). The use of seed banks is relatively low across DMUs, suggesting limited access or utilization of formal seed banks. Interestingly, government sources are rarely cited as the seed provider except South with 13 percent respondents citing government reliance on seed provision.

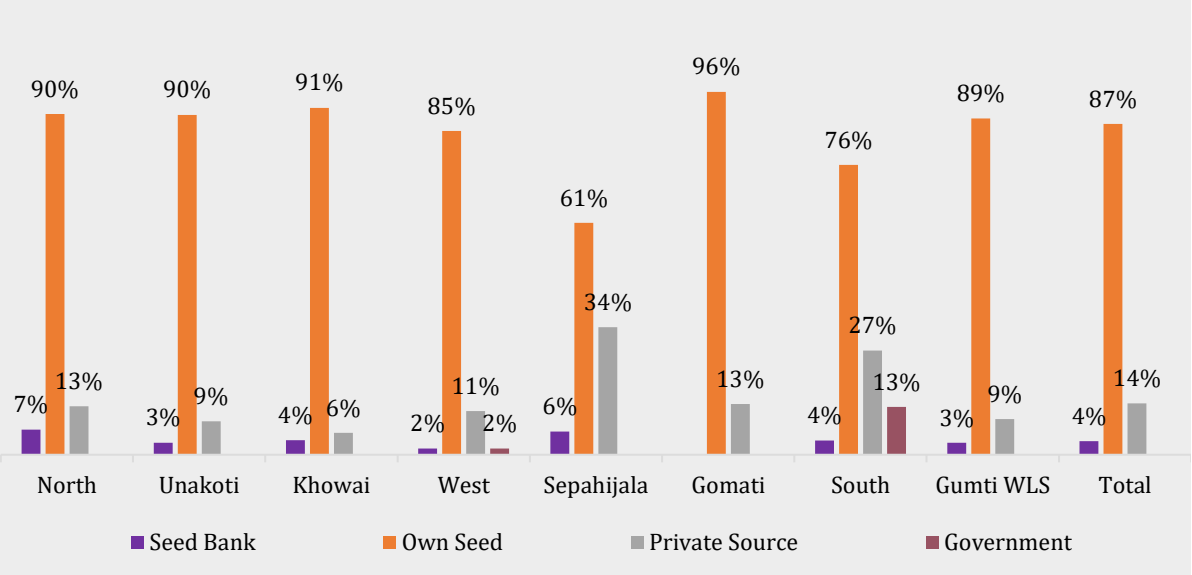


Figure 32: Sources of seeds (N=1724)

Across the surveyed SHG households, it is seen that 20 percent of the household across DMU's use both fertilizers and pesticides for their crop cultivation and close to 45 percent of the SHG households don't use any- fertilizers or pesticides for their crops.

The data on the proportion of households using fertilizers for crop cultivation in various DMUs shows a mixed pattern of fertilizer utilization. In general, a significant portion of households across DMUs use fertilizers, with the highest percentages in Sepahijala (91 percent), West (74 percent), and South (76 percent). Conversely, some DMUs like Unakoti and North have lower percentages of fertilizer usage, indicating lack of access to modern farming techniques.

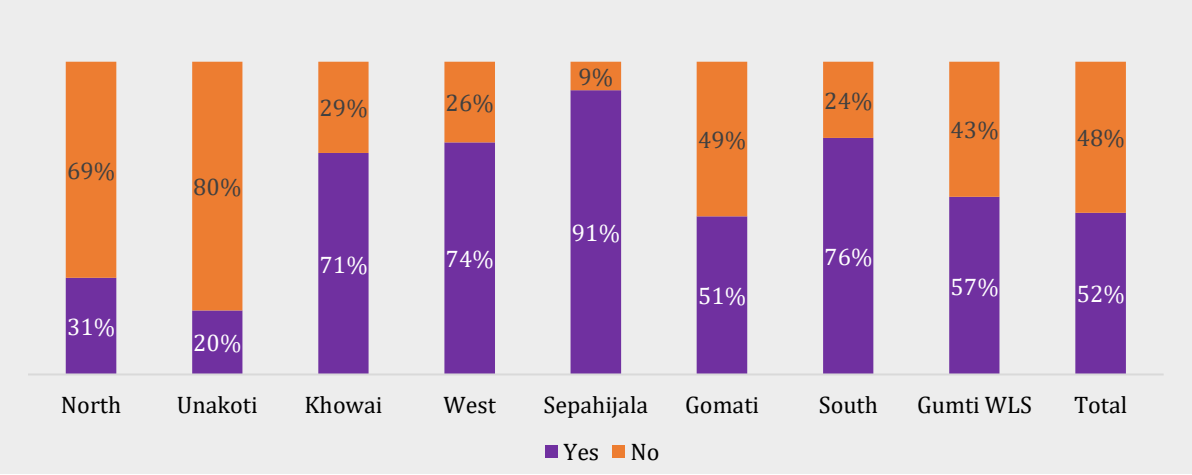


Figure 33: Proportion of households using fertilizers (N=3705)

Organic fertilizers are the primary choice in most DMUs, with relatively high percentages in Khowai (62 percent), West (62 percent), and Sepahijala (57 percent). Chemical fertilizers are less commonly used, with the highest percentage in South DMU (19 percent) and relatively lower adoption in most other DMUs. A significant proportion of households in Sepahijala (29 percent), South, and Gomati (33 percent each) use both organic and chemical fertilizers, indicating a mixed farming practice. A significant portion of households across DMUs (ranging from 17 percent to 61 percent) do not use any fertilizers, suggesting a reliance on traditional farming methods. Since the local practice is of organic farming, this holds the potential for developing organic production

clusters, especially if the project successfully redirects crop production toward commercial sales while capitalizing on existing organic farming practices.

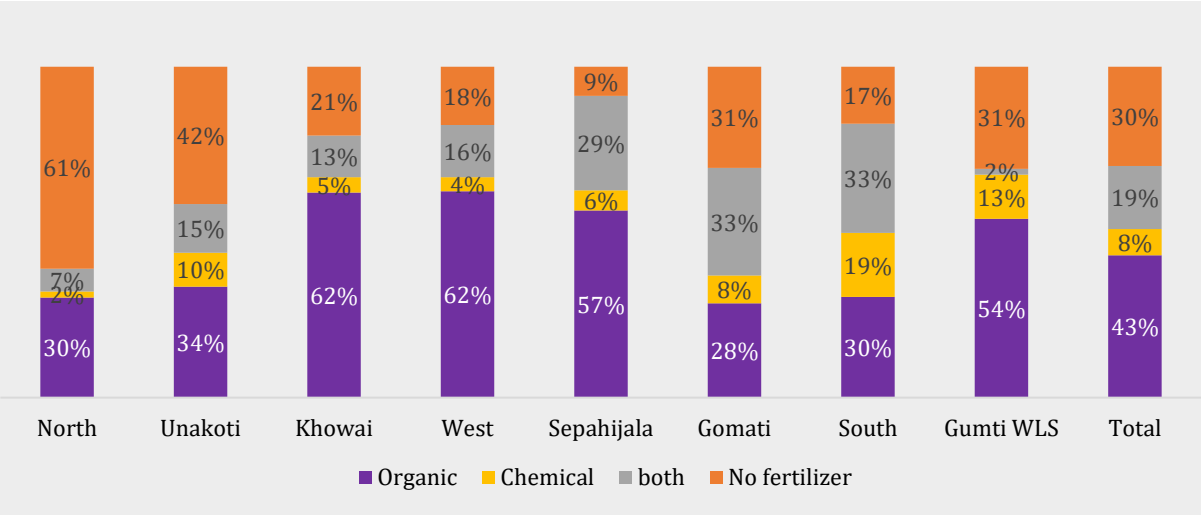


Figure 34: Type of fertilizer used (N=2376)

The data pertaining to the proportion of households employing pesticides for crop cultivation in DMUs underscores notable disparities in pesticide adoption. Particularly, Sepahijala stands out, exhibiting the highest percentage of households utilizing pesticides, accounting for 59 percent of the surveyed households. This figure signifies a widespread implementation of chemical pest control methods within this DMU. Additionally, the South DMU records a relatively higher pesticide adoption rate at 47 percent, followed by Gumti WLS at 36 percent.

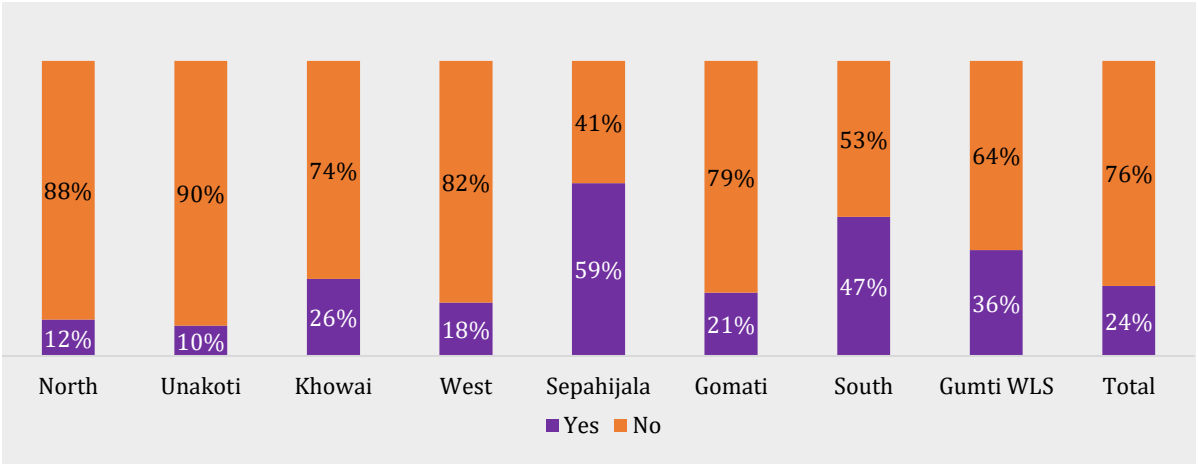


Figure 35: Proportion of households using pesticides (N=3705)

The data on the median productivity of different crops across DMUs reveals variations in crop yields, reflecting the diversity in agricultural practices and environmental conditions. Rice, Pumpkin and Ash Gourd in the region (2000 and 313 kg/ha respectively). Rice and pumpkin productivity is the highest in Gomati (2183 kg/ha and 625kg/ha respectively), Ash Gourd has the highest productivity in Unakoti SHG households. The highest productivity of rice is lower than the average productivity of rice in Tripura which is 2800/ha (GOI, 2016) as compared to the SHG member households. Pumpkin productivity across DMUs is 540 kg/Ha, with the highest average in the South SHG households (944 kg/ha).

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Rice	1875	1736	2000	3042	2688	2813	1331	1250	2000
Pumpkin	521	570	125	94	34	625	250	422	313
Ash gourd	94	1107	99	125	188	594	313	750	313
Till	313	208		3125		188	65	125	221
Brinjal	250	313	135	89	313	188	125	156	125
Green Chilly	115	188	109	66	31	188	69	2750	125
Other Vegetables	63	536	125	156	78	208	443	804	183
Other Crops	153	531	36	63	156	396	438	625	156
Total	625	833	375	156	1031	1250	938	938	625

Table 13: Average productivity per hectare of different crops (in KG/Ha)

Rice is the primary crop sold, with a total of 213 tonnes, most notably in the Gomati SHG member households. Pumpkin follows with 50 tonnes in total sales, primarily in Unakoti and Gomati DMU. Ash gourd sales are relatively low at 21 tonnes, mainly in the Gomati and Unakoti regions. Other crops, including till/sesame, brinjal, green chili, and other miscellaneous vegetables, contribute to varying quantities of sales, reflecting regional agricultural preferences and market demands. Overall, this data provides insights into the diversity of crops commercialized by SHG members in different regions of Tripura, highlighting the economic importance of rice and pumpkin in the local agricultural landscape.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Rice	32	26	12	13	18	63	36	13	213
Pumpkin	7	20	1	1	1	10	5	4	50
Ash gourd	0	6	0	0	0	11	2	1	21
Till	3	15	0	1	0	2	0	0	20
Brinjal	1	2	1	1	0	1	1	0	7
Green Chilly	0	2	1	1	0	2	0	0	6
Other Vegetables	3	15	1	1	2	6	2	2	33
Other Crops	6	2	1	0	1	2	1	1	13
Total	52	89	16	19	23	95	49	21	364

Table 14: Total sold quantity (in Tonnes)

With regards to the market for selling produce in various DMUs, selling within the village appears to be the most common choice, with Gomati reporting the highest percentage at 74 percent, followed by Khowai (70 percent). Adjacent Haat Bazaars also play a significant role, particularly in Gomati (89 percent) and West (78 percent). However, it's important to note that in some DMUs, such as West and Gomati, there is a notable reliance on nearby crop markets (10 percent and 8 percent, respectively). A small percentage of respondent's mention selling to merchants outside

the village, suggesting limited reliance on external markets. Government purchases as a selling avenue are scarcely mentioned.

