Study Number - 189

RURAL LIVELIHOOD DIVERSIFICATION IN WEST BENGAL

Bidhan Chandra Roy
Dilruba Khatun
Arnab Roy

Study sponsored by Ministry of Agriculture and Farmers Welfare
Government of India, New Delhi

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(For the States of West Bengal, Sikkim and Andaman & Nicobar Islands)
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Preface

The present study entitled '*Rural Livelihood Diversification in West Bengal'* was initiated by Agro-Economic Research Centre, Visva-Bharati during work plan 2017-2018 at the instance of Directorate of Economics and Statistics, Ministry of Agriculture & Farmers Welfare, Government of India, New Delhi with full financial and administrative support.

The motivation for the study came from the interaction with Mr. P. C. Bodh regarding the importance of continuous/repeated village survey studies. Since the first and second authors of this study had already conducted a similar study a decade ago, it was suggested to use that as a base line and repeat the survey in the same villages to map the changes in rural livelihood diversification in West Bengal.

Livelihoods of rural people do not depend on a single source of employment. Also it includes various aspects of life apart from income or occupation. Livelihood strategies are characterized by the allocation of assets (natural, physical, financial, public, social and human), income-earning activities (on farm, off farm), and outcomes (food, income, employment, consumption, security). Together these determine the well-being attained by an individual or households.

The present study is a longitudinal study and was conducted in the state of West Bengal during the period 2007-18. In order to examine the changing dimensions of rural livelihood, a repeated field survey was undertaken in an interval of 10 years. The first survey was conducted for the agricultural year 2007-08, and the second survey was undertaken with the same households for the agricultural year 2017-18. It is an attempt to explore the changes in livelihood sources, its determinants and impact on sustainable rural livelihood in West Bengal.

The findings of the study shows that the rural livelihood in West Bengal is fast diversifying though job creation has mainly been shifted towards casual and marginal works. But the silver lining is that livelihood diversification represents a promising opportunity to enhance household income in rural areas. In general, the capacity of agriculture sector in providing employment to the rural masses reached saturation, but there are still scope within agriculture to increase the farm income through development of irrigation facilities and promoting diversification towards high value crops and agri-business activities. So far, the growth in non-farm employment opportunities remained inadequate to absorb the surplus labour left agriculture sector due to push factors. Therefore, creation of off-farm and non-farm employment opportunities for rural households holds the key for a sustainable livelihood. It is a challenging task but employment opportunities need to be created, otherwise the goal of doubling farmers' income will remain as a slogan only.

The project proposal was developed and presented by Prof. Bidhan Chandra Roy in consultation with Dr. (Mrs.) Dilruba Khatun, Asutosh College, University of Calcutta. The task of completion of this study was assigned to Dr. (Mrs.) Dilruba Khatun with Prof. Bidhan Chandra Roy as overall coordinator and Mr. Debanshu Majumder as Team Leader. The study team also consist Mr. Ashok Sinha and Dr. Debajit Roy of this Centre. Analysis and drafting of the report was done by Prof. B. C. Roy, Dr. (Mrs.) Dilruba Khatun, and Mr. Arnab Roy. Secretarial assistance was provided by Munshi Abdul Khaleque, Nrityananda Maji and Dibyendu Mondal. Mr. D. Das, Mr. P. Mitra, Mr. A.R. Patra, Mr. B. Singh and Mr. S. Hansda helped in the office maintenance.

We acknowledge the generosity of Prof. Sabuj Koli Sen, Vice Chancellor (Off.), Visva-Bharati, and Mr. S. Mukherjee, Economic and Statistical Adviser, Ministry of Agriculture & Farmers Welfare, Government of India, New Delhi for their guidance and necessary support in completion of the study.

We are particularly indebted to Shri P. C. Bodh, Adviser (AER Division) and Mr. Rakesh Kumar, Director (AER Division), Ministry of Agriculture & Farmers Welfare, Government of India, New Delhi; and Prof. Amit Kumar Hazra, Former Directors, AERC, Visva-Bharati for their valuable suggestions and help rendered during the execution of the study.

A word of appreciation is due to Prof. Ram Pravesh Singh, Hony. Director, AERC, Bhagalpur for his candid suggestions and comments on the draft of this report. Last but not the least; thanks are due to innumerable respondents in the villages who ungrudgingly took the pain of answering to our questions for hours at end. We thank each one of them for their invaluable support.

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Abbreviations

APL	Above Poverty Level
AGEY	Aajeevika Grameen Express Yojana
BFBY	Bangla Fasal Bima Yojana
BGAY	Bangla Gramin Abas Yojana
BPL	Below Poverty Level
DAC&FW	Department of Agriculture, Cooperation and Farmers Welfare
DDP	Desert Development Programme
DDU-GJY	Deendayal Upadhyaya Gram Jyoti Yojana
DDU-GKY	Deendayal Upadhyaya Grameen Kaushalya Yojana
DFID	Department for International Development
DoA	Department of Agriculture
DPAP	Drought Prone Area Programme
DWCRA	Development of Women and Children in Rural Areas
ECL	Eastern Coalfields Ltd.
FAO	Food and Agriculture Organization
FGD	Focused Group Discussion
GCA	Gross Cropped Area
GDP	Gross Domestic Product
GoWB	Government of West Bengal
HI	Herfindahl Index
HYV	High Yielding Varieties
IAY	Indira Awas Yojana
ICDS	Integrated Child Development Scheme
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IGNDPS	Indira Gandhi National Disability Pension Scheme
IGNOAPS	Indira Gandhi National Old Age Pension Scheme
IGNWPS	Indira Gandhi National Widow Pension Scheme
IFS	Integrated Farming System
IRDP	Integrated Rural Development Programme
IWDP	Integrated Watershed Development Programme
IWMP	Integrated Watershed Management Programme
LDI	Livelihood Diversification Index
MGNAREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
MIS	Monthly Income Scheme
MOA&FW	Ministry of Agriculture and Farmers Welfare
MPCE	Monthly Per Capita Consumption Expenditure
MSP	Minimum Support Price

NABARD	National Bank for Agriculture and Rural Development
NCAER	National Council for Applied Economic Research
NFBS	National Family Benefit Scheme
NGO	Non-Government Organization
NREGS	National Rural Employment Guarantee Scheme
NRLM	National Rural Livelihood Mission
NSAP	National Social Assistance Programme
NSSO	National Sample Survey Organization
OLS	Ordinary Least Squares
PHC	Public Health Centre
PMAY-G	Pradhan Mantri Awwas Yojana-Gramin
PMFBY	Pradhan Mantri Fasal Bima Yojana
PMGSY	Pradhan Mantri Gram Sadak Yojana
PMKSY	Pradhan Mantri Krishi Sinchai Yojana
PRA	Participatory Rural Appraisal
RAD	Rainfed Area Development
RRA	Rapid Rural Appraisal
RSETI	Rural Self Employment Training Institutes
SC	Scheduled Caste
SDP	State Domestic Product
SGRY	Sampoorna Grameen Rozgar Yojana
SGSY	Swarnjayanti Gram Swarozgar Yojana
SHG	Self Help Group
SI	Simpson Index
SPMRM	Shyama Prasad Mukherjee RURBAN Mission
ST	Scheduled Tribe
SVEP	Start Up Village Entrepreneurship Programme
SVSKP	Swamy Vivekanada Swanirvar Karmasansthan Prakalpa
WBHDR	West Bengal Human Development Report
UNEP	United Nations Environment Programme

EXECUTIVE SUMMARY

Background

Livelihood diversification is an important strategy by which rural people may work to exit from poverty. It is a process by which rural families construct a diverse portfolio of activities and social support capabilities in their struggle for survival and in order to improve their standards of living. In West Bengal context, where average farm size is too small and unemployment continue to be preponderant among rural households, the notion of sustainable rural development ought to be viewed in the context of need for enhancement of employment generation, productivity, and profitability of rural enterprises and above all, for improvement in the economic conditions of the rural households. The present study is a longitudinal study and is an attempt to explore the changes in livelihood sources, its determinants and impact on sustainable rural livelihood in West Bengal.

Objectives

The specific objectives of the study are:

1. To study the nature and extent of livelihood diversification among rural households in the study area;

2. To identify the contexts and determinants of livelihood diversification in the study area;

3. To identify the constraints in sustainable livelihood diversification in the study area;

4. To examine the impact of livelihood diversification on household livelihood security in the study area; and

5. To suggest strategies for sustainable livelihood diversification in the study area.

The study is a longitudinal study and was conducted in the state of West Bengal during the period 2007-18. In order to examine the changing dimensions of rural livelihood, a repeated field survey was undertaken in an interval of 10 years. The first survey was conducted for the agricultural year 2007-08, and the second survey was undertaken with the same households for the agricultural year 2017-18. Following a multistage sampling technique, a total of 200 sample households were selected in probability proportionate to different livelihood groups from the study area. Two districts were selected purposively, one representing a more diversified (Burdwan) and the other less diversified agriculture (Purulia) based on diversification indices. Then, one sub-division from each district, one block from each sub-division, and two villages from each block were selected randomly.

Major Findings

- Rural livelihood in West Bengal is fast diversifying though highly varies across the regions and also across different livelihood groups. Livelihood diversification is greater in agriculturally developed regions than in backward regions, but during last 10 years, the gap has been narrowed down.