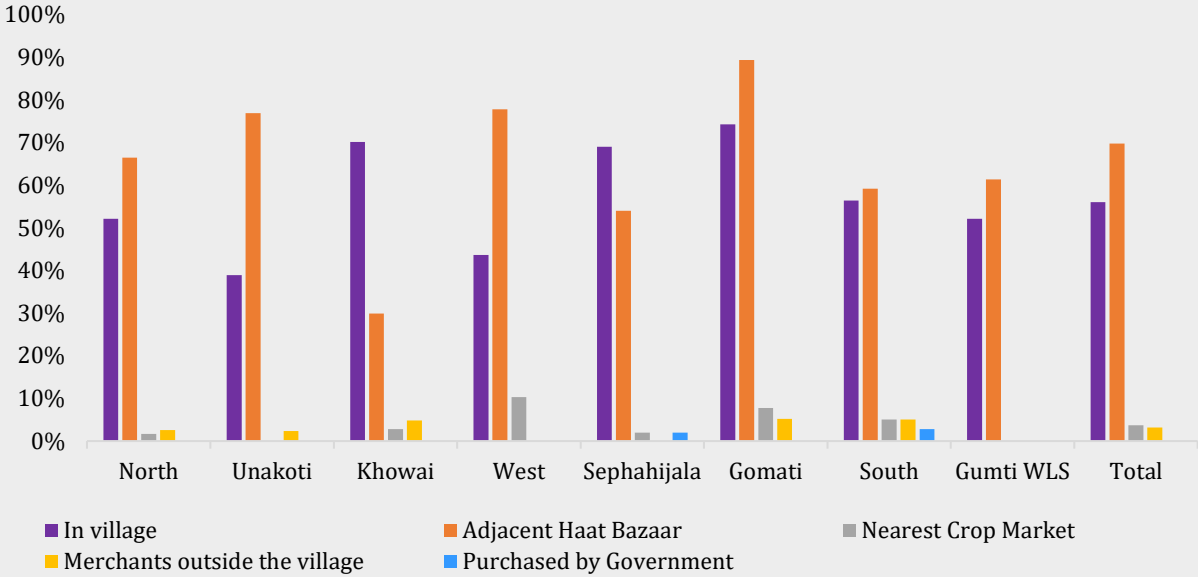


Figure 36: Market for selling produce

Sepahijala region has the highest average income from Rice (INR 14,248). Brinjal sales result in substantial earnings in Gumti WLS (INR 13,567), likely due to higher demand. Green Chilly also generates notable income in Gomati (INR 8,032) and South (INR 8,800), possibly due to favourable market conditions. Other Vegetables exhibit significant revenue, particularly in Gumti WLS, where it contributes substantially to household income.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Rice	7572	7875	5194	11061	14248	14136	12144	6559	10002
Mishtikumro	4162	3108	2469	1804	3887	3337	3565	2518	3109
Chalkumro	2960	1504	3433	1758	2540	3495	1744	1791	2466
Til	8180	4910		200		5199	950	1200	5927
Brinjal	2005	2823	1697	3941	2823	3387	3283	13567	2976
Green Chilly	3111	4387	2092	7593	1890	8032	8800	5100	5191
Other Vegetables	7118	7106	3188	2730	6285	5036	4773	24730	6371
Other Crops	4607	2786	7613	1963	7090	3148	26063	2971	6495
Total	5910	4564	3033	4594	8084	7108	10204	6422	6152

Table 15: Average amount received from sold produce (in Rs)

A majority of DMUs report that the last harvest was relatively normal, with percentages ranging from 47 percent to 85 percent. However, Khowai stands out with a higher percentage (49 percent) indicating a harvest less than normal, which may be indicative of challenges faced by farmers in this DMU. Gumti WLS, on the other hand, reports a notable percentage (13 percent) of harvests above normal, suggesting favourable agricultural conditions in this region.

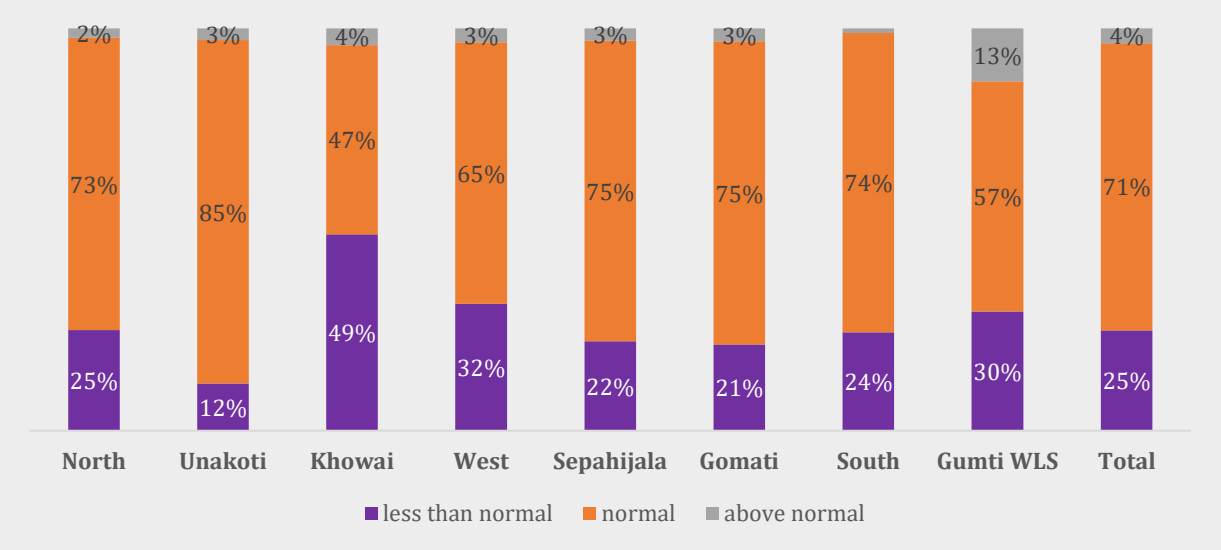


Figure 37: Last harvest in comparison to a normal year (N=3705)

The unavailability of water for irrigation is a significant issue in several DMUs, with West, Gomati, Unakoti and South all reporting particularly high percentages (65 percent, 43 percent, and 37 percent respectively). Erratic rainfall is also a prevalent challenge, with Sepahijala, Unakoti, Khowai, and West reporting substantial percentages (ranging from 31 percent to 54 percent). Market accessibility is another concern, especially in Gomati where 40 percent of respondents find the access to market as the primary challenge for crop production.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Procurement of Seeds	15%	17%	12%	3%	16%	15%	13%	22%	14%
Selling of Produce	6%	10%	7%	0%	6%	13%	14%	17%	9%
Market too far	9%	24%	5%	9%	7%	40%	9%	9%	18%
Unavailability of water for irrigation	20%	37%	26%	65%	34%	43%	37%	15%	36%
Erratic rainfall	11%	38%	42%	54%	31%	18%	25%	37%	31%
No Issues	47%	22%	20%	12%	17%	15%	20%	12%	22%
Any other				2%	2%		3%		1%

Table 16: Issues faced by households for crop production (N=3705)

Across DMUs, the improvement in the irrigation system is consistently highlighted as a key factor reported by households that can help improve production with Khowai reporting the highest percentage (80 percent). Additionally, the need for good quality seeds is emphasized in Unakoti (32 percent) and Khowai (37 percent). Solving labour problems and ensuring better market linkage and facilities are mentioned as other potential improvement factors, albeit by a lower percentage of respondents. New techniques and training, as well as the availability of fertilizers and pesticides, are also cited as essential factors in several DMUs. Notably, a significant percentage of respondents in each DMU (ranging from 2 percent to 46 percent) express that they believe nothing can improve production, which underscores the need for targeted interventions and awareness campaigns to address farmers' concerns and enhance agricultural practices.

	North	Unakoti	Khowai	West	Sehahijala	Gomati	South	Gumti WLS	Total
Imrovment in irrigation system	23%	48%	80%	59%	67%	51%	54%	48%	50%
Need Good quality seeds	11%	32%	37%		8%	24%	8%	6%	20%
Solve Labour problme			2%		2%				
Market linkage / Market facility	2%	8%	14%	2%	2%	14%	10%		8%
Need New Technics / trainings	10%	3%	17%	21%	11%	12%	16%	17%	10%
Need Fertilizer / Prestiside		7%	22%	14%	2%	2%	2%	30%	7%
Nothing	46%	6%	2%	2%	5%	7%	13%	3%	12%
Other	8%	3%		4%	13%	2%	2%		4%

Table 17: Factors as reported by households that can help improve production (N=1641)

5.3 Horticulture

The figure below provides a proportion of SHG households reporting growing horticulture produce across the DMUs. Mango stands out as the most extensively grown product, with households in West, Sepahijala and South having the most product grown at 62 percent, 53 percent, and 50 percent respectively. Pineapple is primarily cultivated in Gumti WLS (29 percent). Jackfruit, on the other hand, displays a more balanced distribution across DMUs, with West, North and Khowai households growing 53 percent, 47 percent and 44 percent, respectively. Banana production is reasonably even across the DMUs, with the highest percentages in Unakoti and West at 44 percent and 49 percent, respectively. Households producing litchi is highest in West DMU (23 percent) and absent in Gumti WLS (2 percent). Lime/lemon production varies slightly across DMUs, with West having the most lemon grown in the households at 21 percent. Papaya cultivation is evenly spread, with Khowai having the highest SHG member household percentage at 28 percent. Coconut production is limited to 2 percent on average. Guava production is consistent, with Khowai having most households growing Guava (15 percent). Sajna (drumstick) sees varying cultivation levels across SHG member households, with the highest at 16 percent in the Khowai DMU. Total arecanut cultivation is 5 percent across DMUs.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Mango	39%	36%	45%	62%	53%	49%	50%	46%	47%
Pineapple	16%	13%	12%	19%	9%	11%	10%	29%	14%
Orange	4%	4%	3%	1%	1%	1%	0%	0%	2%
Jackfruit	47%	36%	44%	53%	42%	28%	34%	15%	41%
Banana	38%	44%	43%	49%	25%	27%	22%	21%	37%
Litchi	7%	5%	11%	23%	5%	5%	5%	2%	10%
Lime/ Lemon	10%	12%	19%	21%	10%	8%	8%	3%	13%
Papaya	17%	15%	28%	21%	19%	23%	17%	8%	20%
Coconut	3%	0%	3%	2%	0%	2%	3%	1%	2%
Guava	9%	3%	15%	13%	13%	10%	4%	6%	10%
Drumstick	5%	9%	16%	11%	9%	9%	2%	6%	9%
Arecanut	6%	4%	8%	6%	3%	5%	3%	0%	5%

Table 18: Proportion of households growing different type of horticulture product (N=2418)

In terms of different uses of the horticulture produce, 69 percent of the fruit is consumed locally, 9 percent is sold, and 22 percent is used for both consumption and selling. The majority of fruit grown is consumed locally in most DMUs, with consumption percentages ranging from 51 percent in Gumti WLS to 78 percent in Sepahijala. High consumption rates suggest that these fruits are an important part of the local diet and contribute to food security. The selling percentages are relatively low in most DMUs, ranging from 2 percent to 39 percent. This indicates that a smaller portion of the fruit produced is sold, suggesting that many households primarily use their fruit

harvest for personal consumption rather than commercial purposes. Notably, Gumti WLS stands out with 39 percent of fruit being sold, indicating some level of commercialization alongside local consumption. Other DMUs like South (39 percent) and Gomati (35 percent) have substantial presence of fruit being used for both purposes. Mango, Jackfruit and Papaya is sold the most across all DMU's with an average 89 percent, 83 percent and 77 percent of the produce being sold in all SHG member households respectively.

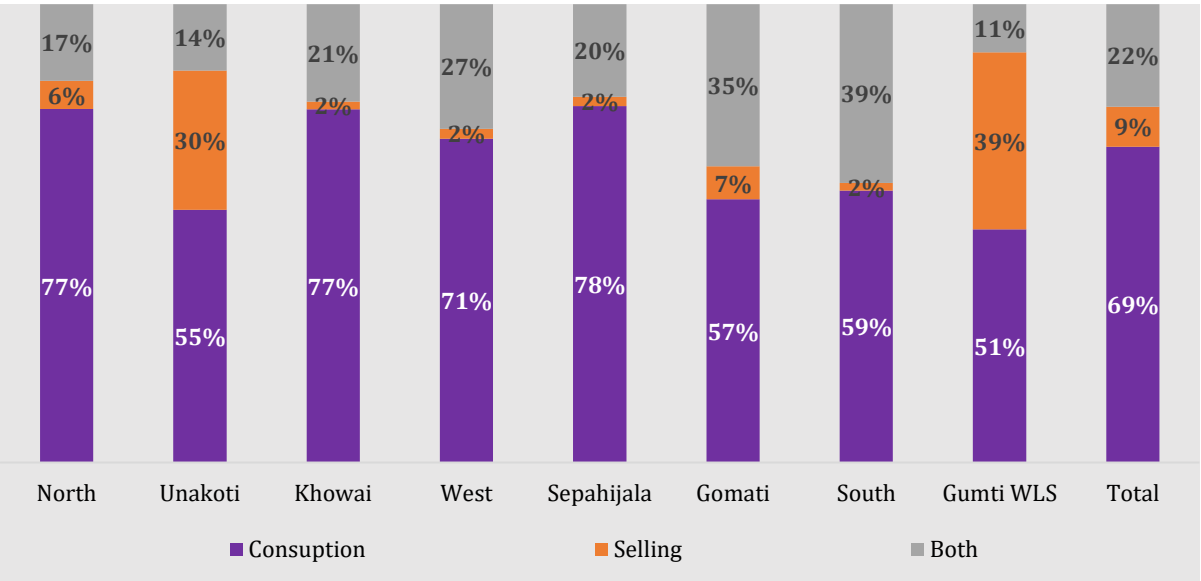


Figure 38: Uses of fruits (N=2071)