- Agriculture and allied activities are the main livelihood option for rural households in West Bengal. However, during last 10 years, substantial changes occurred in the pattern of livelihood. Dependence on agriculture as a primary source of income has reduced substantially and people are now increasingly relying on non-farm income sources for their livelihood. But the job creation, has been shifted towards wage earning and self-employment with pretty business.

- For the poor, livelihood diversification is mainly a survival strategy to cope with the adverse livelihood shocks and to manage the risky environments. However, for others, livelihood diversification is a deliberate attempt to reap the benefits of diversification.

- Household experience (age), education, social status, training, asset positions, credit availability, rural infrastructure, agro-climatic condition and the overall level of economic development of a region are the main driving force towards livelihood diversification in our study area. The scope for livelihood diversification also gets boosted when there are better infrastructure and urban market in the proximity.

- Lack of opportunities to find out an alternative livelihood in non-farm sector is the most important constraints faced by the rural households in West Bengal. The other major constraints faced by the sample households are landlessness or weak asset base; limited access to institutional credit; and poor irrigation and marketing infrastructure. The severity of the constraints is more for the resource poor labourers groups and least for the resource rich salaried class.

- Over time, the contexts of livelihood diversification have also changed considerably, and the pull factors have gradually been replaced by the push factors due to limited expansion of job opportunities in organized non-farm sector and falling profitability of agricultural enterprises.

- Households of the study region perceive that cultivation is a non-profitable business, and therefore for survival, they have to diversify their livelihood through petty business, off-farm activities, and non-farm works.

- Whatever may be the motives, the impact of livelihood diversification is positive on household income, employment and consumption. Household with diversified portfolio of livelihoods have higher level of income, employment and consumption than their counterparts across all the livelihood groups, in both the study regions and during both the period.

Policy recommendations

For sustainable livelihood diversification in West Bengal the following policy interventions are suggested:

- Creation of off-farm and non-farm employment opportunities for rural households holds the key for a sustainable livelihood. Quality of rural livelihood can only improve if surplus labour force in agriculture is absorbed in more productive organised sectors like manufacturing or agro-processing.

- Efforts should be made to making remunerative non-farm opportunities accessible to the rural households particularly in backward regions. Education and skill development can be an effective means of increasing the livelihood diversification strategies as it relaxes the entry barriers to different remunerative non-farm activities, particularly salaried jobs.

- Drought proofing should be accorded high priority over drought relief. Relief should be confined to only those household who are extremely poor. Efforts to be taken to dig new ponds and/or renovate the existing ponds under MGNREGS work.

- Sheer capability (education, asset base, etc) to diversify income sources signifies an improvement in the livelihood security in terms of employment, consumption, and overall well-being of the household. Therefore, policies that reduce various constraints to diversification and widen new opportunities like education, market, infrastructure, credit, social safety nets, etc are in general desirable.

- Development of rural infrastructure is the key: Government should invest more on rural road, market and irrigation infrastructure.

- The role of human capital is universally acknowledged. Thus strengthen the rural education system in rural areas particularly in backward areas like Purulia to promote sustainable rural livelihood diversification.

Chapter – I

Introduction

1.1 Background

Diversification of rural livelihoods is the subject of a growing amount of conceptual and policy –based research as it is considered as an important strategy by which rural people may work to exit from poverty. It is a process by which rural families construct a diverse portfolio of activities and social support capabilities in their struggle for survival and in order to improve their standard of living (Ellis, 1998). Both on-farm and off-farm diversification has been pursued in many countries as a way to improve the long run viability of agriculture by enhancing the profitability and overall stability of the sector. Food and Agriculture Organization (FAO) on farming systems and poverty has suggested that diversification is the most important source of poverty reduction for small farmers in South and South-East Asia (FAO/World Bank, 2001).

The shift to other crops or economic activities, however, has not been an easy undertaking, particularly for small farmers. In spite of that, recent studies related to this subject have confirmed that livelihood diversification became a popular policy prescription in the present scenario as incomes from farming come under pressure due to over population. It has been well documented that livelihood diversification generates greater employment opportunities and higher incomes, particularly for rural poor, women and small farmers (Joshi et al, 2006; Khan et al, 2017; Khatun and Roy, 2012a; Khatun and Roy, 2014; Meena et al, 2017).

Over the last several decades, the importance of non-farm sector as a source of livelihood has increased in India. Due to rapid expansion in the non-farm sector in India, the share of agricultural sector in gross domestic product (GDP) has gone down from 55 per cent in 1950-51 to 12.6 per cent in 2016-17. But there was no corresponding decline in dependence on agriculture for rural employment. The percentage of labour force dependent on agriculture has remained at a very high level of 50 to 55 per cent. Rapid industrialization has failed to absorb the excess labour dependent on agriculture. The structural pattern of West Bengal economy is too changing fast (Chandrashekar and Ghosh, 2008 and 2013). While the share of primary sector in output has fallen from 34.45 per cent to 22.35 per cent during 1999-2012, its share in employment has barely changed at all. It continues to account for around 44-47 per cent of the work force (Table 1.1). The share of manufacturing sector in the State Domestic Product (SDP) has also declined but even more in terms of the proportion of workers engaged in such activity. Meanwhile, the services sectors that have accounted for the biggest increases in share of output have increased their share of employment to a much lesser extent. In particular, financial, real estate and business services accounted for 15 per

cent of the State Domestic Product in 2011-12, but only 2 per cent of the work force. The highest increase in the relative share in employment has been in construction and transport sector. So both in the manufacturing sector and in the more dynamic services sectors, growth of output has resulted into very little expansion in employment. Yet, the non-farm sector has the potential role to play in improving the farmer's economic condition of rural West Bengal. In this situation it is required to create new opportunities for productive employment in the rural areas. Several studies point out that crop cultivation and non-crop occupation should go hand in hand for improved and sustainable living of farmers (Barret and Reardon, 2000; Dev et al, 2002; Ellis, 2000a; Khatun and Roy, 2012b; Meena et al, 2017). As a result, the pressure on land will be reduced and a bulk of small and marginal farmers can be gainfully employed. Their employment in secondary and tertiary sector will guarantee a higher level of per capita income.

Table 1.1 Structural changes in West Bengal economy

(% share)

Particulars (Sectors)	Share in SDP			Share of workforce		
	1999-00	2004-05	2011-12	1999-00	2004-05	2011-12
Primary Sector	34.45	26.42	22.35	47.76	46.35	44.02
Manufacturing	12.46	10.86	9.21	20.04	17.45	12.11
Electricity, gas & water supply	1.11	1.26	1.91	0.35	0.24	0.18
Construction	4.32	7.04	5.89	3.31	4.54	6.32
Trade, hotels & restaurants	11.49	13.50	16.09	10.35	13.36	14.24
Transport, storage & communications	5.37	5.75	8.03	4.27	5.57	7.57
Financial, real estate & business	16.82	22.86	15.34	1.32	2.11	2.02
Public administrations and other services	13.98	12.31	19.75	12.60	10.38	13.54

Source: Compiled from Statistical Handbook of West Bengal (various issues) & Chandrasekhar and Ghosh, 2008, 2013.

As elsewhere in India, unemployment, underemployment and low per capita income of rural households are the uppermost problem of West Bengal. West Bengal being the most densely populated state, in India, land based livelihood options are at stake. One disturbing features of the state is that the last two decades have been marked by very low rates of employment generation. Employment growth lagged far behind the output growth as rural employment grew at the very low rate of less than 0.6 per cent per annum, lower than any previous period

in post- independence era and well below the growth of rural population which is around 1.8 percent per annum. Another disturbing feature of the recent past has been the rapid increase in landlessness among rural households. It is evident from the Human Development Report (WBHRD, 2004) that by the year 1999-2000 almost half (49.8 per cent) of the rural households were landless which was less than 40 per cent (39.6 per cent) in 1987-88. Further, the number of rural poor exceeds the capacity of agriculture to provide sustainable livelihood opportunities. These factors coupled with declining trend in public investment in agriculture and rural infrastructures have created a severe crisis in rural economy (Roy, 2001; Roy and Pal, 2006). Sustainable livelihood diversification may act as a safety valve for these problems. Therefore it is necessary to have a clear picture about the livelihood options and strategies across the livelihood groups and regions within the state, so that appropriate strategy can be taken in hand.

1.2 Need and Scope of the Study

A large number of literatures related to this subject have confirmed that livelihood diversification became a popular policy prescription for rural households in land scare regions like West Bengal wherein incomes from farming come under pressure due to over population (Bhaumik, 2017; Khatun and Roy, 2012a; Khatun and Roy, 2012b; Khatun and Roy, 2014). The West Bengal agriculture and rural economy is diversifying at a faster rate than all India level (Singh et al, 2006). Despite the dominance of crop agriculture in West Bengal, it is striking that only 41 per cent of workforce now depends on agriculture for their livelihood (Table 1.1). Though, agriculture and allied activities support livelihoods of nearly half of rural population in West Bengal, farming is not now a very preferable proposition for rural households. Land based livelihoods of small and marginal farmers are increasingly becoming unsustainable and unable to support the farm family. As a result, rural households are forced to look at alternative means for supplementing their livelihoods out of agriculture. Widespread and increasing reliance on non-farm activities are the emerging feature of West Bengal but statistics also points out to the fact that at aggregate level, the job creation has shifted to more of casual and marginal work. The absolute number of workers in organised sector has been consistently declining since 2000-01. On the other hand, the share of casual workers increased from 37.3% in 2004-05 to 44.6% in 2011-12 in the total workforce in West Bengal. Now the question is why it is so?; Is it viable in the long run?; Is it universal in all the regions/or among all the livelihood groups?; and What impact it made at household level?. Therefore, an empirical evidence on the issues like why do household diversify their livelihoods?; under what circumstances they diversify?; who is diversifying and who is not?; what are the constraints to diversification?; what are the impacts of such diversification?; etc. are of utmost important.

With globalization further stimulating trade, diversification of agriculture and allied enterprises afforded greater opportunities for expanding the range of agricultural products that one can market abroad. However, expanded trade has also brought with it increased competition and hence the need to focus diversification programs on agricultural activities where they have a competitive advantage. Achieving diversified growth with equity also requires new measures to ensure that the transformation to high value agriculture and non-farm enterprises are inclusive of region's large number of marginal and small farmers as well as land less labourers. For long, the backwardness of the Eastern and North-eastern states has been an area of concern and various measures have been taken to improve the status of livelihood in this region. However, the region is still lagging behind other parts of the country on various indicators, particularly in terms of rural employment, poverty and agrarian crisis. In West Bengal, where average farm size is too small and unemployment continue to be preponderant among rural households, the notion of sustainable rural development ought to be viewed in the context of need for enhancement of employment generation, productivity and profitability of rural enterprises and above all, for improvement in the economic conditions of the rural households. All these need a careful and in-depth analysis of livelihoods in rural West Bengal.

In West Bengal, land-based livelihoods of small and marginal farmers are increasingly becoming unsustainable, since their land is no longer able to meet the requirements of food for the family and of fodder for their cattle (Khatun and Roy, 2012). As a result, rural households are forced to look towards alternative sources of income. However, there is enormous potential for the growth in the agriculture and allied enterprises particularly fisheries, poultry keeping, dairying as well as agri-business in West Bengal (Khatun & Roy, 2014). Agriculture has always remained the key sector for development in these regions. It is critically important for ensuring food security, alleviating poverty and as a means to provide employment led economic growth through its backward and forward linkages. West Bengal is the hub of economic activities in the entire eastern and north eastern India while North-Eastern region, by virtue of its diverse agro-climatic conditions, varied soil type and abundant rainfall has the promises of becoming an excellent sourcing point for high value horticultural produce and value added products unique to the region, for onward marketing both within the country and abroad. Therefore, it is desirable that more and more farmers take up economically viable occupation either with or without crop cultivation.

1.3 Objectives of the Study

The present study is a longitudinal study and is an attempt to explore the changes in livelihood sources, nature and extent of livelihood diversification and identifies the factor responsible for changing livelihoods. Impacts of livelihood diversification on household

livelihood security have been analyzed systematically, so that it is possible to understand the efficacy of livelihood diversification as a strategy that leads to a positive exit from poverty.

The present study is proposed to be undertaken as an attempt to answer the following questions:

- Why do household diversify their livelihoods?
- Under what circumstances they diversify?
- Who is diversifying and who is not?
- What are the constraints to diversification?
- What are the impacts of such diversification?
- Where diversification is sustainable and where it is not?

With this background the present study was planned to analyze the above issues in rural West Bengal with the following specific objectives.

The specific objectives of the study are:

1. To study the nature and extent of livelihood diversification among rural households in the study area;
2. To identify the contexts and determinants of livelihood diversification in the study area;
3. To identify the constraints in sustainable livelihood diversification in the study area;
4. To examine the impact of livelihood diversification on household livelihood security in the study area; and
5. To suggest strategies for sustainable livelihood diversification in the study area.

1.4. Review of Literature

This section attempts to take an account of research works carried out by various researchers in the areas closely related to the topic under study. The studies which are directly or indirectly related to the objectives of the present study are reviewed.

The concept of livelihood is widely used in the contemporary writings on poverty and rural development, but its meaning can often appear elusive either due to vagueness or to different definitions being encountered in different sources (Ellis, 2000b). A popular definition is that

provided by Chambers and Conway (1992) wherein a livelihood comprises of capabilities, assets (including both material and social assets) and activities required for a means of living. Briefly, one could describe a livelihood as a combination of the resources used and the activities undertaken in order to live (DFID, 2000).

Diversification can either refer to an increasing multiplicity of activities or it can refer to a shift away from traditional rural sectors like agriculture to non-traditional activities in either rural or urban space (Ellis, 2000b). But the intricacies underlying the diversification are many and need threadbare understanding. For example, one type of diversification indicates shift away from one crop to another crop or from one enterprise/sub-sector/sector to another enterprise/sub-sector/sector, the other type of diversification may involve pursuing income generating enterprises in addition to the existing ones (Singh et al, 2006). Ellis (1998) defined livelihood diversification 'as the process by which rural families construct a diverse portfolio of activities and social support capabilities in their struggle for survival and in order to improve their standard of living.'

Therefore from the above analysis it is seen that livelihood is different from income alone. Similarly, livelihood diversification is not synonymous with income diversification. Income diversification refers to the composition of household income at a given point in time. Whereas livelihood diversification is a process, whereby rural household construct a diverse portfolio of activities. But income diversification is one of the important components of livelihood diversification.

Several studies were undertaken in different countries to investigate empirically the composition of rural household incomes. Von Braun and Pandya-Lorch (1991) have examined income composition 12 countries. Among these countries two were in Latin America, five in Asia and five in Sub-Saharan Africa. These surveys showed that rural households do not depend directly for income only or mostly on agriculture. In half of the survey locations, the non-agricultural income share of households is about or exceeds 50 per cent.

In another study, Reardon (1997) reviewed data from 31 different surveys in 18 Sub-Saharan countries and showed that 30 to 50 per cent of rural household income in Sub-Saharan Africa was derived from non-farm sources.

In 1990, an International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) survey in Andhra Pradesh in India found that landless and smallholding class had more sources of income than the large land size group (Walker and Ryan, 1990). But a resurvey by Livelihood Options Project, Department of International Development (DFID) in 2001, found that households from all landholding groups have diversified income sources.

Khatun and Roy (2012a) examined livelihood in rural West Bengal in India by taking an advanced region and a backward region. In the advanced region, nearly 47 per cent of incomes of the rural households were generated in the non-farm sector and the same was as high as 88 per cent in the backward region. It was found out that although all categories of households attempted to diversify their employment and income portfolios, the degree of diversification has been greater among the landless and small farm size groups.

The literature identifies a range of different motives and pressures that prompt the household to diversify their income portfolios. Some major causes of diversification identified in the literature are seasonality, risk spreading, credit market imperfections and coping with shocks (Ellis, 1998; Reardon, 1997).

A lot of literature (Adams, 1993; Bigsten, 1996; Ellis, 2004) made a distinction between `pull' and `push' factor of diversification. `Pull' reasons correspond to the emergence of improving labour market opportunities outside agriculture. While `push' reasons referred to deteriorating conditions within agriculture itself. But many studies have come up with opposing `pull' or `push' findings in different places at different times (Adams, 1993; Bigsten, 1996). According to Ellis (2004) this distinction is artificial because `pull' and `push' are merely two sides of the same coin: if agriculture is lagging behind dynamics trend occurring elsewhere in the economy the `pull' factors are involved and if agriculture is deteriorating relative to a static non-farm economy then `push' factors are involved.

So far as determinants of livelihood diversification are concerned the literature was too scanty till few years back. But of late we came across a number of studies that examined the pattern and determinants of income/livelihood diversification (not livelihood diversification) in rural West Bengal (Bhaumik, 2007; Khatun, 2010; Khatun and Roy, 2012). The results of multiple regressions showed that total number of workers, age, education, assets and formal loan were the most important determinants of income diversification in West Bengal. The desire for diversification was enhanced when they have low operated land area. The proximity of the households to some urban centers also helped to diversify. Caste is the only factor that negatively affected the level of income diversification. Using state-wise data Singh et al (2006) examined the pattern and determinants of agricultural diversification across states of India. According to that study, several factors influence agricultural diversification, viz. road density, number of regulated markets, number of villages electrified, area under high-yielding varieties, per cent irrigated area, and fertilizer consumption per hectare on the one hand and per capita value of agricultural output and population per hectare of net sown area on the other. Of all the variables, road density and number of electrified villages were found negatively affecting the diversification, as they tended to influence farmers for income enhancing activities, owing to the presence of developed market led by specialized farming.

In another related study, the issue of linkage between farm and non-farm sector has been probed by Jha (2006) based on the NSSO data of selected states of India for the period 1983-2000. The results suggest that rural diversification, in the sense of increasing employment in non-farm sector, has been increasing but the effect of agricultural income on non-farm employment has decreased during the reference period. Infrastructure and land-man ratio have been found as the important determinants of rural diversification.

1.5. Scheme of the Chapters

The present report is organised into four chapters. Chapter- I, which is the current chapter, provides the background of the study, along with a brief description about need, scope, and objectives of the study; as well as a brief review of literature relevant to the topic. The second chapter essentially deals with the study design and methodology along with the concepts and frameworks used in this study. The findings of the study are presented and discussed in Chapter-III. And finally, summary of the study along with policy suggestions are covered in Chapter-IV.