With regards to annual mean harvested quantity of fruits, Lime/ Lemon production has the highest amount of harvest across DMUs, with West and Unakoti being the primary contributors, yielding an average of 1118 and 1089 kg annually. Unakoti also has a significant harvest of bananas, totalling 346 kg. In Khowai, litchi has been harvested at 815 kg. North has a high pineapple harvest, with an average of 318 kg. West DMU has high papaya harvest, averaging at 106 kg. The remaining fruits, including drumsticks, arecanut, orange, and others, have varying production levels in the region annually.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Mango	37	76	24	8	10	25	15	7	24
Pineapple	318	199	24	44	11	8	49	220	123
Jackfruit	21	96	56	13	30	48	19	10	37
Banana	268	346	335	319	169	78	73	24	269
Litchi	21	478	815	333	644	118	153	14	396
Lime/Lemon	73	1090	3054	176	96	253	10	3	1118
Papaya	17	744	81	23	30	21	30	25	107
Coconut	36		72	163		48	105		75
Guava	12	23	36	19	12	16	14	8	22
Drumstick	8	48	7	9	9	27	7	14	15
Arecanut	70	42	180	377	2	12	37		167
Orange	63	22	13	3	2	2	1		31
Other	2	2	24	28	2	2	4	12	14

Table 19: Average harvested quantity of fruits

In terms of the annual average produce sold across SHG member households, Lime is sold the most in Khowai averaging at 4314kg annually followed by Unakoti SHG member households at 1487kg. Mangoes show a relatively consistent production across SHG households in most DMUs, with Khowai and Sepahijala selling an average of 283kg and 172kg respectively. Pineapples are

sold the highest in North and Unakoti households, Jackfruit production is consistent, with Khowai and Sepahijala SHG member households having sold 110kg and 91kg annually.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Mango	86	89	283	80	172	166	97	108	135
Pineapple	369	216	69	127	58	77	52	176	178
Jackfruit	63	80	110	87	91	86	47	28	80
Banana	396	322	304	343	251	85	114	55	291
Litchi	70	444	608	245	157	416	148	15	298
Lime/ Lemon	123	1487	4314	433	131	264	37	100	1523
Papaya	41	871	133	62	24	42	57	18	151
Coconut	19		84	238		354	160		158
Guava	46	106	79	99	176	41	71	78	85
Drumstick	22	78	66	95	59	36	11	119	67
Arecanut	17	73	317	387		674	38		227
Orange	50	173	71	60	10	5	12		78
Other	45	20	52	93	19	130	200	23	66
Total	154	335	556	181	144	133	80	98	248

Table 20: Average produce sold (in Kg)

The analysis of the data concerning the average proportion of sold quantity of total harvested fruits across various regions reveals notable trends and disparities in fruit sales. In Gumti WLS region, Pineapple stands out with an impressively high average proportion of 162, signifying a substantial portion of the total harvested Pineapples being successfully marketed in this area. Similarly, in Unakoti, Banana exhibits a remarkable average proportion of 92, indicating a significant share of the Banana harvest being effectively sold. Conversely, some fruits exhibit lower average proportions in specific regions, potentially indicative of marketing challenges or lower demand. For instance, Jackfruit demonstrates a notably lower average proportion of 22 in the West region, implying potential impediments in its marketability in that locale. Additionally, the exceptionally high average proportion of 169 for Litchi in Sepahijala and the notably low average proportion of 2 for Lime/Lemon in Gumti WLS underscore the regional variation in fruit demand and sales performance.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Mango	27	35	20	30	21	23	28	34	27
Pineapple	52	73	50	30	24	17	67	162	57
Jackfruit	23	37	53	22	25	51	31	54	33
Banana	53	92	59	42	52	70	48	74	58
Litchi	25	59	63	26	169	29	24	13	36
Lime/ Lemon	18	82	55	24	14	97	32	2	44
Papaya	20	94	23	23	20	54	46	9	35
Coconut	63		140	145		74	63		91
Guava	30	7	14	9	16	19	13	4	16
Drumstick	26	125	29	29	132	130	106	5	55
Arecanut	26	111	117	112		13	153		86
Orange	60	46	2	4	20	40	8		41
Other	21	10	44	81	73	23	1	5	39

Table 21: Average proportion of sold quantity of the total harvested fruits

5.4 NTFP

The table below presents an overview of the key NTFPs collected by the respondent HHs of the DMU. Bamboo is a prominent NTFP collected by HHs, with the highest percentage of households collecting it in Unakoti (20 percent) and the lowest in Khowai (6 percent). Fuelwood also ranks high in collection, with the maximum percentage in Gumti WLS (43 percent). Bamboo shoot, another listed NTFP, shows variations across DMUs, with the highest collection rate in Gumti WLS (34 percent).

Among the other NTFPs that are collected in small amounts, banana flower and *lati* account for an approximate average of 4 percent each. *Sugandhamantri* (used for making essential oil) and *fuljhadu* (Arjun flower/broom stick) follow with moderate prevalence levels at 3 percent each. Taro contributes 2 percent to the NTFP collection, while others like Indian pennywort, pineapple, elephant apple, thatch, sesame, drumstick collectively make up 1 percent each.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Bamboo	10%	20%	6%	11%	8%	14%	11%	15%	11%
Fuelwood	25%	32%	22%	26%	33%	26%	26%	43%	27%
Bamboo shoot	23%	22%	30%	25%	27%	31%	29%	34%	28%
Fiddle head fern	8%	5%	14%	7%	8%	8%	6%	0%	8%
Wild potato	6%	1%	4%	7%	6%	5%	7%	2%	5%
Other	4%	3%	3%	3%	2%	2%	3%	1%	3%

Table 22: Details of various NTFPs collected (N=8227)

A major percentage of NTFPs is collected within the JFMC areas, ranging from 73 percent in Gumti WLS to as high as 97 percent in West. NTFP collection varies outside the JFMC, with the highest percentage being 76 percent in Gomati and the lowest at 18 percent in Unakoti. Some NTFPs are collected outside the beat but within the RMU area, with West leading at 23 percent. However, this percentage is substantially lower in other DMUs. Beyond RMU areas, minimal NTFP collection is observed. NTFP collection outside Tripura or beyond is negligible across all regions, indicating a strong localized focus.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Within JFMC area	93%	89%	78%	97%	92%	79%	91%	73%	86%
Outside the JFMC but within the Beat	38%	18%	28%	38%	30%	76%	49%	49%	43%
Outside the beat but within the RMU area	0%	1%	15%	23%	1%	10%	2%	1%	9%
Outside the RMU but within the DMU area	2%	0%	0%	3%	0%	0%	1%	0%	1%

Table 23: Place of NTFP collection (N=8227)

The monthly overview of NTFP collection activity in the DMUs portray that the collection is active all through the year. June and July being the monsoon window, exhibits highest percentage of households reporting being engaged in NTFP collection (57 percent). In contrast, activity during October to December is comparatively lower.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Jan	47%	48%	38%	53%	25%	50%	44%	61%	47%
Feb	49%	51%	39%	50%	28%	51%	44%	61%	48%
Mar	47%	39%	50%	38%	30%	31%	35%	59%	42%
Apr	52%	34%	61%	46%	33%	30%	32%	48%	44%
May	60%	40%	61%	58%	34%	41%	42%	42%	50%
Jun	60%	52%	67%	71%	51%	47%	54%	41%	57%
Jul	59%	53%	65%	71%	48%	47%	54%	40%	57%
Aug	57%	43%	63%	64%	23%	43%	44%	36%	51%
Sep	52%	38%	56%	60%	18%	34%	35%	31%	45%
Oct	35%	35%	47%	53%	17%	34%	27%	37%	39%
Nov	38%	32%	37%	52%	21%	39%	26%	42%	39%
Dec	39%	31%	32%	51%	17%	43%	28%	40%	38%

Table 24: NTFP collection over months (N=8227)

Across the state, women are the primary collectors of NTFP, with the highest proportion of women reporting NTFP collection in Khowai (95 percent) and the lowest in Unakoti (76 percent). This is leading to an average participation rate of 89 percent among the respondent HHs in the DMUs. In comparison, an average of 64 percent men participate in NTFP collection. Children below 18 years of age contribute to NTFP collection at lower percentages underscoring the limited involvement of children as labour.

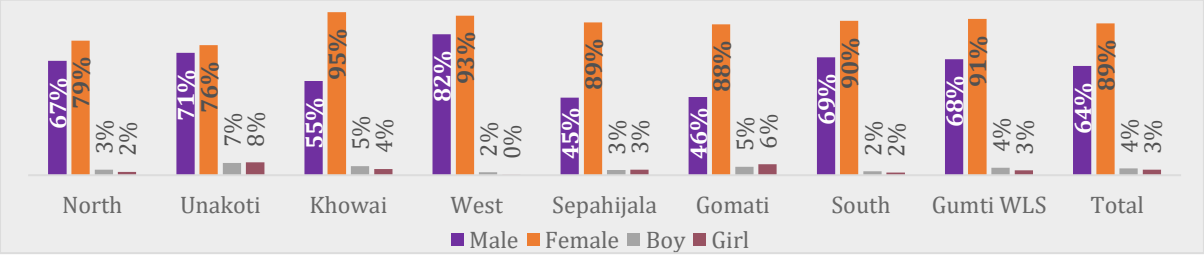


Figure 39: NTFP primarily collected by (N=8227)

This table given below presents the annual harvest quantity of various NTFPs. Bamboo, a key resource, is harvested at varying quantities across the state, with the highest yield of 1561 culms in Unakoti and the lowest at 182 culms in Sepahijala. Fuelwood, an essential energy source, exhibits the highest average harvest upto 2700 kg. Bamboo shoots (373 culms), *Fuljhadu*/Arjun Flower (255 bunches), wild potato (123 kgs), pineapple/elephant apple (1176 kgs), thatch, sesame, drumsticks (157 kgs) are some of the preferred forest produce.

	Unit	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Bamboo	Culm	478	1561	418	473	182	635	353	402	631
Fuelwood	Kg	2917	3382	3206	2092	4080	2421	2393	3023	2788
Bamboo shoot	Culm	275	366	649	145	238	247	256	745	373
***Fuljhadu* (Arjun Flower)**	Bunch	794	33	8	7		61	292	1848	255
Fiddle head fern	Bunch	43	84	45	55	245	126	32	165	72

	Unit	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Banana flower	No.	70	245	43	73	57	176	55	225	72
Sugandhamantri	Bunch/ Kg	50	153	21	99	9	36	37	285	54
Wild Potato	Kg	26	33	35	130	15	380	46	85	123
Taro	Bunch	87	220	51	32	146	102	32	60	66
Lati	Kg	26	25	33	36	40	58	12	239	47
Indian Pennywort	Kg	6	7	14	11	3	22	147	42	30
Pineapple/Elephant apple	No.	837	2567	32	34	25	236	13	400	1176
Thatch/Sesame/Drumstick/Other	Kg	49	229	97	141	76	208	85	868	157

Table 25: Annual harvest quantity (in Kgs)

Proportion of respondents reporting to be selling bamboo, range from 15 percent in Khowai to 52 percent in Sepahijala. Fuelwood sales for DMU households vary from 4 percent in Khowai to 24 percent in Sepahijala. Similarly, bamboo shoot sales fluctuate, with the highest percentage of 42 percent in Gomati and a total average of 24 percent. *Fuljhadu* (Arjun Flower), fiddle head fern, banana flower, *sugandhamantri*, wild potato, taro, *lati* and Indian pennywort display similar levels of sales in at an average of 16 percent. Pineapple, elephant apple is being sold by all the respondents in North and Sepahijala while thatch, sesame, and drumstick is being sold by 59 percent of the DMU households in Unakoti.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Bamboo	25%	47%	15%	15%	52%	14%	36%	37%	26%
Fuelwood	10%	9%	4%	4%	24%	5%	10%	8%	8%
Bamboo shoot	30%	30%	11%	11%	29%	42%	18%	28%	24%
***Fuljhadu* (Arjun Flower)**	17%	13%	3%	0%	0%	22%	18%	50%	15%
Fiddle head fern	8%	24%	9%	17%	26%	43%	16%	50%	19%
Banana flower	11%	71%	12%	5%	25%	18%	12%	25%	11%
Sugandhamantri	16%	25%	6%	43%	33%	14%	16%	40%	18%
Wild Potato	12%	33%	7%	18%	14%	14%	11%	31%	14%
Taro	8%	0%	12%	15%	8%	33%	25%	75%	16%
Lati	9%	20%	4%	17%	9%	35%	9%	28%	16%
Indian Pennywort	0%	50%	5%	13%	25%	50%	8%	50%	15%
Pineapple/Elephant apple	100%	61%	0%	11%	100%	80%	0%	67%	51%
Thatch/Sesame/Drumstick/Other	38%	59%	43%	30%	40%	67%	31%	50%	45%

Table 26: Proportion of HHs who sell NTFP (N=8227)

Bamboo sales are most prominent in Unakoti, totalling 2028 culms, and lowest in Sepahijala at 91 culms. Fuelwood sales contribute to a total average of 663 kg across the study area. Bamboo shoot sales are highest in Gumti WLS at 1875 culms. *Fuljhadu* (Arjun Flower) are sold at an

average of 3900 bunches in North and Gumti DMUs. Meanwhile, fruits such as pineapples remain abundant with sale quantities ranging from 20 to 1105 pieces.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Bamboo	1147	2028	667	1269	91	694	333	356	1007
Fuelwood	502	319	1994	574	94	686	255	1388	663
Bamboo shoot	511	209	286	360	120	160	224	1875	487
***Fuljhadu* (Arjun Flower)**	4323	90	70			120	852	3580	1394
Fiddle head fern	71	113	40	67	39	111	38	5	81
Banana flower	113	248	27	174	128	175	89	80	119
Sugandhamantri	53	270	11	78	10	63	75	205	79
Wild Potato	61	20	28	78	16	158	201	37	92
Taro	172		101	31	20	83	73	42	66
Lati	41	30	169	32	13	101	21	312	94
Indian Pennywort		3	3	10	2	27	1697	38	118
Pineapple/Elephant apple	730	1105		20	20	152		440	738
Thatch/Sesame/Drumstick/Other	68	236	80	199	60	278	87	1600	228

Table 27: NTFP sold quantity (in Kgs)

This table provides the average proportion of the quantity of NTFPs sold compared to the total harvested quantity. For bamboo, the average proportion sold ranges from 8 percent in Khowai to 54 percent in Unakoti. Fuelwood shows a similar trend, with the lowest average proportion sold at 1 percent in West and the highest at 27 percent in North. Bamboo shoots, on average, are sold in higher proportions, ranging from 7 percent to 52 percent.