Chapter – II
Methodology

In this chapter, the concepts, a brief profile of the study area, the sampling frame, the data sources and the analytical tools used to address the various objectives of the study are discussed.

2.1 Concepts and Definition

Livelihood - Livelihood is not just income or employment rather it includes various aspects of living. Rural livelihoods can be derived from a range of farm, off-farm and non-farm activities, which together provides a variety of means and strategies for living. According to Chambers and Conway (1992) `A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living'. And a livelihood is said to be sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base. This definition /approach have been broadly adopted by the Department for International Development (DFID) and a range of other development agencies and are therefore used in this study.

Livelihood diversification - In this study livelihood diversification refers to attempts by individual and households to find new ways to raise incomes and reduce vulnerability to different livelihood shocks. Livelihood diversification can take place through both agricultural diversification i.e., production of multiple crops or high value crops and non-agricultural livelihood diversification i.e., undertaking small enterprises, or choosing non-agricultural sources of livelihood like casual labour or migration.

Vulnerability - Vulnerability is also a relative measure and is defined as a high degree of exposure to risks, shocks and stress. It is determined by the options available to households and individuals to make a living, the risks they face and their ability to handle this risk.

Coping mechanism - Coping strategies refers in this study is to a short term response by the households in agro-biological, social and economic systems in response to actual or expected changes and their efforts in securing livelihood system to periodic stress. Coping is involuntary and ex-post response to shocks or unanticipated failure in major sources of survival. Coping mechanisms can be described as the sum total of ways in which we deal with minor to major stress and shocks.

2.1.1 Livelihood groups

This study examines the issue of livelihood diversification at household level. But households are not homogeneous in the sense that their level of income and the way in which they earn. Therefore, in order to get a clearer picture all the households are classified into few `livelihood groups' based on their incomes, asset positions, and trajectories. Individual households then have been assigned to that particular livelihood group which the person concerned feel is their main source of livelihood. Thus if concerned household is of the opinion that its income from one of its members who is a casual labourers, is higher than what it earns from the ownership of, say, 10 cattle or one hectare of agricultural land, then that family has been considered belonging to labourers class.

We have categorized seven livelihood groups and these are:

1. Agriculture and allied activities - Families who earn most of their income from crop farming or fishery or livestock or poultry keeping are categorized under this group.

2. Agricultural labourers - A person who works on another person's agricultural land for wages in money or kind or share is regarded as an agricultural labourers.

3. Non-agricultural labourers - Non-agricultural labourers are all the workers other than those engaged in agriculture and related activities like crop production, plantations, forestry, fishing and animal husbandry. Non-agricultural labourers in the study area mainly include mason work, non-farm wage work, bidi labour, labour earning from NREGS, etc.

4. Salaried group - The person engaged in employment on a permanent basis both in private and public sector and draw regular monthly salary is included in this group.

5. Casual labourers - Workers, who are only taken on for temporary work as and when needed and are not employed on a regular basis. This group includes vehicle driver, part time workers in petty shops etc., commission agent, rickshaw puller, part time work in tailor shop, etc.

6. Petty business - The persons self-employed by running own small business is called as petty business group. This group includes households running sweet shop, grocery shop, tea stall, bidi business, cloth shop, tailoring, etc.

7. Other groups -The persons do not fall under any of the above group are included under this group. This group includes the households depend on interest earning, remittances, caste occupation, private tuition, migration, etc.

2.2 Study Area

West Bengal is one of the important states in the eastern part of India stretching from the Himalayas in the north to the Bay of Bengal in the south. The total geographical area of the state is 88,752 sq. km. (34,267 sq. miles). Total population of West Bengal is over 91 million that accounts for 7.6 percent of the country's population. The state's geographical area of 88,752 sq. km. constitutes 2.7 per cent of the country's geographical area. West Bengal has 23 districts and Calcutta (Kolkata) is the state's capital. With a very high population density of 1029 persons/sq. km., in 2011, the state is currently the most densely populated state in the country (CMIE, 2009). The literacy rate is 76.26 per cent and the life expectancy in the state is 70.2 years higher than the national average of 67.9 years (2011 census). About 72 per cent of people live in rural areas. The proportion of people living below the poverty line, in 1999-2000, is 27 per cent which is marginally higher than the national average of 26 per cent. Schedule castes and schedule tribes formed 28.6 per cent and 5.8 per cent of the population respectively in the rural areas and 19.9 per cent and 1.5 per cent respectively in urban areas.

Agriculture is the main source of livelihood as nearly two-third of the population depends on agriculture for their livelihood. The state has large reserves of coal in the Raniganj coal belt region. The other mineral include dolomite, limestone and china clay. Rice is the dominant crop of the state. Other major crops are wheat, jute, tea, potato, sugarcane, pulses, rapeseed and mustard and forest produce. Tea is also produced commercially and the state is well known for Darjeeling and other high quality tea.

A sizable part of the state is still economically backward. It includes the large parts of three northern districts of Cooch Behar, Jalpaiguri and North Dinajpur; three western districts of Purulia, Bankura and Birbhum; and the Sundarbans area. Years after independence, West Bengal was dependent for meeting its demand for food till mid-1980s. Food production remained stagnant and the Indian green revolution bypassed the state. However there has been a significant spurt in food production since the mid-1980s and the state now has a surplus of grains. The state's share of total industrial output in India which was 9.8 per cent in 1980-81, declined to 5 per cent by 1997-98. However the service sector has grown at a rate higher than the national rate. Today, the state economy is predominantly service economy as 53 per cent of the state GDP comes from the service sector. The shares of agriculture and industry are 21 per cent and 26 per cent respectively. State industries are mainly located in the Kolkata region and the mineral rich western highlands of Burdwan district. Most of the steel plants are located in Durgapur-Asansol colliery belt. Manufacturing industries of the state includes a variety of commodities particularly engineering pro ducts, electrical equipments, electronics, cables, steel, leather, textiles, jewelry, frigates, automobiles, railway coaches and wagons. Most of these firms are located in Kolkata, Howrah, Hooghly, and

Burdwan districts. West Bengal is the third largest economy (2003-2004) in India, with a gross state domestic pro duct of Rs. 236,044 crores during 2005-06. The state has promoted foreign direct investment, which has mostly come in the software and electronics fields; Kolkata is becoming a major hub for the Information technology (IT) industry. Owing to the boom in Kolkata's and the overall state's economy, West Bengal is now the third fastest growing economy in the country and the state domestic product (SDP) grew in 2004 with 12.7 per cent and in 2005 with 11.0 per cent. However, the rapid industrialization process has given rise to debate over land acquisition for industry in this agrarian state. NASSCOM-Gartner ranks West Bengal power infrastructure the best in the country. However, in terms of basic household amenities, the state's performance tends to be lower than the national average with 68 per cent of urban households and only 16 per cent of rural households had pucca houses, compared to 71 per cent and 29 per cent respectively for all-India.

2.3 Livelihood Polices and Programmes in the Study Area

Although nearly 70 per cent of the West Bengal's population lives in rural areas, with higher level of unemployment and poverty, the rural economy in West Bengal now is very different from what it used to be few decades back. Although villagers earn their living mostly through agriculture and allied activities, increasing reliance on non-agricultural activities led to a diversified livelihood which contributed very significantly to decline in rural poverty. Since the cultivable land available to rural households either declined or remained stagnant, supporting the growing family members through agriculture alone is becoming difficult.

In order to eradicate rural poverty and to tackle issues related with livelihood problems in rural areas, a number of programmes are being implemented in West Bengal (and also in other parts of the country) to create opportunities for livelihood development among the rural people. Such programmes intend to reduce rural poverty and unemployment, improve the health and educational status, and to fulfill the basic needs such as food, shelter and clothing of the rural population. Government also took initiatives to make better farming techniques available to increase crop productivity and profitability, and also making other opportunities of employment close to or within the villages itself. Major livelihood programmes can be grouped into five categories, namely:

I. Programmes for self employment and wage employment: DDU-NRLM; MGNAREGS; RSETI; Anandadhara; Gatidhara; Muktidhara; etc.

II. Programme for development of rural infrastructure and minimum basic needs: PMGSY/BGSY; PMAY-G/BGAY; Nirmal Bangla; Swajaldhara; etc.

III. Programmes for natural resource management: PMKSY, IWDP; IWMP; IFS; RAD; etc.

IV. Programmes for social security: ICDS; DWCRA; Annapurna Scheme, Atal Pension Yojana; Kanyashree; etc

V. Programmes to make farming productive and profitable: MSP; BFBY/PMFBY; PMKSY; etc.

It is to be noted here that most of these programmes are central schemes being implemented in the state with increasing budgetary contribution (increased from 10 per cent to 50 per cent in recent years) by the state government. A good number of such schemes were re-structured and/or renamed at the national level from time to time like IRDP changed into SSRY to NRLM to DDU-NRLM. Further, quite a few central schemes have been rechristened in the state such as Anandadhara (for NRLM); Nirmal Bangla (for Swach Bharat); Bangla Gramin Abas Yojana (for PMAY-G); Bangla Fasal Bima Yojana (for PMFBY); Sabar Ghare Alo (for DDU-GJY); Banglar Grameen Sadak Yojana (for PMGSY); Swamy Vivekanada Swanirvar Karmasansthan Prakalpa (for SVEP); etc. Similarly state government introduced several new schemes like Muktidhara; Gatidhara; Kanyashree; Khadyasathi; Sabujsathi; Sasthasathi; Geetanjali; etc either by re-designing the central schemes or as a new initiatives. The details of such schemes are available in government websites (https://wb.gov.in). Salient features of some of the important schemes, operating in the study area, promoting rural livelihoods in West Bengal are given below:

1. Deendayal Antyodaya Yojana-National Rural Livelihoods Mission (DAY-NRLM) known as 'Anandadhara' in West Bengal is a poverty alleviation programme, focusing on promoting self-employment and organization of rural poor. The basic idea behind this scheme is to organize the rural poor through formation of SHG (Self Help Groups) groups and make them capable for self-employment. The programme came into effect from 1 April, 2013, restructuring the then ongoing programme SGSY and again renamed in 2016. The programme have several sub-schemes like:

    a. Aajeevika Grameen Express Yojana (AGEY) known as 'Gatidhara' in West Bengal is to provide an alternative source of livelihoods to members of SHGs under DAY-NRLM by facilitating them to operate public transport services in backward rural areas and to provide safe, affordable and community monitored rural transport services.

b. Start Up Village Entrepreneurship Programme (SVEP) is another sub-scheme of DAY-NRLM designed to promote rural entrepreneurship.

c. Deendayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) is a placement linked skill-training programme and is uniquely placed to empower rural poor youth with employable skills and facilitate their participation in regular labour market.

d. Rural Self Employment Training Institutes (RSETIs) are offering training in more than 56 vocations classified under major areas like agriculture, processing, product manufacture and general EDP.

e. Shyama Prasad Mukherjee RURBAN Mission (SPMRM) with an objective to transform rural areas into economically, socially and physically sustainable spaces.

f. Saansad Adarsh Gram Yojana (SAGY) with the objective of creating model Gram Panchayats in all parts of the country under the guidance of Members of Parliament through the convergence and implementation of existing Government Schemes and Programmes without allocating any additional funds.

2. Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) aimed at eradicating rural poverty and unemployment, by way of generating demand for productive labour force in villages. It aims at enhancing livelihood security of the households in rural areas of the country by providing at least one hundred days of guaranteed wage employment in a financial year. It provides an alternative source of livelihood which will have an impact on reducing migration, restricting child labour, alleviating poverty, and making villages self-sustaining through productive assets creation such as road construction, cleaning up of water tanks, soil and water conservation work, etc. The state West Bengal become the best performing state both in terms of alloting jobs and utilizing funds under this scheme during 2017-18.

3. Pradhan Mantri Awwas Yojana-Gramin (PMAY-G): The scheme is known as Bangla Gramin Abas Yojana (BGAY) in West Bengal. The erstwhile scheme of IAY has been restructured into Pradhan Mantri Awaas Yojana-Gramin (PMAY-G) with effect from 1st April, 2016 and is in line with the Government's commitment of providing 'Housing for All by 2022' with improved scheme architecture and robust delivery and monitoring mechanism.

4. Pradhan Mantri Gram Sadak Yojana (PMGSY): The scheme is known as Bangla Grameen Sadak Yojana. The primary objective of PMGSY is to provide connectivity by

way of all-weather roads. The programme also has an upgradation component with a target to upgrade existing rural roads in order to ensure full farm to market connectivity.

5. National Social Assistance Programme (NSAP): NSAP comprises of five sub-schemes namely Indira Gandhi National Old Age Pension Scheme (IGNOAPS), Indira Gandhi National Widow Pension Scheme (IGNWPS), Indira Gandhi National Disability Pension Scheme (IGNDPS), National Family Benefit Scheme (NFBS) and Annapurna Scheme. The schemes of NSAP are implemented both in urban and rural areas, by the Social Welfare Department in the States.

A large number of schemes are operating in West Bengal to promote rural livelihoods and the importance of which cannot be overemphasised. But too many schemes and frequent change in their nomenclatures as well as designs makes it difficult to implement. For example, too much emphasis on achieving targets for credit linkages under NRLM led to 'forced lending' rather 'demand based lending'. Similarly, the skill trainings under NRLM also turned out to be an end in itself as neither side taking the learnings forward to ensure that the trainings result in successful livelihood projects. Further, awareness about such schemes (like PMFBY/BFBY) is quite poor among the rural households. But one of the important gains over the last few years is that a lot of what happened for poverty reduction through women SHGs and rural roads schemes. The diversification of livelihoods, through SHGs, is beginning to happen on a very large scale and is reflected in the total loans which women of SHGs have taken during last two decades, particularly in tribal and backward districts like Purulia, Birbhum, Bankura, Dinajpur, Midnapore, Musrshidabad and South 24 Parganas. Bangla Grameen Sadak Yojana has made considerable contribution in connecting far flung and scattered areas of the state, particularly in backward districts.

2.4 Sampling Design

In order to fulfill the various objectives of the study, repeated field survey was undertaken in the study area in an interval of 10 years. The survey was conducted in two visits to the same set of households in a gap of 10 years. The first survey was conducted for the agricultural year 2007-08 (hereafter referred to as Period I), and the second survey was undertaken with the same households for the agricultural year 2017-18 (hereafter referred to as Period II). While doing so, for several reasons beyond our control, we required to replace only 3 household (out of 200 surveyed in Period I) from the same villages in Period II.

A multistage sampling technique was used to select the sample households following specific criteria. In the first stage of sampling two districts were selected purposively from the state. In the next stages of sampling, one sub-division from each district, then one block from each of the sub-divisions, and two villages from each block were selected randomly. Once the

villages are identified, a household census was conducted in all the selected four villages with a structured questionnaire. Accordingly, a total of 1029 households were surveyed in the first round of survey. Then, in the next round of survey, 50 households from each of the villages are selected randomly in probability proportionate to major livelihood groups in the study villages thus a total of 200 households were selected for the study. The detailed sampling frame is presented in Table 2.1 and discussed in the following sections.

Table 2.1 Sampling frame

Sampling stage	**Numbers of units**	**Sampling technique**	**Selected units**			
Districts	Two districts	Purposive (Based on LDI)	Burdwan (Highly diversified)		Purulia (Low diversified district)	
Sub-divisions	2 (one from each district)	Random	Katwa		Raghunathpur	
Blocks	2 (one from each sub-division)	-do-	Katwa-I		Neturia	
Villages	4 (two from each blocks)	-do-	Barampur	Debogram	Narayanpur	Goaladi
Households	200 (50 from each villages)	PPS(LG)	50	50	50	50

2.4.1 Selection of districts

The state West Bengal comprises seventeen districts including Kolkata district (as per 1991 census). For the selection of districts we have calculated diversification index (Herfindahl index) for each district, using Census of India (1991) data on classifications of workers which classified all the workers into ten categories: i. Cultivators, ii. Agricultural labourers, iii. Livestock, forestry, fishing, hunting and plantation or orchards allied, iv. Mining and quarrying, v. Household industry, vi. Other than household industry, vii. Construction, viii. Trade and commerce, ix. Transport, storage and communication, x. Other services. In 2001 census these categories have been merged and all workers are divided into four categories only. These are: i. Cultivators, ii. Agricultural labourers, iii. Household industry manufacturing processing, and iv. Other workers. As our study is about the livelihood

diversification, so more disaggregated data is appropriate. Therefore, we have used 1991 census data for district selection as it was most comprehensive. Herfindahl index is then used to measure livelihood diversification, its values lies between zero and one. Lower value of Herfindahl index means higher diversification. The value one of Herfindahl index means complete specialization. The values of Herfindahl index for each district is shown and arranged in descending order of magnitude in Table 2.2. Two districts, Burdwan and Purulia, have been selected purposively, one from more diversified region and the other from less diversified region on the basis of Herfindahl index as shown in Table 2.2.

Table 2.2 District-wise Herfindahl indices in West Bengal

Districts	**Level of Diversification**		**Districts**	**Level of Diversification**	
	HI	**Rank**		**HI**	**Rank**
24-Parganas(N)	0.1614	I	Malda	0.2574	X
Burdwan	*0.1626*	II	Midnapur	0.2614	XI
Darjeeling	0.1676	III	Birbhum	0.2738	XII
Hooghly	0.1738	IV	Bankura	0.2922	XIII
Jalpaiguri	0.1872	V	Cooch Behar	0.3132	XIV
Howrah	0.1882	VI	Dakshin Dinajpur	0.3141	XV
Nadia	0.1978	*VII*	*Purulia*	*0.3210*	*XVI*
24-Parganas(S)	0.2011	VIII	Uttar Dinajpur	0.3228	XVII
Murshidabad	0.2170	*IX*	***West Bengal (Average)***	***0.2487***	-

2.4.2 Selection of subdivisions, blocks and villages

In the next stage of sampling, one subdivision from each district has been selected randomly. In 1991 census, Burdwan district has five and Purulia district has two subdivisions. The selected subdivisions are Katwa subdivision in Burdwan district and Raghunathpur subdivision in Purulia district. Next, one block from each subdivision has been selected randomly. Katwa subdivision has five and Raghunathpur subdivision has six blocks. From these, the selected blocks are Katwa-I in Katwa subdivision and Neturia in Raghunathpur subdivision. The village is an important institution and unit of economic activity. Therefore, in the next stage of sampling, two villages from each block have been selected randomly. The selected villages are Barampur and Debagram in Katwa-I block, and Narayanpur and Goaladi in Neturia block.