Pineapples and elephant apples have a high average proportion sold in North and Unakoti at 85 percent and 123 percent, respectively. Thatch, sesame, drumsticks record substantial average proportions sold, ranging from 21 percent in Sepahijala and South to 57 percent in Gomati.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Bamboo	17	54	8	9	30	32	25	28	26
Fuelwood	27	4	3	1	10	3	6	6	7
Bamboo shoot	28	18	7	7	14	28	18	52	21
***Fuljhadu* (Arjun Flower)**	11	11	3	0		18	14	46	12
Fiddle head fern	5	16	5	12	10	30	12	8	12
Banana flower	7	63	6	3	17	11	8	20	7
Sugandhamantri	10	23	4	24	33	11	12	32	12
Wild Potato	10	29	2	12	10	8	8	24	9
Taro	5	0	4	11	4	28	18	43	11
Lati	6	20	3	13	3	40	5	24	14
Indian Pennywort	0	30	2	13	25	35	8	40	11
Pineapple/Elephant apple	85	123	0	6	83	64	0	53	71

Thatch/Sesame/Drumstick/Other	29	50	39	25	21	57	21	50	38

Table 28: Average proportion of sold quantity of total harvested (in percent)

NTFPs are sold at some of the priority points which has been captured in the given table. In-village sales are most prevalent, accounting for as high as 78 percent in Gomati. The *adjacent haat bazaar* also serves as a sales point, ranging from 34 percent in Khowai to 77 percent in Gomati. These are the popular choices owing to the proximity from the respondents' households and having to pay no extra costs for transport. Less transport also means that the sale products are fresher in comparison and stand better chances to fetch higher price. This highlights the importance of local markets and nearby trading hubs in the distribution of forest products.

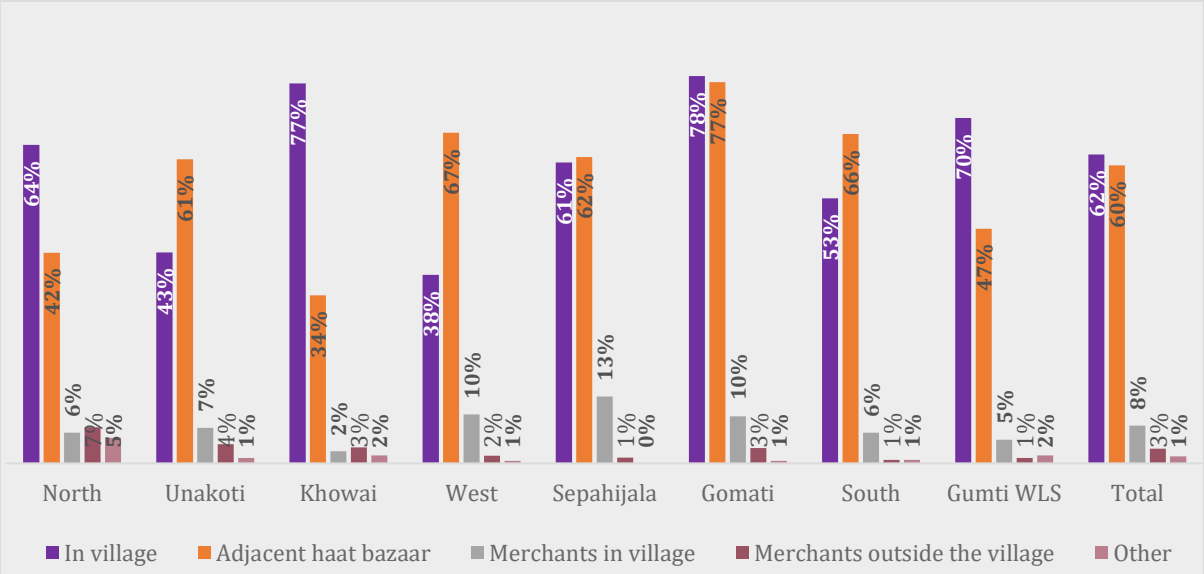


Figure 40: Key points of sale for NTFPs (N=1502)

Bamboo sales exhibit considerable variability in average income levels, ranging from a peak of INR 13,656 in Unakoti to a minimum of INR 2,318 in Khowai. Similarly, fuelwood sales demonstrate the highest average income recorded at INR 6,685 in Gumti WLS and the lowest at INR 1,854 in Sepahijala. *Fuljhadu* (Arjun Flower) generates INR 14,661 and INR 17,200 in North and Gumti WLS respectively. In addition to these, pineapples yield as high as INR 9,000 in potential earnings.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Bamboo	2874	13656	2318	4406	7008	6158	11037	3481	7418
Fuelwood	1488	3459	5668	3120	1854	4557	5434	6685	3943
Bamboo shoot	3688	1902	3801	5259	1669	3685	1270	3077	3297
***Fuljhadu* (Arjun Flower)**	14661	1613				2853	1117	17200	6015
Fiddle head fern	1057	1713	1321	821	600	1405	386	100	1178
Banana flower	933	2164	378	2254	150	750	971	400	1094
Sugandhamantri	2569	950	145	778	201	1500	434	765	1158
Wild Potato	2333	850	375	1590	316	5210	542	972	1979
Taro	1333		1013	647	800	2288	1363	1000	1253
Lati	763	1500	850	1122	150	859	775	3184	1133
Indian Pennywort		500	67	50	50	274	1700	2613	845

Pineapple/Elephant apple	9117	8080		100	450	990		4500	6268
Thatch/Sesame/Drumstick/Other	5533	6250	1822	1514	4600	2338	1688	2750	3064

Table 29: Average income from selling NTFP last year (in INR)

5.5 Livestock

The geographical landscape, climatic conditions, and socio-economic factors prevailing in the region have led to a significant reliance on animal husbandry activities in Tripura. Majority of the respondents rear some form of livestock (82 percent) with the primary choice being pig rearing. Pig rearing constitutes a total average of 38 percent of the livestock. Piggery contributes substantially, accounting for 30 percent of the state's total meat production. Traditionally, pig rearing has been a practice among tribal communities, but non-tribal communities have increasingly embraced pig farming as their primary source of income. Cattle rearing comes next with 24 percent engaged in rearing cows and 20 percent in goat rearing.

	North	**Unakoti**	**Khowai**	**West**	**Sepahijala**	**Gomati**	**South**	**Gumti WLS**	**Total**
Cow	23%	25%	22%	20%	23%	23%	27%	26%	24%
Goat	22%	23%	18%	18%	18%	22%	20%	20%	20%
Pig	31%	41%	40%	37%	41%	38%	39%	38%	38%
Chicken	18%	5%	16%	23%	10%	11%	9%	9%	12%
Duck	6%	6%	5%	3%	7%	5%	5%	7%	5%

Table 30: Types of Livestock Owned (N=3674)

The primary source of fodder for cows and goats is from trees and fodder from their own agricultural land, accounting for 64 percent and 63 percent of their respective fodder requirement. For pigs, a significant portion of their feed (54 percent), also comes from the owners' agricultural land. Fodder from trees and other sources from agricultural land of others are the second most common source for cows (35 percent) and goats (41 percent). Similarly, poultry (13 percent) and ducks (21 percent) also derive a portion of their fodder from the same source. Reserve forests provide a significant portion of fodder for both cows (22 percent) and goats (28 percent). Purchase of feed (40 percent) is a significant source for pigs. Feed for poultry (22 percent) and ducks (21 percent) also rely on purchased fodder, albeit to a lesser extent.

	Cow	**Goat**	**Pig**	**Chicken**	**Duck**
Trees/ fodder from own agriculture land	64%	63%	54%	48%	51%
Trees/ fodder from others' agriculture land	35%	41%	15%	13%	21%
From treatment area	2%	4%	3%	2%	6%
From reserve forest	22%	28%	7%	10%	4%
From other village common land	21%	19%	11%	19%	11%
Purchase	8%	4%	40%	22%	21%
Other	1%	0%	3%	13%	8%

Table 31: Source of fodder for livestock (N=3674)

The three most common items for commercial sale are milk, meat and eggs. More than half the sample households sold cow milk (58 percent) followed by those who sold goat milk (28 percent). Gumti WLS shows the highest percentage engaged in selling cow milk with 70 percent of the respondents engaged. Although there is no sale of goat milk in West Tripura and Sepahijala, half of the respondents each from North Tripura, Unakoti and Khowai sell goat milk.

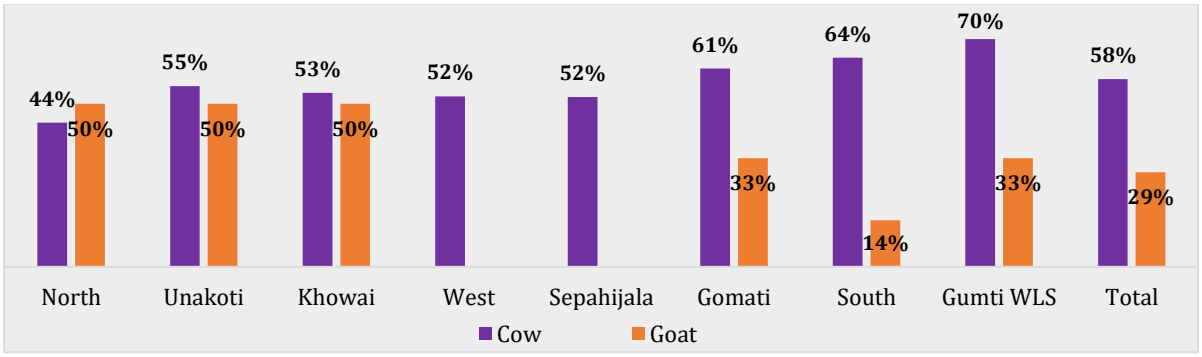


Figure 41: HHs selling milk (N=464)

While Gumti WLS constitutes the highest proportion of households that reported selling milk, South DMU was found to be selling the highest quantity, at 0.67 kltrs. Respondents from North and Khowai DMUs indicate a high volume of goat milk sale wherein 0.84 and 0.7 kltrs were sold by each household annually.

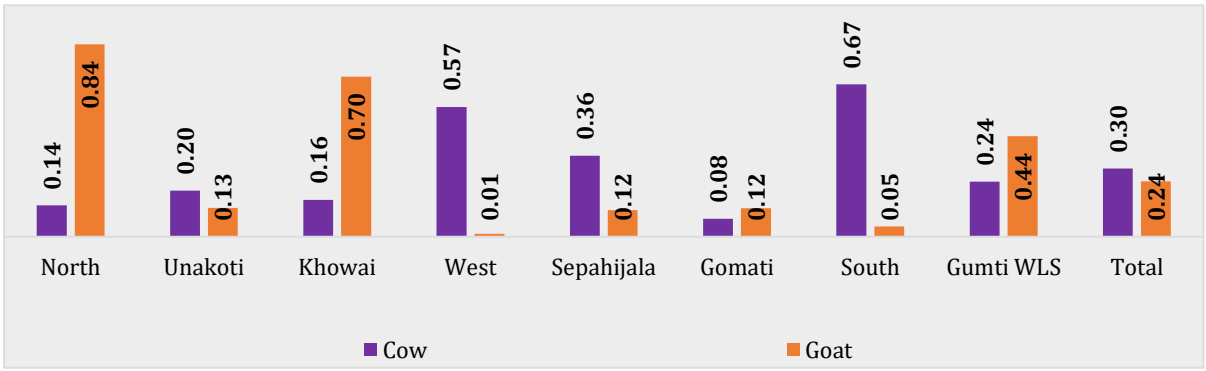


Figure 42: Average quantity of milk sold annually (per HH, in kL) (N=464)

From an income perspective, households in West DMU exhibit a difference in their earnings from cow milk sales. On average, they earn a relatively high income of INR 29684, despite selling a lower quantity of milk (0.56 kltrs). In contrast, respondents in South sell 0.67 kltrs of cow milk but earn an annual income of INR 9635. A similar pattern emerges with goat milk sales. Households in Gumti earn INR 37816 from the sale of 0.44 kltrs, while those in North and Khowai sell twice the quantity but earn an average of INR 7900 each.