2.4.3 Selection of households

In the first round of survey, all the households in the selected four villages were surveyed with a structured questionnaire. For, each village a complete list of households was prepared along with their main sources of livelihoods. Thereby a total of 1029 households were surveyed and classified into different livelihood groups. In the first round of survey we have classified households into eleven categories of livelihood groups viz., Cultivation, Agricultural labourers, Non-agricultural labourers, Government service, Private service, Casual labourers, Petty business, Caste occupation and Others. The approach was based on livelihood analysis that covers both farming and non-farming activities in the villages. But it was found that for some livelihood groups, there are very few households so we merged these eleven categories of livelihood groups into seven livelihood groups in the second round of survey. These are Agricultural and allied activities, Agricultural labourers, Non-agricultural labourers, Salaried group, Casual labourers, Petty business and Others. Then a total of 50 households from each of the villages were selected randomly in probability proportionate to major livelihood groups in the study villages.

2.5 Analytical Tools

2.5.1 Household survey questionnaire

Household is an economic unit in socio-economic model. To obtain basic information from the sampled households, we used a comprehensive questionnaire that covers:

• Household size and structure: Demographic features and educational aspects

• Livelihood options: Sources of income and changes therein over time with reason

• Cropping pattern and changes therein

• Access to market, social network, information and infrastructure as well as and position in the rural power structure

• Asset particulars, liabilities and asset transactions

• Income and expenditures details including employment and consumption

• Diversification (crop and livelihood) strategies, constraints and contexts

2.5.2 Village survey questionnaire

Village level information was collected from group interactions, taking inputs from panchayat official and from government official in block departments. The village heads,

important decision makers, government persons living in the village or having knowledge about the village were thoroughly interviewed to collect information about the village, its resources, problems, programmes and plans.

2.5.3 Focus group discussion (FGD)

Four focus group discussions took place, one in each of the four villages. Each FGD was participated by 50-80 people from different livelihood groups. Each focus group was constituted by a range of people of different livelihood groups. These groups were asked to consider transformations in the villages over the last few decades regarding infrastructure, cropping pattern, sources of income , non-farm economy, reasons behind the shift into non-farm livelihoods, major livelihood shocks, probability of their occurrence, their possible impacts, coping strategies, etc. The purpose of FGD was to prepare a vulnerability profile of different livelihood groups from climatic, social, technological and economic shocks and to know the effectiveness of various coping strategies.

2.5.4 Livelihood diversification index

Diversity in livelihood should not be measured only in terms of number of activities but on the degree of reliance on each of such activities. Diversification index is an important tool to measure the extent or degree of diversification. In the available literature, six different indices are being used to measure the degree or extent of diversification (Khatun and Roy, 2012; Chand, 1995; Shiyani and Panda; 1998). They are Herfindahl index, Simpson index, Ogive index, Entropy index, Modified entropy index and Composite entropy index. Each of these measures has its advantages and limitations. In this study livelihood diversification is measured by using the Simpson Index (SI). In fact SI is derived from the Herfindahl Index (HI) as given below:

SI =1- HI

Herfindahl index (HI) is computed by taking sum of squares of acreage (income) proportion of each crop (income sources) in the total cropped area (household income) as given by the following formula:

$$\text{H.I.} = \sum_{i=1}^{N} P_i^2$$

where N is the total number of crops (income sources) and Pi represents acreage (income) proportion of the i-th crop (income)in the total cropped area (household income). Its value is bounded by zero and one. With the increase in diversification, the Herfindahl index would decrease. The index value is one when there is a complete specialization and approaches zero

as N gets large, i.e., if diversification is perfect. In fact HI is a measure of concentration rather diversification. The major limitation of HI is that it cannot assume the theoretical minimum, i.e., zero for smaller values of N (number of activities). Therefore, as widely used, we have converted Herfindahl Index into Simpson Index as a measure of diversification.

2.5.5 Constraint analysis

Constraints for livelihood diversification and agricultural diversification are identified in a systematic way. There is no single best method for identifying client constraints. A review of the available literature regarding the socio-economic development of the region helps to identify some important constraints. Many socio-economic surveys have already collected a tremendous amount of information on the needs of different household categories. Unfortunately, this information is rarely pooled. Even more rarely is it synthesized into a usable form. Therefore, the most important step in identifying client constraints is to review existing sources of information and gather fresh information from the clients as well as concerned officials and key informants living in the village or having knowledge about the village, its resources, problems, programmes and plans. The most commonly used techniques to obtain additional information on client constraints are rapid rural appraisal (RRA), participatory rural appraisal (PRA) and focused group discussion (FGD). In this study, RRA (through village survey) and FGDs were undertaken in all the four villages and most of the key informants (e.g. panchayat officials, development authorities, school teachers, etc.) were interviewed for detailed discussion on livelihood constraints. Based on the literature survey, initially, we identified an exhaustive lists of constraints (both for crop diversification and for livelihood diversification) encompassing socio-economic, technological, institutional and policy constraints. The list was then shortlisted (and revised) through interactive process with key informants consulted during the village survey and FGDs. Subsequently, the constraints having social and economic significance were shortlisted for which information was gathered from each household. Accordingly, we finalized with twelve constraints for livelihood diversification and eleven constraints for crop diversification for interrogation to the sampled households. Constraints are measured in a five point scale for their severity with a maximum (minimum) value of `5' (`1') when the constraint is extremely severe (negligible). The severity of each constraint was assessed through the concerned household's perception based on his/her own experience.

2.5.6 Regression analysis

In order to identify the determinants of livelihood diversification Tobit model has been used, whereas the impact or scope of rural livelihood diversification in augmenting household income has been explored with the help of a multiple linear regression model. The list of

variables that we have included in our regression models are defined in Table 2.3 & 2.4 and described at the end of this section.

2.5.6.1 Regression model to identify the determinants of livelihood diversification

We have taken Simpson Index of livelihood diversification (LDI) as dependent variable. Livelihood diversification depends on various quantitative and qualitative factors, some of which might be difficult to measure and some of which might be very specific to a particular agro-ecology or a social group. Since the focus of interest in this study is to identify the major factors that influence the diversification of livelihood at the household level, the data on important explanatory variables were collected from household survey. Several factors (both pull and push factors) are known to influence livelihood diversification in rural areas in one or the other way. The available theoretical and empirical literature provided an a-priori idea about the possible determinants covering household's capabilities, compulsions, risks, and asset endowments. Initially, we have tried the regression model with a large number of explanatory variables like - Age, Caste, Education, Farm size, Family size, Dependency ratio, Land-Man ratio, Asset value, Access to credit, Amount of borrowing, Irrigation facility, Market facility, Electricity connections, Distance from town, Training/Skill development programmes, Membership to social bodies along with dummies for Livelihood groups, Regions, and Time. However, due to the problem of multi-co linearity, we required to drop few variables like Caste, Farm size, Amount of borrowing, Market facility, Electricity connection, and Livelihood dummy. The final set of independent variables included in the model are - Age, Education, Family size, Dependency ratio, Land-Man ratio, Asset value, Irrigation facility, Access to credit, Distance from town, Training/Skill development, Membership to social bodies, Regional dummy, and Temporal dummy. Since our sample observations are from two different regions (one advanced and other backward) and from two different time periods (2007-08 and 2017-18) for the same households, use of regional dummy and temporal dummy are necessary to account for location specific and time specific variations in the data set. Descriptions of the explanatory variables along with their expected impact on the dependent variable are given in Table 2.3.

Since the dependent variable (LDI) is bounded between 0 and 1, an ordinary linear regression model is not suitable as the predicted value from a linear model will not necessarily be contained within the interval of 0 and 1. Even a logit transformation may not be appropriate, under such context, because in a cluster of observations the dependent variable takes value of 0 (mono-cropping). Therefore, as suggested in a number of literatures, a Tobit model is used so as to avoid any loss of information (see Kumar et al, 2012; Mondal and Bezbaruah, 2013). The model is formulated with the help of a latent variable Y_j^* which can take any possible

value but is not always observable. The observed dependent variable Y_j (i.e., LDI) is linked to the latent variable . The Tobit model used is:

$Y_j^* = \beta_i X_i + \mu_i$ $\quad \mu_i \sim N(0, \sigma^2)$ i=1, 2, 3,....., n

$Y_j = Y_j^*$ if $Y_j^* > 0$

$Y_j = 0$ otherwise

where Y_j^* is the unobserved latent variable (linked with Y_j), Y_j is the observed censored dependent variable (representing LDI), β_i represents the vector of parameters and X_i represents a vector of exogenous explanatory variables. The random disturbances μ_i are assumed to be independently and normally distributed with zero mean. The model was estimated by Maximum Likelihood Estimation (MLE) using STATA II for 200 sample households with repeat survey during two time periods i.e., Period-I (2007-08) and Period-II (2017-18).

In this study we have used panel data but only for two different time periods (2007-08 & 2017-18) for the same set of households (200) from two different regions (Burdwan & Purulia). Thus instead of using a dynamic Tobit model, we have used Type-I variant of Tobit model with time dummy. The essence of using the dummy for two different time period is to state the influence of time gap on the expected outcome (Y_j^*). We have also used Tobit model for two different periods independently. Schnedler (2005) provides a general formula to obtain consistent likelihood estimators for different variants of Tobit models, and the same was used in this study.

The goodness of fit in Tobit model is judged using the following parameters:

1. McFadden Pseudo R^2 value (which is not bounded between 0 and 1)
2. Log likelihood value
3. LR χ^2 value along with its probability

It is to be noted here that the co-efficients of a Tobit model (β_i) needs to be interpreted in a slightly different way than OLS estimates, as it tells us the linear effect of an explanatory variable on the uncensored latent variable (Y_j^*), rather on the observed outcome (Y_j). The β co-efficients are not the effect of X_i on Y_i rather a combination of the change in Y_i of those above the limit, weighted by the probability of being above the limit, and the change in the probability of being above the limit, weighted by the expected value of Y_i if above (Wikipedia, 2018).

Table 2.3 Description of explanatory variables used in Tobit model

Variable Name	Definition	Expected sign of co-efficient
Age	Age of the household head in years	-
Dependency Ratio	Percentage of household members below 18 years old and above 60 years old	+
Education	Average years of education in the household	+
Family Size	Total number of members in the household	+
Land-man Ratio	Amount of cultivable land per working member (acres/head)	-
Asset Value	Estimated monetary value of all the physical assets (except land and residential unit) owned by the household (Rs. Lakhs)	+
Irrigation	Percentage area under irrigated	+
Distance	Distance from the nearest town in kilometer	-
Access to credit	Dummy whether or not any household member received loan from institutional sources (Yes=1, No=0)	+
Membership	Dummy whether or not any household member is a member to a formal social organization like SHG/Co-operative /Village Committee etc. (Yes=1, No=0)	+
Training	Dummy whether or not any household member received any formal training on livelihood skill development (Yes=1, No=0)	+
Regional dummy	Dummy whether or not the household belongs to the high diversified district i.e., Burdwan (Yes=1, No=0)	+
Time dummy	Dummy whether or not the household belongs to the Period-II i.e., 2017-18 (Yes=1, No=0)	+

2.5.6.2 Regression model to examine the role of livelihood diversification in augmenting household income

Livelihood diversification, in this study, is viewed as a strategy to enhance household income (Pull) or to mitigate risk (Push). Therefore, it is very important to examine the role or impact of livelihood diversification in enhancing the household income. The impact of livelihood diversification on household income has been explored through a linear multiple linear regression model as given below.

$$\mathbf{I = \tau_0 + \tau_i Z_i + \epsilon}$$

where, I is the dependent variable representing annual household income, explained by τ_i which represents a vector of parameters and Z_i is a vector of exogenous explanatory variables. Since one major focus in this study is to examine whether livelihood diversification

helped in enhancing household income or not we have used the Simpson Index of livelihood diversification (LDI) as an explanatory variable. The available literature and field experience also suggests few other factors/variables responsible for enhancement in household income in rural areas. Therefore, apart from livelihood diversification index, other explanatory variables included in this model are land holding size, family size, education, asset value, share of non-farm income, irrigation facilities, access to credit, skill enhancing trainings, distance from town, employment opportunity under MGNAREGA, and time-specific and region specific dummies. The model has been estimated by ordinary least square (OLS) technique. Details of these explanatory variables are given in Table 2.4.

2.5.6.3 Description of variables used in regression models

LDI- A diversified rural livelihood is expected to result in enhancing household income and employment. It also helps in mitigating the risks and therefore checking the fall in household income at the event of livelihood shocks. Therefore it is hypothesized that the household with higher value of LDI will have higher annual income.

Table 2.4 Description of explanatory variables used in linear regression model

Variable Name	Definition	Expected sign of co-efficients
LDI	Livelihood Diversification Index (Simpson Index)	+
Land holdings	Land holding in acres by the household	+
Family Size	Total number of members in the household	-/+
Education	Average years of education in the household	+
MGNAREGA	Dummy whether or not any household member have job card for MGNAREGA (Yes=1, No=0)	+
Non-farm income	Percent share of non-farm income in total household income	+
Asset Value	Estimated monetary value of all the physical assets (except land and residential unit) owned by the household (Rs. Lakhs)	+
Irrigation	Percentage area under irrigated	+
Distance	Distance from the nearest town in kilometer	-
Access to credit	Dummy whether or not any household member received loan from institutional sources. (Yes=1, No=0)	+
Training	Dummy whether or not any household member received any formal training on livelihood skill development (Yes=1, No=0)	+
Regional dummy	Dummy whether or not the household belongs to the high diversified district i.e., Burdwan (Yes=1, No=0)	+
Time dummy	Dummy whether or not the household belongs to the Period-II i.e., 2017-18 (Yes=1, No=0)	+

Age - Age is an important factor in determining the extent of diversification as the younger people are more dynamic and they have greater potentiality to engage in non-farm activities. Most of the non-farm works are urban centered and skill based, which is generally possessed by the younger people. Moreover, the decision to choose livelihood option and diversification strategy depend upon the age. Since in rural society livelihood decisions are mostly taken by the household head, we have considered the age of the household head only. Therefore it is hypothesized that the household with younger head will have higher desire and access to various non-farm activities leading to higher livelihood diversification.

Dependency ratio - Dependency ratio is an important factor in deciding whether to diversify or not. With the increase in dependency ratio, the ability to meet subsistence needs declines and the dependency problems make it necessary in the household to diversify their income source. In other words it can be said that with the increase in dependency ratio, the ability of farmers to meet family needs decrease and probability of diversifying livelihood to non-farm activities increases. Thus we hypothesized the relationship between livelihood diversification and dependency ratio to be positive.

Education - Education is universally considered as one of the most important indicators of human capital achievement which enhances the prospects of getting employment in the non-farm sectors. Although this is truer for highly remunerative non-farm employment with entry barriers, but also true for low return non-farm works that hardly require any skill. Education also has some `crossover' effect (Islam, 1997). The educated members of a family most often help the other members through discussions and suggestions in choosing livelihood options. Higher education level is likely to raise the household income level through involvement in non-farm activities. Households require more human capital to engage in non-farm livelihoods. Education also moves households out of agriculture, and encourage adoption of non-farm livelihoods. To capture the effect of education we considered the average education of all the members in a household. The relationship between the LDI and education, as well as between household income and education is hypothesized to be positive.

Family size - Family size is an important determinant of diversification. The total number of working hands available in the family is important in determining the extent of diversification to be pursued by the households. Reardon (1997) observed that family size affects the ability of a household to supply labour to the farm. In a large size family some members may be able to engage in traditional farming activities while other members can do non-farm activities. In other words division of labour will be possible in a large size family. This will also reduce the risk of livelihood failure. In the event of shortfall in production of farm the family can manage this by the earnings from non-farm activities. We therefore hypothesize a positive

relationship between livelihood diversification and family size as well as between household income and family size.

Land holding - Ownership of land is very important both cultivators as well as non-cultivators in rural areas. It enables the cultivators to diversify towards high value crops and others towards non-farm livelihood options like petty business, self-employment or even leasing out. Thus land holdings by the rural households are also expected to raise the household incomes and livelihood diversifications.

Land-man ratio - Land-man ratio is the per capita availability of cultivable land. Higher family size decreases land per head if the size of landholding remain the same. This creates overpressure on land which in turn results in disguised unemployment in agriculture (i.e., workers having very low or zero marginal productivities). As a consequence this surplus labour will try to find jobs in the non-farm sector. So we can hypothesize that the relationship between diversification and land-man ratio is negative.

Asset value - Ownership of asset is very important for accessing both farm and non-farm employment particularly in the self-employment sector. Individuals' own asset base helps both directly and indirectly in livelihood diversification. Some assets generate income directly through their hiring out services and others indirectly through their allocation to different activities. Asset offers a store of wealth as well as provides an opportunity to invest upon alternative enterprises. Several researchers noted that lack of asset base creates an entry level barrier for the resource poor households in diversifying their livelihood options particularly towards high end remunerative non-farm activities. Therefore, we hypothesize a positive relationship between diversification and asset value as well as between asset value and household income.

Irrigation - Development of irrigation is an important factor for agriculture development of a region. Provision of irrigation increases the productivity and profitability of farming. Irrigation opportunities make multiple cropping possible which will create agricultural surplus. This surplus can be used for doing non-farm activities particularly self-employment activities which require some amount of investment. Also this surplus can be used for educating children which will increase the possibility of getting non-farm employment. So we hypothesize the relationship between diversification and irrigation to be positive. So is expected between education and family income.

Distance - Geographic variables are also important determinants of livelihood diversification. For instance, the distance from the nearest market or town is expected to have a significant influence on livelihood diversification as market/town/city provides opportunity for market and non-farm activities. It is expected that households that are closest to cities are more likely

to engage in non-farm activities as the proximity of a village to its nearest town increases the non-farm employment prospect for the rural households. The workers can easily communicate in search of urban jobs particularly in the off season. Therefore households living in villages that are close to urban centres would have higher potentiality to engage in non-farm activities. Thus the relationship between livelihood diversification and distance to the nearest town is hypothesized to be negative. Similarly, a positive relationship between distance to nearest town and family income is also expected.