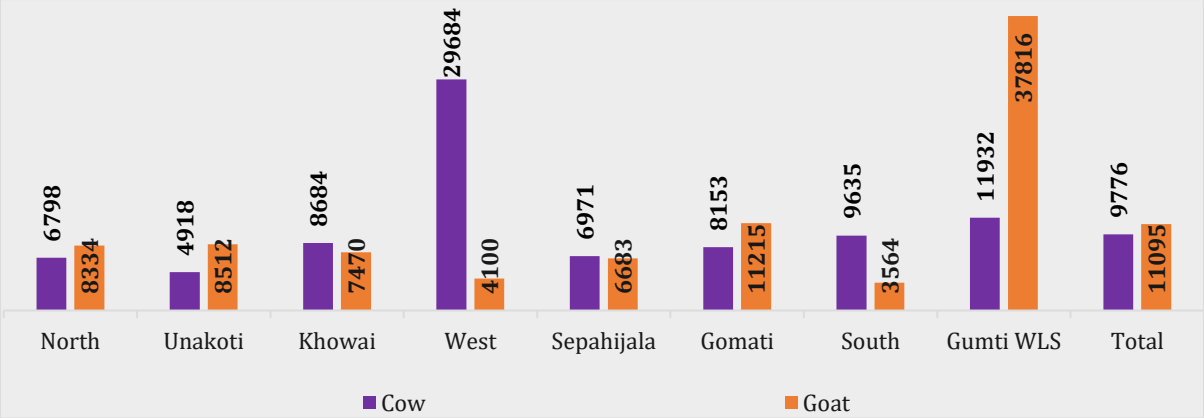


Figure 43: Annual income from sale of milk (in INR)

The choice to sell milk in the village and nearby *haat-bazaars* for both cow and goat milk is driven by the perishable nature of milk. This approach minimizes the risk of spoilage during transportation, especially when cold storage facilities are not readily available.

		North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Cow	In village	90%	84%	72%	55%	57%	74%	88%	94%	79%
	Adjacent Bazaar	14%	12%	20%	65%	43%	29%	63%	33%	33%
	Merchant in Village	5%	6%	8%	10%	29%	3%	0%	6%	7%
	Others	0%	1%	4%	0%	2%	3%	1%	0%	1%
Goat	In village	100%	92%	67%	100%	56%	88%	86%	89%	84%
	Adjacent Bazaar	50%	25%	33%	50%	56%	31%	7%	33%	32%
	Others	0%	3%	6%	0%	0%	0%	5%	4%	2%

Table 32: Market for sale of milk (N=321)

Livestock and poultry are the primary sources of meat in the DMUs with 71 percent and 68 percent of the respondents' selling cattle and pig meat respectively, closely followed by respondents selling duck meat (63 percent). Income-wise, piggery generates the highest amount with INR 23198. Goat and chicken are close contenders with an average of INR 11000 being provided from their sale. Similar to milk, meat is sold in the village or at the adjacent market. But local village merchants also play a part in the sale of meat as indicated by 10 percent of the responses opting for it.

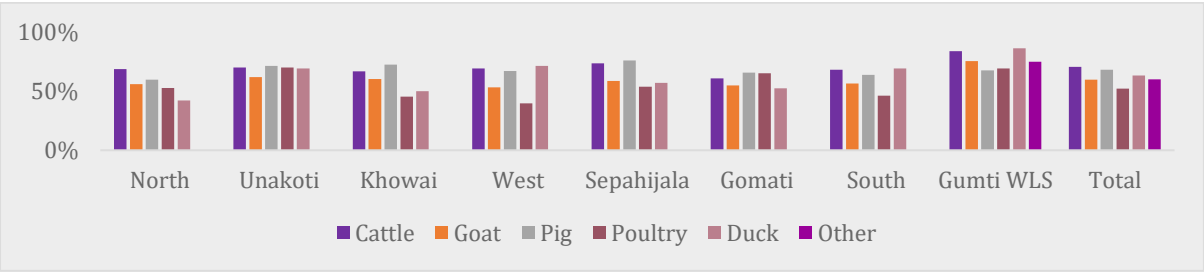


Figure 44: HHs selling meat (N=2412)

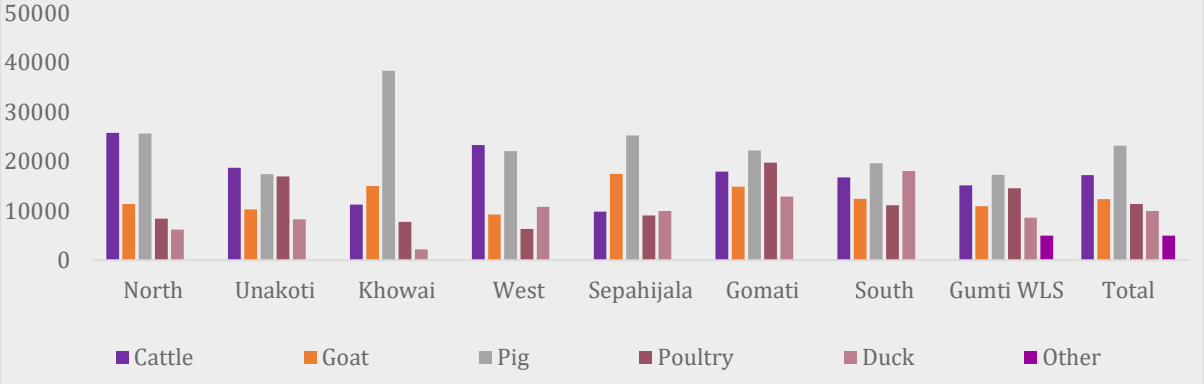


Figure 45: Annual income from sale of meat

Eggs from poultry, including from chicken and ducks—are marketed in these areas where they are raised. While 61 percent of eggs from poultry are sold, the proportion is higher for duck eggs (at 86 percent). Gumti WLS and South region families sell 91 percent and 90 percent of poultry eggs, respectively, whereas Unakoti sells 100 percent of all types of eggs. Furthermore, both regions receive the highest money from selling eggs, with INR 7015 and INR 5588, respectively. Duck eggs are sold the least in the Khowai region, accounting for 33 percent of families, but the revenues from selling duck eggs are higher (INR 3,807) than the national average (INR 2,239). These eggs are generally sold in the village, with the surrounding haat bazaar serving as a secondary market. In the North DMU, 100 percent of poultry-raising households and 92 percent of duck-raising households sell their eggs in the village.

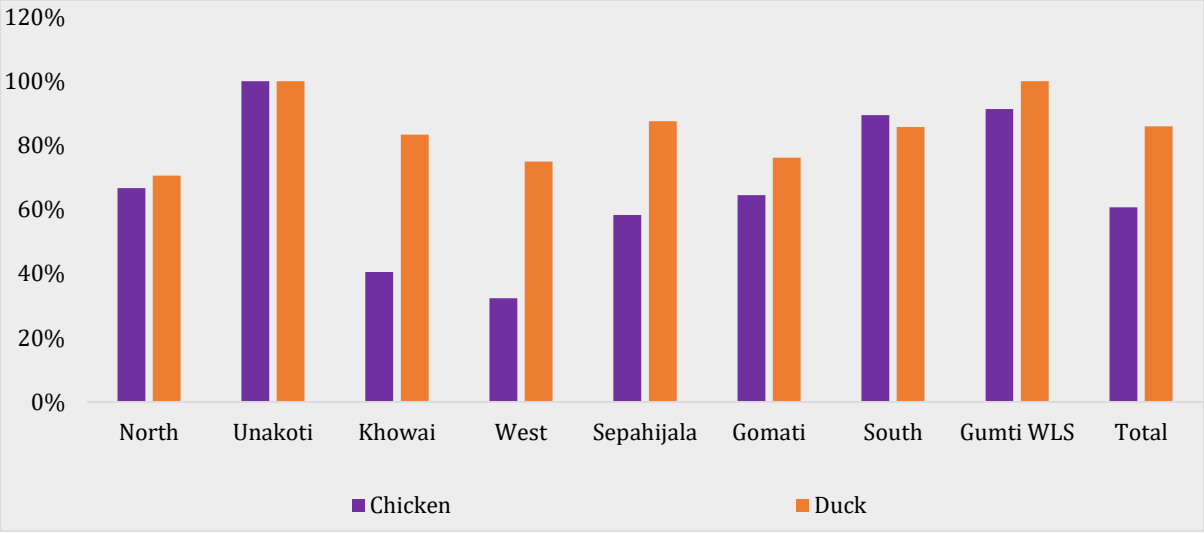


Figure 46: HHs selling egg (N=304)

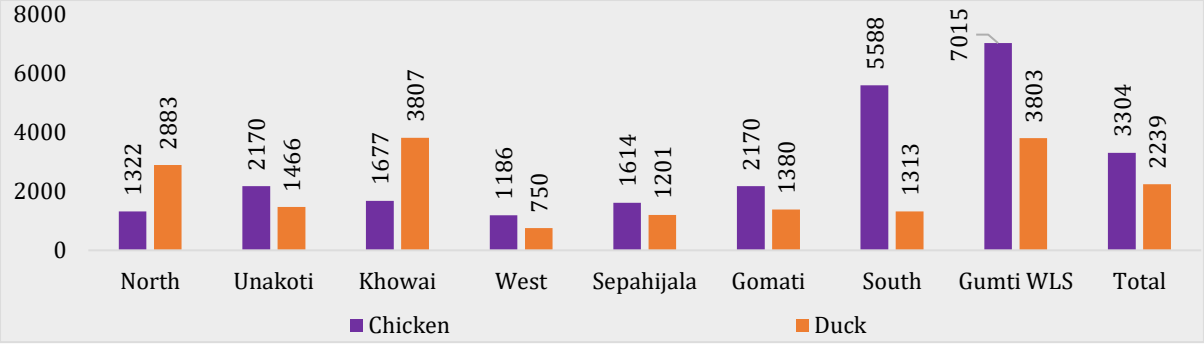


Figure 47: Annual income from sale of eggs

		North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Chicken	In village	100%	83%	93%	64%	86%	80%	94%	91%	88%
	Adjacent Bazaar	43%	83%	33%	18%	14%	65%	76%	70%	54%
	Merchant in Village	0%	17%	0%	27%	0%	0%	0%	0%	4%
	Others	2%	0%	0%	2%	0%	1%	1%	2%	1%
Duck	In village	92%	75%	60%	67%	79%	71%	83%	81%	77%
	Adjacent Bazaar	42%	31%	60%	33%	36%	41%	50%	48%	43%
	Merchant in Village	0%	0%	10%	33%	7%	6%	17%	5%	7%
	Others	0%	0%	3%	0%	0%	2%	3%	0%	1%

Table 33: Market for sale of eggs (N=218)

5.6 Fisheries

Among the surveyed households, the proportion of those who own ponds varies significantly among DMUs. Notably, the North Division (26 percent) has the highest percentage of households owning ponds, followed by Unakoti (14 percent). In contrast, Gumti WLS (2 percent) has the lowest percentage of households owning ponds. Overall, around 8 percent of households across all DMUs own ponds.

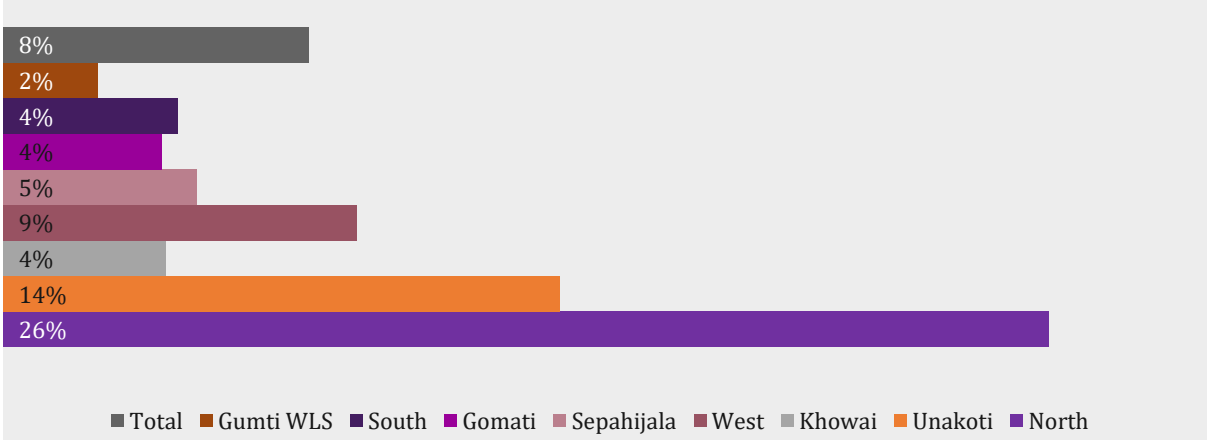


Figure 48: Proportion of households who have owned ponds (N=5309)

The data presented in the figure illustrates the proportion of households engaged in leasing ponds across different DMUs. The highest proportion of households having leased land is in the North at 2 percent, followed by Unakoti, Khowai, West, Sepahijala, and Gomati DMUs, all at 1 percent. However, in the South and Gumti WLS, the proportion of households involved in pond leasing is 0 percent.

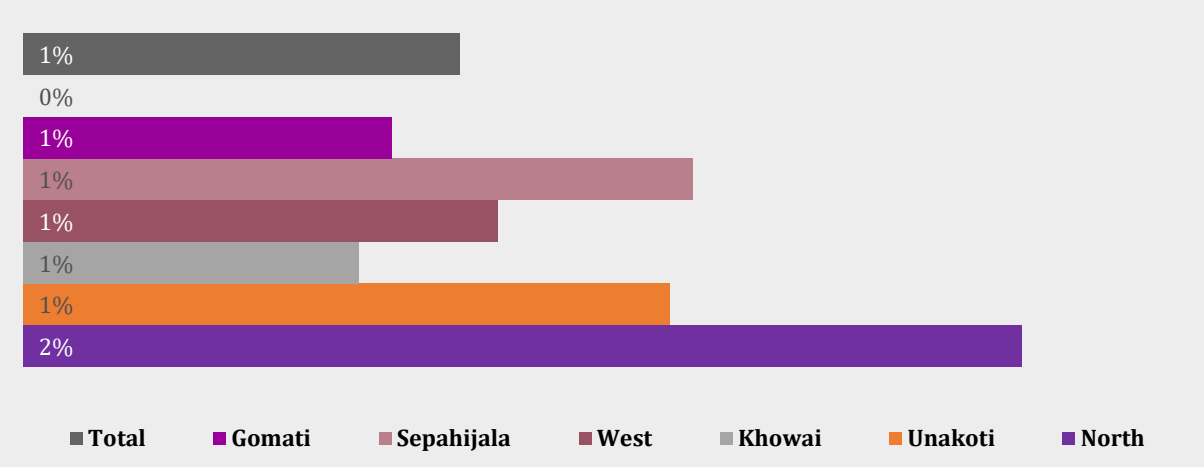


Figure 49: Proportion of households who have leased in ponds (N=5309)

The following figure represents the average quantity of fish produced in kilograms (Kg) per year in owned and leased ponds across the DMUs. In terms of owned ponds, Sepahijala stands out with the highest average fish production at 5,346 Kg, followed by North (3,480 Kg), Gomati (3,726 Kg), and Gumti WLS (2,764 Kg), while Unakoti (1,910 Kg), Khowai (2,442 Kg), South (2,630 Kg), and West (2,639 Kg) have relatively lower average fish yields. For leased ponds, Khowai reports an exceptionally high average fish production of 38,026 Kg, far surpassing all other DMUs, possibly indicating a concentrated fishery operation in that area. Other DMUs have considerably lower average yields in leased ponds, with Gumti WLS (925 Kg) and Unakoti (1317 Kg) selling the next highest figures.

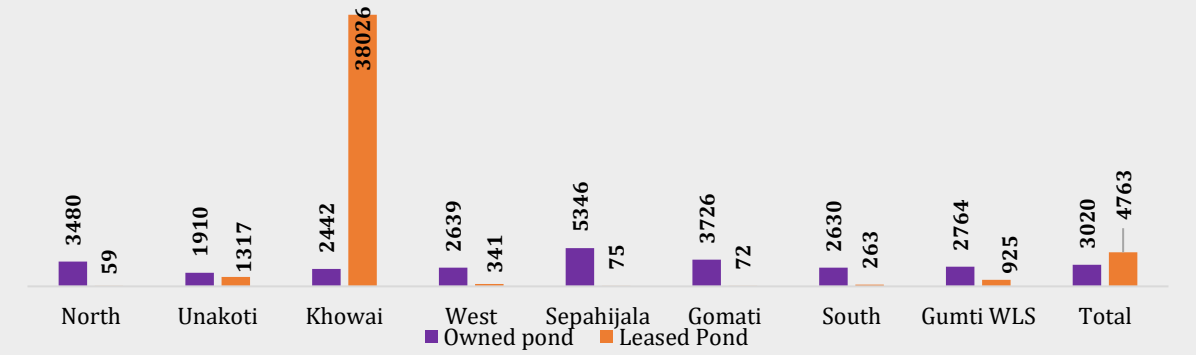


Figure 50: Average Quantity of fish produced in a year (Kg)

The chart reveals income generated from leased ponds and total amount received from own and leased ponds among Self-Help Group (SHG) member households in various DMU'S. West DMU reports the highest average income from leased out ponds at INR 22,500, followed by Unakoti (INR 13,000) and Sepahijala (INR 10,000). In contrast, DMUs like North, Khowai, and Gumti WLS report considerably lower average earnings from leased ponds. These income variations can be attributed to factors such as pond size, productivity, market demand, and lease agreement terms. North DMU reports the highest total sale amount received from own and leased ponds at INR 40,240, with Gumti WLS also showing significant earnings at INR 34,460. Other DMUs, including South, Unakoti, Khowai, West, Sepahijala, and Gomati, contribute substantially to the region's economy through fish farming activities, as indicated by their substantial total sales amounts.

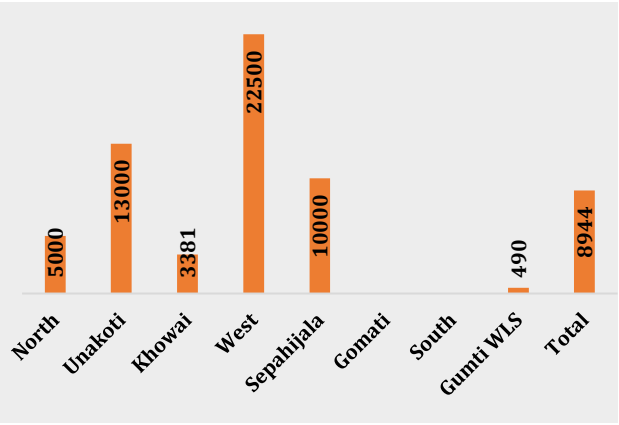


Figure 52: Average amount received from leased out ponds (INR)

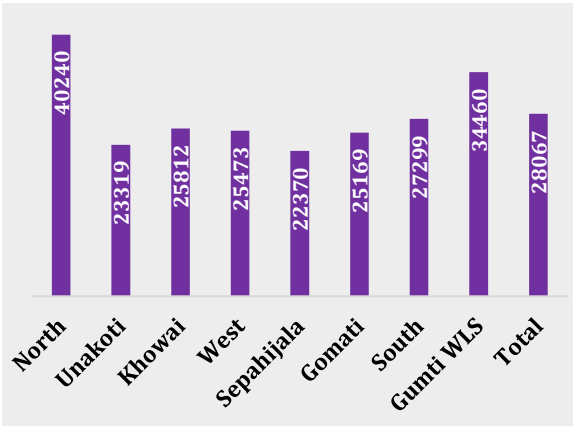


Figure 51: Total amount received from own/leased pond (INR)

Most of the fish is sold within the village (42 percent) or in nearby market (59 percent) with little variation across DMUs. In the West, Sepahijala, Gomati, South, and Unakoti adjacent Haats/Bazaars are the dominant locations for fish sales, with percentages ranging from 56 percent to 66 percent. Gomati SHG member households has the proportion of sales occurring within villages (62 percent).

Image 2: Fish, ready for sale

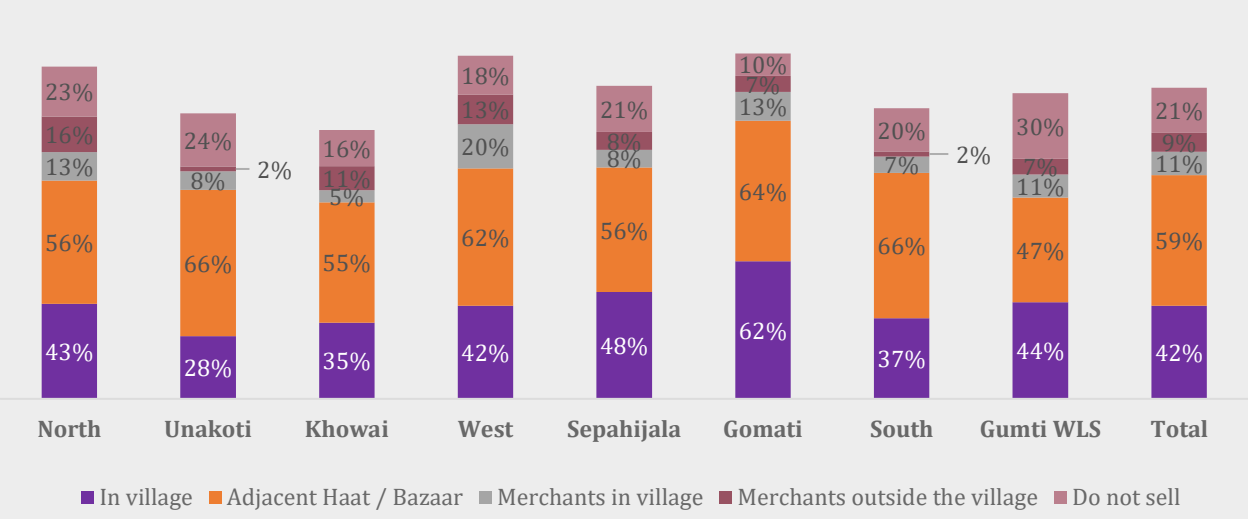


Figure 53: Places for selling fish (N=517)

6 Household Expenditure

The data on average monthly household expenditure across DMUs, provides valuable perspective on the spending patterns and economic well-being of households in the region. Sepahijala region has the highest average monthly household expenditure of INR 9558, indicating a relatively higher level of spending capacity in this area. South and West DMUs also exhibit relatively high expenditure levels at INR 9038 and INR 8612, respectively, reflecting relatively higher economic conditions. Conversely, Unakoti and Gomati report lower average monthly household expenditures of INR 5836 and INR 5617, respectively, which indicates comparatively lower income levels and corresponding higher poverty levels in the region.

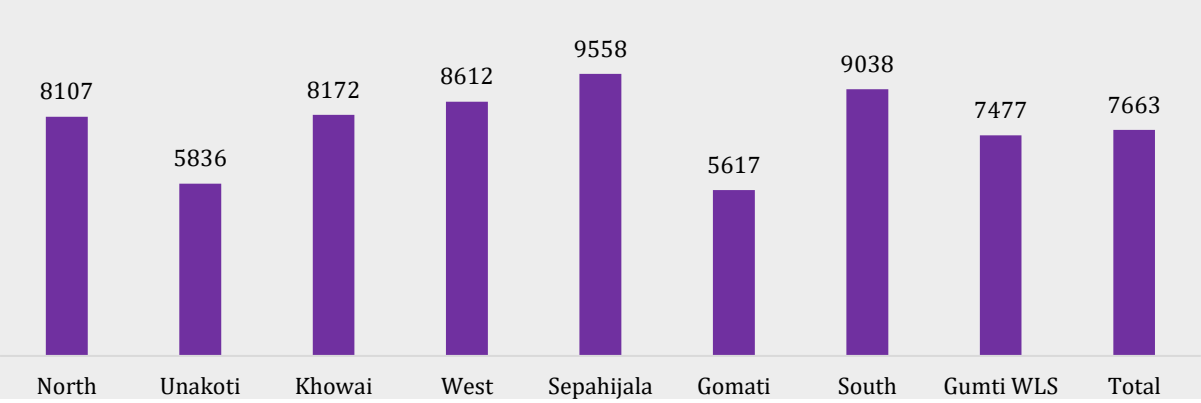


Figure 87: Average monthly expenditure per HH (in Rs)

When we delve into the various aspects of monthly spending, the highest expenditures are observed in other assets/house rent. In North DMU, the average per capita spending in this category amounts to INR 3068, while South DMU allots INR 1980 for the same. In comparison, the other DMUs demonstrate considerably lower expenses in this category. In the realm of food and dietary essentials, substantial spending is channelled towards items like eggs/meat (notably Gumti WLS with INR 572), vegetables (especially South with INR 358), and milk/curd (Unakoti, at INR 342). Furthermore, there is notable spending on rice/wheat from sources other than the Public Distribution System (PDS), with South directing INR 439 per capita to this. Additionally, significant expenses are documented in other expenditure categories, including jewellery (South, INR 1119) and repair work (Sepahijala, INR 1036). As a result, South and Sepahijala secure the top two positions in terms of monthly per capita spending, which we will discuss further in the following section.

Calculated by dividing the total household expenditure by the population, per capita monthly expenditure provides insights into spending patterns, affordability of essential goods and services, and overall economic conditions. Sepahijala region reports the highest per capita monthly expenditure of INR 2673, indicating relatively higher spending capacity among its residents. This suggests a relatively better economic situation in the region. South also exhibits a relatively high per capita expenditure of INR 2756, indicating higher average monthly spending capacity. On the other hand, Gomati has the lowest per capita monthly expenditure of INR 1491, indicating potentially lower income and high levels of poverty in the region. The SHG household average per capita monthly expenditure is higher than the Tripura MPCE figure: INR 1194, and is in similar with the national average Rs. 2477 implying that the living standard of the denizens of Tripura is somewhat similar to their counterparts in the country as a whole[8] (IHDR, 2016).

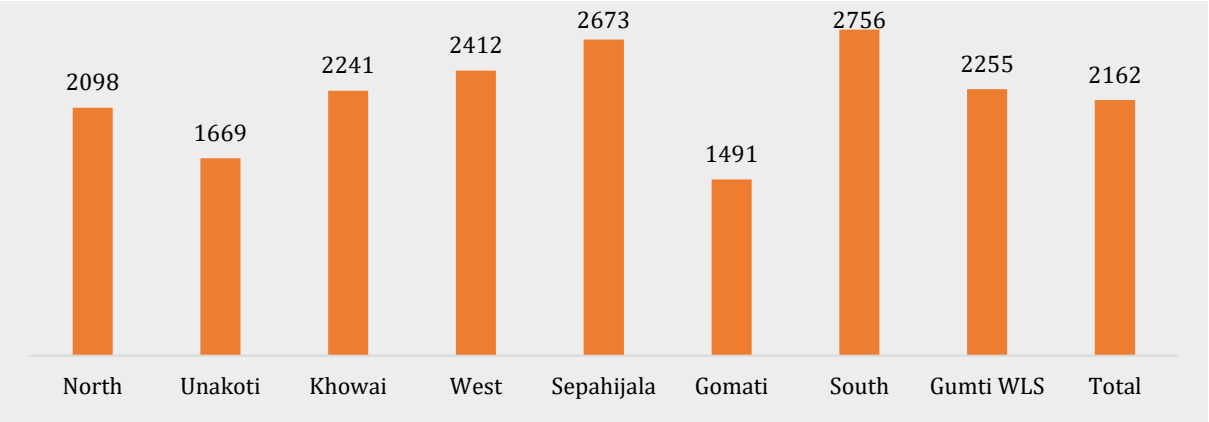


Figure 54: Average per capita monthly expenditure (in Rs)

7 Loan

In the Northern DMU, 41 percent of households have taken loans, while in Unakoti, this figure stands at 21 percent. Khowai has the highest proportion, with 52 percent of households who have taken loans. The average across all regions is 29 percent, indicating that nearly one-third of respondent households in DMUs have accessed loans, while the remaining 71 percent do not currently have any outstanding loans.

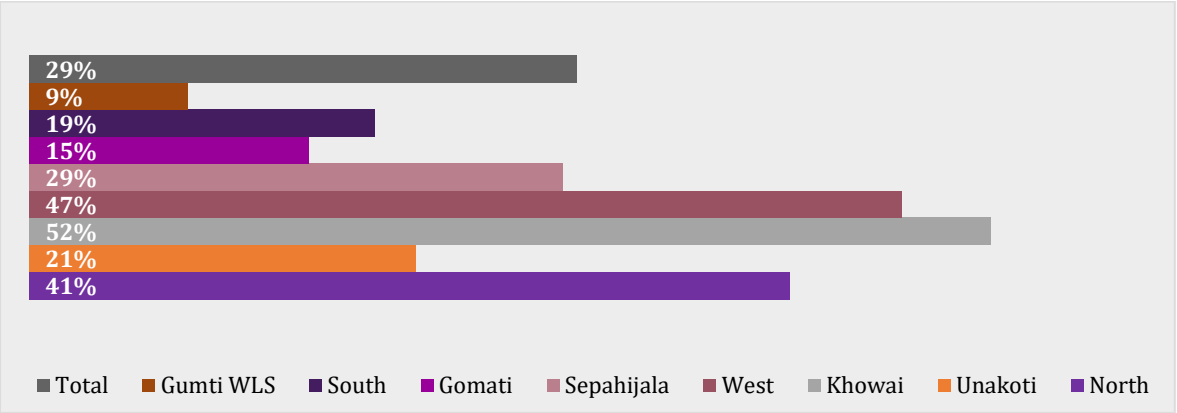


Figure 55: HHs currently repaying loans (N=1812)

8 https://planning.tripura.gov.in/sites/default/files/Draft%20Tripura%20Human%20Development%20Report%20%28THDR%29%20-%20II%2010%20April%202018.compressed.pdf

Table below illustrates the sources of loans that households in the DMUs are currently repaying. In North, banks are the primary source of loans (59 percent) whereas SHGs and micro-finance banks serve as the secondary source. Gumti WLS displays a higher reliance on SHGs at 43 percent, while Khowai has an approximate 49 percent opting for micro-finance institutions. Banks and micro-finance institutions are the leading sources, accounting for an average of 38 percent of households relying on them. Borrowing money from family or relatives does not appear as a major option in the region.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total Avg
SHG	17%	24%	16%	11%	31%	25%	20%	43%	21%
Bank	59%	39%	35%	28%	44%	32%	57%	40%	42%
Relatives / Relative	0%	2%	0%	1%	1%	0%	0%	1%	1%
Micro-finance	26%	35%	49%	58%	26%	39%	22%	7%	35%
Cooperative Banks	1%	1%	1%	3%	0%	7%	2%	13%	3%

Figure 56: Loan disbursing entities (N=816)

Households in North availing loans from SHGs have an average loan amount of INR 21,335, while those opting for banks have a higher average of INR 65938. In Unakoti, loans from SHGs average at INR 27755, while banks provide an average loan of INR 41317. Khowai displays an average loan amount of INR 58403 from micro-finance institutions. West records an average bank loan of INR 56128. The total average loan amount across all regions is approximately INR 37400, with loans from banks and micro-finance institutes having the highest average. It must be noted that while respondents did not cite relatives or family members as a source for borrowing money in the earlier section, this section clearly indicates an average of INR 13864 being borrowed from family or relatives in six out of the eight DMUs. It could be a possibility that borrowing from family was not seen as a formal source of loan disbursal and therefore not quoted as well. Although a small percentage of household report borrowing from relatives, the loan amount tends to be higher.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
SHG	21335	27755	14543	12300	24633	21824	32317	33704	23744
Bank	65938	41317	39001	56128	56293	28367	41372	32391	49616
Friends/ Relative	21333	1500	5000	25000	15000			5667	13864
Micro-finance	65523	42743	58403	62012	73305	51062	59927	37316	58270
Cooperative Banks	50000	40000	40000	75000	120000	33333	1400	32500	41971

Table 34: Average loaned amount from different institutions

Loans from SHGs carry an average interest rate of 10 percent, while bank loans have a slightly higher average interest rate of 14 percent. Unakoti records an average interest rate of 17 percent

for bank loans, while Khowai displays a lower rate of 10 percent for SHGs. Micro-finance institutions in South offer loans at an average interest rate of 13 percent. The total average interest rate for all regions with bank loans has an average interest rate of 14 percent. Cooperative banks and micro-finance institutions have the highest average rate of interest at 16 percent. Although loan taken from family and relatives are not stated formally, a small rate of interest (approximately 3 percent) is still paid by the borrower.

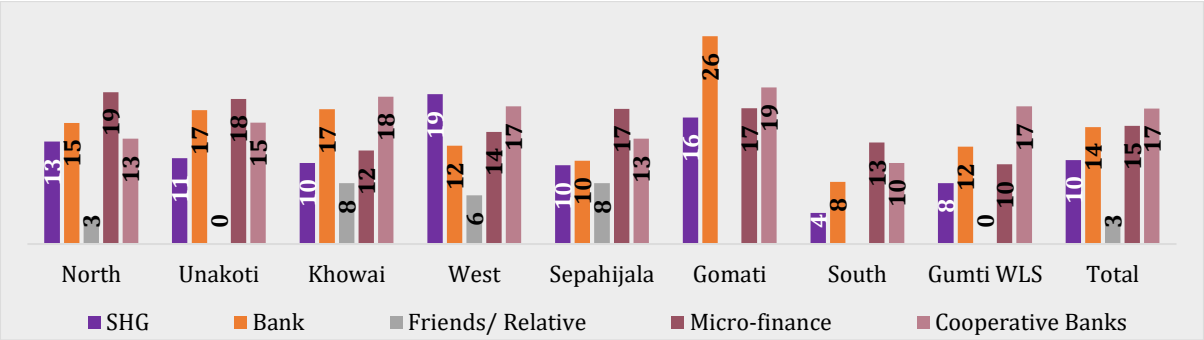


Figure 57: Average rate of interest levied

Loans are accessed (from SHGs, banks, and family) predominantly for the purpose of continuing education as depicted through the data which is followed by the requirement to purchase livestock. Borrowing money for treating an unwell member of the family has emerged to be a common reason across all the DMUs with an overall average of 14 percent from all loaning avenues.

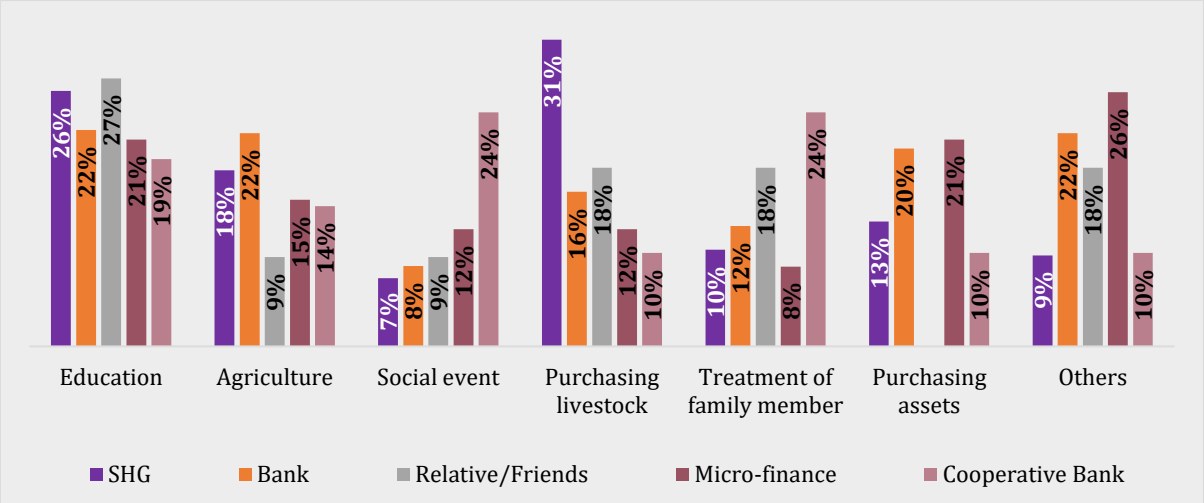


Figure 58: Purpose of accessing loan (N=1126)

8 Savings

These findings provide insights into the diverse saving behaviours and priorities among households in different parts of Tripura, highlighting the focus on self-consumption and education across the board, with DMU level nuances in saving preferences.

The figure below illustrates the proportion of households engaged in saving across the study DMUs. In North Tripura, 69 percent of household's report saving, while for Unakoti DMU, the proportion is 49 percent. Moving to Khowai, the rate jumps to 80 percent, while in the West, 88 percent of households are actively saving. Sepahijala and Gomati regions also demonstrate healthy savings practices, with 75 percent and 68 percent respectively. The overall average across all regions in Tripura indicates that 71 percent of households are actively engaged in saving.

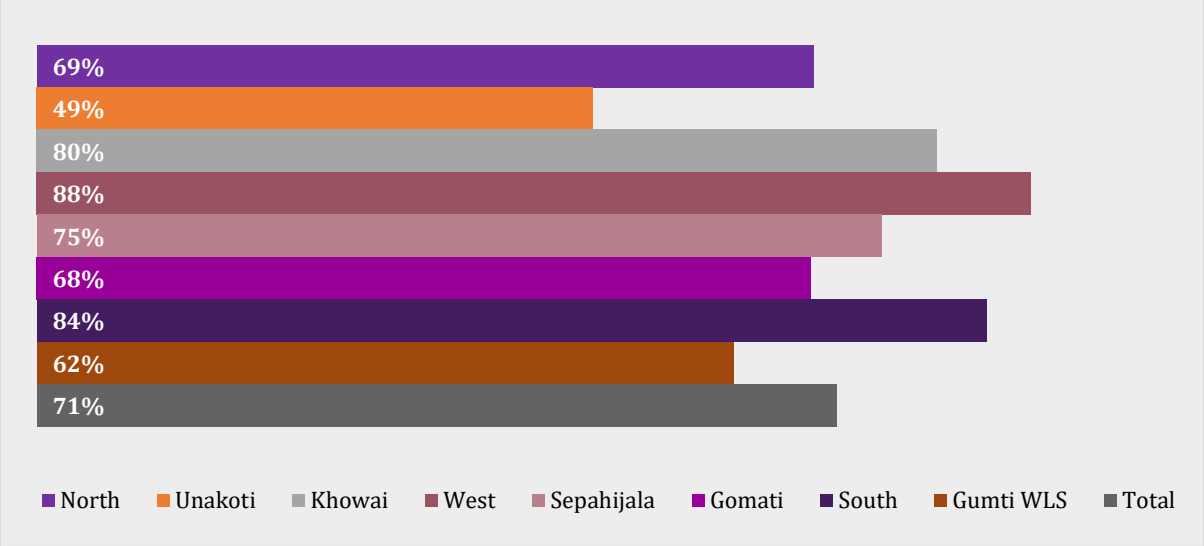


Figure 59: Proportion of HH practicing savings (N=4595)

Across the North and Unakoti DMUs, SHGs are the preferred institution for saving, with 68 percent households keeping their savings with the SHGs. In Khowai, 46 percent favour the bank as an institution for savings. In West, a total of 96 percent of households prefer SHGs for their savings. In Sepahijala, Gomati, and South regions, a large portion of households opt for SHGs, with percentages ranging from 66 percent to 79 percent. Minimal participation is observed in post offices. The preference for these savings avenues varies considerably by region, reflecting differences in accessibility and trust in these institutions.

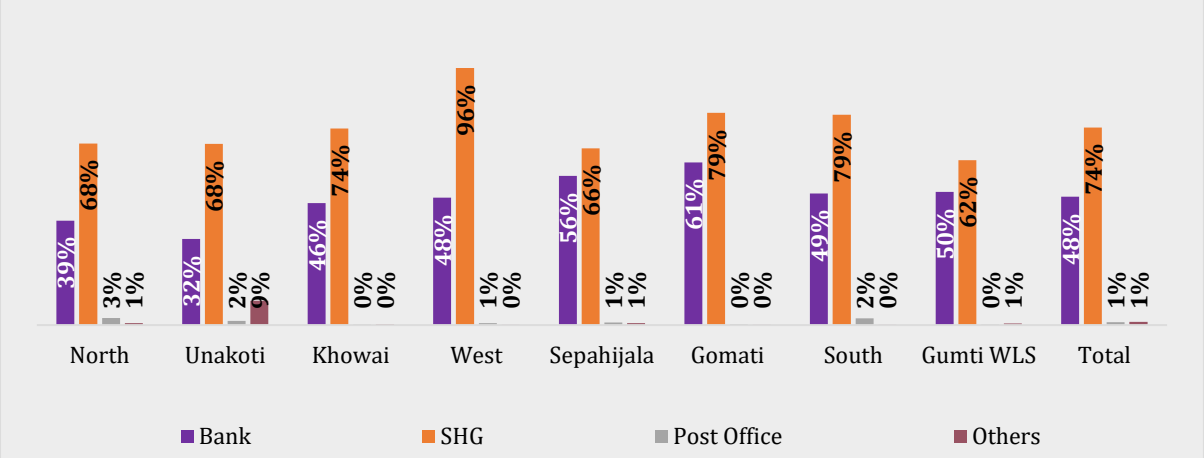


Figure 60: Preferred institutions of savings (N=4595)

In North, the mean savings in banks is approximately INR 21,288, while Unakoti demonstrates a lower average of INR 7712. Khowai maintains an average bank savings of INR 16852, whereas in West, it drops to INR 11960. For SHGs, the mean savings vary, with North, Unakoti, and Khowai reporting lower values of INR 188, INR 485, and INR 616, respectively. In West, households have a higher mean SHG savings of INR 466, while South, Gomati, Gumti WLS and Sepahijala regions maintain averages ranging from INR 593 to INR 1228. The overall average SHG savings across all regions amounts to INR 593.

Post office savings exhibit regional differences ranging from INR 364 in in South to INR 20000 in Khowai. It is the third preferred source for depositing money wherein an overall average of INR 5143 is getting deposited through the eight DMUs.

The DMUs exhibit total average loaned amount as INR 55787 against total average savings of INR 6873 across the institutions of banks, SHGs, post offices, microfinance institutes.

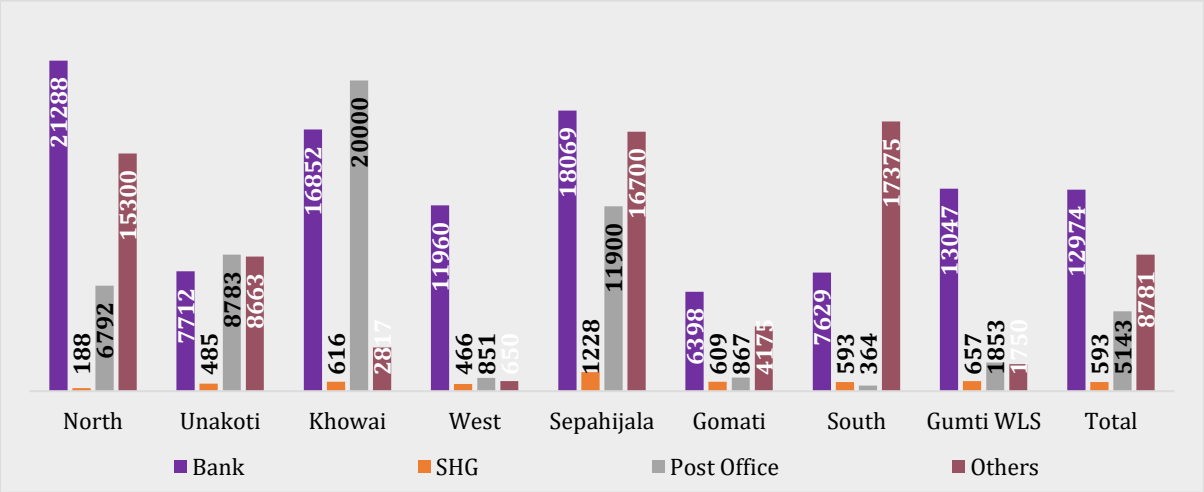


Figure 61: Average savings at different institution

- Majority of households in North, Unakoti, Khowai, West, Sepahijala, Gomati, South, and Gumti WLS regions allocate savings for self-consumption (52 percent to 84 percent).
- Education is a significant savings allocation, with households in these regions dedicating 27 percent to 60 percent of savings for this purpose.
- Reinvestment in business, agriculture, and animal husbandry is more prominent in North, Unakoti, Khowai, West, Gomati, and Gumti WLS regions (5 percent to 27 percent).
- Purchasing additional assets is observed in all regions, with percentages ranging from 0 percent to 16 percent.
- Regional disparity in using savings to build new houses, with Gumti WLS at 51 percent, and other regions allocating smaller percentages (3 percent to 12 percent).
- Renovating old houses is less common across regions, with an average response of 7 percent.

	North	Unakoti	Khowai	West	Sepahijala	Gomati	South	Gumti WLS	Total
Purchase additional assets	8%	3%	6%	11%	16%	9%	12%	0%	8%
Loan it to friends/relatives	1%	1%	0%	0%	1%	0%	1%	0%	1%
Reinvest in business/agriculture/animal husbandry	21%	20%	27%	21%	5%	22%	6%	23%	19%
Self-consumption	83%	52%	64%	63%	53%	77%	84%	59%	68%
Education	29%	30%	37%	27%	43%	50%	40%	60%	40%
Building new house	12%	10%	9%	8%	5%	3%	5%	51%	14%
Renovating old house	5%	11%	8%	18%	6%	4%	3%	4%	7%
Any other	0%	10%	2%	1%	0%	0%	0%	0%	2%

Table 35:Perceived benefits of savings (N=4595)

4. Annexure

a. Logical Framework for SCATFORM

Goal: **To develop forest ecosystem services and livelihoods of forest dependent communities in the State of Tripura.**

Outcome	Key Outcome Indicators	Means of Verification	Outputs	Output Indicators	Means of Verification
Sustainable Forest Management					
1. Improved quality and quantity of forests and grasslands and their management in the targeted catchment	1.a 25 percent increase in the proportion of moderate dense category forest[9] in the targeted catchments	1.a Bio-physical baseline/ endline report 1.b Biodiversity assessment report[10]	1.1 Increased area under forest in the targeted catchments 1.2 Increased area under grassland in the targeted catchments	1.1.a 42000 ha area covered under different regeneration/ plantation models in JFM Mode a. Artificial Regeneration – 5,000 ha	1.1.a, 1.1.c & 1.2.a – MIS 1.1.b – Internal (six monthly) and external assessment (third year) reports
	1.b 10 percent increase in species composition in Shannon Diversity Index for both forests and grasslands in targeted catchments	1.c Forest Carbon stock report 1.d Socio-economic baseline/ midline/ endline reports	1.3 Community aware about sustainable use of forest and water resources	b. Aided Natural Regeneration – 21,000 ha c. Teak Plantation – 15,000 ha d. Silvi-Pastoral Plantation – 1,000 ha	1.3.a – Socio-economic baseline/ midline/ endline surveys
	1.c percent increase in the Forest Carbon stock			1.1.b 80 percent survival rate after 3 years of plantation	
	1.d 20 percent Jhumia households stop practicing Jhum			1.1.c 3 High Tech, 7 centralized and 150 decentralized nurseries	

[9] Moderate dense category forest is tree canopy **density** of 40 percent and more but less than 70 percent (0.4 to 0.7 tree **density**). 25percent increase means that if moderate density forest at the baseline stage is 20percent then it is expected that in the endline it should increase to (20+(25/100)*20) = 25 percent.

[10] A biodiversity assessment in sample project sites, pre, mid and post project can be undertaken to inform this indicator.

		cultivation in the targeted catchments				developed/ improved 1.2.a Area (in ha) covered under grassland improvement 1.3.a percent households show increased awareness on sustainable forest and water management practices[11]	
Soil and Moisture Conservation							
2.	**Improved water regime in the targeted catchments**	2.a A water conservation structure within 500 meters from the centre of all the hamlet 2.b percent of JFMC/EDCs reporting improvement in water regime in the streams affected by the treatment area	2.a – Microplanning and endline surveys 2.b - Microplanning and bio-physical baseline/ midline/ endline surveys	2.1 2.2	Reduced soil run-off in targeted catchments Increased soil moisture in the targeted catchments	2.1.a 10 percent reduction in soil run-off in treated areas in targeted catchments 2.2.a 10 percent increase in soil moisture content in treated areas in targeted catchments 2.2.b 10 percent increase in soil organic carbon in treated areas in targeted catchments	2.1.a, 2.1.b and 2.1.c – Internal and/or external sample-based studies
Livelihood Improvement							
3.	**Improved Livelihoods of the**	3.a 20 percent increase in	3.a and 3.b Socio-economic	3.1	Institutions of Non-Timber	3.1.a no. of NTFP collection/	3.1.a, 3.1.b, 3.1.c, 3.1.d, 3.2.a, 3.2.b,

[11] Sustainable Forest Management and Sustainable Water Management practices will be documented by concerned experts in the form of manuals/ guidelines and the community members will be trained on the same.

Communities in the targeted catchments	the income of JFMC members from sale of NTFPs 3.b Livelihoods [12] of 50 percent SHG members in the targeted SHGs improved	baseline/ midline/ endline surveys		Forest Produce (NTFP) based livelihoods created and/or strengthened 3.2 Agro-forestry based livelihoods on RoFR lands strengthened 3.3 Livestock/ fisheries/ organic farming-based livelihoods strengthened 3.4 Convergence on livelihood activities with other departments / agencies 3.5 Eco-tourism in the state strengthened	primary processing centres established 3.1.b no. of advanced processing and value addition units established 3.1.c no. of households selling NTFPs through collection centres 3.1.d Value of trade/ profit generated by the livelihood organizations formed under the project 3.2.a Number of agroforestry plots supported under the project 3.2.b Area under agro-forestry plantation 3.2.c No. of farmer's groups established for promoting agro-forestry 3.3.a Number of SHG members	3.2.c, 3.3.a, 3.4.a, 3.5.a and 3.5.b – MIS

[12] Livelihoods will include income, expenditure, savings, loans and assets

						having income from livestock/ fisheries/ organic farming-based livelihoods	
						3.4.a No. and value (in ₹) of activities/ programs facilitated through convergence with other departments/ projects	
						3.5.a no. of eco-tourism sites renovated	
						3.5.b Eco-tourism policy of the state comes into force	
Institutions of forest management and livelihoods strengthened							
4.	**Community and other institutions for forest management and livelihood improvement strengthened**	4.a Proportion of well-functioning JFMCs/ EDCs[13] 4.b percent of well-functioning SHGs[14]	4.a. – JFMC/ EDC self-assessment report 4.b – SHG self-assessment report	4.1 4.2	Capacity of community institutions developed Gender aspects mainstreamed in the project	4.1.a No. of JFMCs/ EDCs worked with 4.1.b 100 percent of JFMCs/ EDCs have approved micro plans	4.1.a, 4.1.b, 4.1.c, 4.1.d, 4.1.e, 4.2.b – MIS 4.1.b – Approved micro plans

[13] Well-functioning JFMCs/ EDCs will be categorised based on an index comprising of – a) regular meetings of executive – at least 6 executive committee meetings and 2 GBMs in a year, b) attendance – at least 80percent attendance rate in executive committee meetings and 60percent attendance rate in GBM. Attendance rate = (Cumulative Attendance x 100/ Number of Meetings Conducted x Number of Members), c) women participation – at least 2/3rd of the women members in executive committee present in the executive committee meetings, at least 50percent of the members present in the GBM are women (cumulative attendance of women*100/ cumulative attendance), d) JFMC has up to date relevant documents (list to be added in consultation with JFM expert of PMC) related to the institutional and bio-physical aspects, d) has addressed issues of fodder and fuelwood collection emanating due to protection of the area, e) has norms and rules for forest resource management, f) the rules are enforced through a working system

[14] Well-functioning SHGs will categorised based on an index comprising of – a) regular meetings – at least 10 meetings in a year, b) attendance – at least 90percent attendance rate (Cumulative Attendance x 100/ Number of Meetings Conducted x Number of SHG Members), c) regularity of savings – 100percent savings rate (Total savings collected (during six months) X 100/ Monthly Savings x Total

		4.3	Forest research on various aspects conducted	4.1.c 100 percent of targeted beats have approved Beat Forest Basic Plan (BFBP) 4.1.d No. of JFMC/ EDC/ SHG members (gender disaggregated) trained on different aspects of sustainable forest and water management, livelihoods improvement and strengthening institutions 4.1.e No. of trainees from TFD and other concerned agencies participate in different training programs 4.2.a Gender mainstreaming action plan prepared 4.2.b Number of women in leadership positions in JFMCs	4.1.c – Approved BFBP 4.1.d & 4.1.e – Training reports 4.2.a – Gender Mainstreaming Action Plan 4.3.a Research Papers and art

Number of members x six months), d) loan disbursement to members – 60percent (Number of members having loan outstanding x 100/ Total SHG members), e) loan repayment - >= 95percent (Cumulative loan collection – prepayments/ Total loan principal due on the last day of the previous month)

		4.3.a At least X no. of forest research papers are published under the project