Credit - To carry out own non-farm enterprises/business, availability of credit is essential for the resource poor rural households. However, in an imperfect rural credit market, where money lenders and several micro-financing agencies are now ready to provide credit for any purpose but at exorbitant rate of interest, mere availability does not ensure productive use of the credit. The interest rate need to be affordable and the purpose should be productive in nature. Therefore, access to institutional sources of credit is taken as a determinant. For obvious reason, it is relevant to hypothesize a positive relationship between livelihood diversification and access to institutional credit as well as between institutional credit and household income.

Membership - Membership to a formal social organization like Self Help Group (SHG)/ cooperative/village committee, etc. is an important social capital in determining livelihood diversification. Memberships empower the person and increases status which increases the scope to engage in different activities. For example, membership to a SHG brings some facilities from Government and NGO's to pursue different livelihood supporting activities. Also an individual's position in the village power structure has a positive influence on his/her access to different common property resources as well as government/NGO schemes. Therefore we hypothesize a positive relationship between livelihood diversification and membership.

Skill development training - Most of the non-farm activities are skill based and require formal training. Training increases the possibility of getting non-farm jobs. Some self-employment activities also require training like tailoring, repairing of machines, small scale agro processing unit, etc. We therefore assume that there is a positive relationship between livelihood diversification and training. A positive relationship between training and household income level is also expected.

MGNAREGA- Under MGNAREGA, rural households are expected to get employment during lean seasons. Having a job card under this flagship programme, will expected to guarantee some additional income to the household and thus a positive relationship between MGNAREGA and household income is hypothesized.

Non-farm income- Agriculture alone fails to provide gainful employment to the rural households round the year. Reliance on non-farm income sources therefore not only raises the total household income but also acts as a cushion during unfavourable crop years. Therefore, scope for non-farm income sources (measured as share of non-farm income in total household income) is expected to have a positive relationship with household income.

Regional dummy - Geographic location may be another important determinants captured through regional dummies. The incentives to diversify may vary due to agro-ecological characteristics and socio economic standard of development of a region. The development literature suggests that agricultural development leads to the development of non-farm activities through their backward and forward linkages. And agricultural development, to a large extent, depends upon agro-ecology of the region. To capture the effect of differences in agro-ecological and socio-economic development between the two regions of our study, on livelihood diversification, we have used a regional dummy. The dummy assumes value `1' if the household belongs to the more developed region (i.e., Burdwan) and `0' otherwise (i.e., Purulia). We therefore hypothesize that the relationship between livelihood diversification and regional dummy is positive. We also hypothesize a positive relationship between regional dummy and level of household income.

Temporal dummy - Over time, many things gets changed, including the behavior of rural household. The structural changes in economic developments, both within agriculture and outside agriculture, gets changes over time. So is the case with development of rural infrastructure (road, telecommunication, etc.), opportunities for non-farm employments, the capabilities of rural households, and their attitudes towards income, asset and livelihood options. To capture the effect of all these factors, we have used a time dummy. The dummy assumes value `1' if the household responses are for more recent period (i.e., 2017-18) and `0' otherwise (i.e., 2007-08). We assume that over time rural households tend to diversify their livelihoods thus hypothesize a positive relationship between livelihood diversification and time dummy. We also hypothesize a positive relationship between regional dummy and household income.

2.6 Limitation of the Study

The present study is a longitudinal study and is confined to the state of West Bengal. In order to examine the changing dimensions of rural livelihood, a repeated field survey was undertaken in an interval of 10 years only and that too only in two districts (Purulia and Burdwan) covering 200 households. The first survey was conducted for the agricultural year 2007-08, and the second survey was undertaken with the same households for the agricultural year 2017-18. While doing so, for several reasons beyond our control, we required to replace 3 household (out of 200 surveyed in 2007-08) from the same villages in 2017-18.

Chapter – III

Results and Discussion

Results of the study are reported and discussed in this chapter. Results are presented objective wise and under five sections. First section analyses the nature and extent of livelihood diversification among different livelihood groups. Second section deals with the determinants or drivers of sustainable rural livelihood diversification; third section analyses the socio-economic, technological, institutional and policy constraints in livelihood diversification; fourth section analyses the context in livelihood diversification; and impacts of livelihood diversification on livelihood security are discussed in fifth section.

3.1 Nature and Extent of Livelihood Diversification

This section considers the nature and extent of livelihood diversification by different livelihood groups in two districts, i.e., Burdwan (representing more diversified regions) and Purulia (representing less diversified regions).

3.1.1 Nature of diversification

Agriculture and allied activities are the main livelihood option for rural households in West Bengal. However, their dependence on agriculture as primary source of livelihood varies substantially across the regions and over period of time. Table 3.1 and 3.2 presents the changes in livelihood pattern in the study area during last 10 years i.e., from 2007-08 to 2017-18.

During Period-I i.e., in 2007-08, agriculture was the most important source of livelihood in more diversified region (Burdwan) but the same was not true in backward regions like Purulia. In Purulia, the main source of rural livelihood was wage earning from non-agricultural sectors, particularly from mining and construction activities. For as high as 60 percent of rural households in Purulia, wage earning in non-farm sector was the primary source of income.

Farming, fisheries, animal husbandry, poultry keeping, and allied activities were main source of household income for 42 percent rural households in Burdwan district with another 26 percent households earning their livelihood from agriculture sector as agricultural labourers. This implies that for more than two-third of the sample households in Burdwan district, agriculture and allied activities were the main source of livelihood. While the corresponding figure for Purulia was just 6 per cent. Agriculture, in Purulia, failed to provide a sustainable livelihood to majority of the rural households and therefore the rural poor were forced to diversify their livelihood through wage earning in marginal and casual works.

Table 3.1 Nature of livelihood diversification in Burdwan during 2007-08 to 2017-18

Livelihood option (Primary source)	Number of households			
	2007-08	Left (during 2007-2017)	Joined (during 2007-2017)	2017-18
Agriculture and allied activities	42	27 (-64.29)	10 (23.81)	25 (-40.48)
Agricultural labour	26	17 (-65.38)	7 (26.92)	16 (-38.46)
Non-agricultural labour	9	6 (-66.67)	22 (244.44)	25 (177.78)
Salaried class	8	6 (-75.00)	13 (162.5)	15 (87.50)
Casual labour	6	5 (-83.33)	3 (50.00)	4 (66.67)
Petty business	3	0 (0.00)	8 (266.67)	11 (266.67)
Others	6	4 (-66.67)	2 (33.33)	4 (-33.33)
All	***100***	***65***	***65***	***100***

Data Source: Primary Survey Note: Figures in parenthesis are percentages of Period-I

Table 3.2 Nature of livelihood diversification in Purulia during 2007-08 to 2017-18

Livelihood option (Primary source)	Number of households			
	2007-08	Left (during 2007-2017)	Joined (during 2007-2017)	2017-18
Agriculture and allied activities	6	6 (-100.00)	3 (50.00)	3 (-50.00)
Agricultural labour	-	-	-	-
Non-agricultural labour	60	23 (-38.33)	13 (21.67)	50 (-16.67)
Salaried class	17	10 (-58.82)	13 (76.47)	20 (17.65)
Casual labour	2	2 (-100.00)	12 (600.00)	12 (600.00)
Petty business	6	5 (-83.33)	9 (150.00)	10 (166.67)
Others	9	8 (-88.89)	4 (44.45)	5 (55.56)
All	***100***	***54***	***54***	***100***

Data Source: Primary Survey Note: Figures in parenthesis are percentages of Period-I

During last 10 years, substantial changes occurred in the pattern of livelihood in both the districts. Dependence on agriculture as a primary source of income has reduced substantially

in both the districts and job creation has now been shifted towards wage earning (casual and marginal work like MGNREGS, e-rickshaw pulling, mason work, etc.) and self-employment with pretty business. The share of casual and marginal workers in both the district has increased with a commensurate decline in the share of crop farming. Dependence on agriculture as a primary source of livelihood declined from 42 percent in 2007-08 to 25 percent in 2017-18 in Burdwan district and from 6 percent to 3 percent in Purulia during the same period.

There has been an increase in the number of salaried persons in the study area during last 10 years but almost entirely under temporary or contractual jobs in private or semi-private firms like security agencies, private schools, private health firms, insurance agencies, civic volunteers, etc. with very small salaries. A large number of households left agriculture, even in more diversified regions of Burdwan, since it failed to provide a means of living to them. The problem of finding a secured livelihood is most with the educated youths and there has been very little job opportunities for them in the organized sectors. In fact, total number of employments in the organised sectors in West Bengal is consistently declining since 2000-01 with highest reduction in manufacturing sector (Table 1.1). The service sectors too failed to generate employment opportunities for rural youths. This is quite alarming for a state like West Bengal, with higher literacy rate and lowest land-man ration among all the states in India.

3.1.1.1 Diversification within agriculture

Table 3.3 shows the major changes in cropping patterns in the study area. A perusal of the table indicates that the cropping pattern in Purulia is mostly stagnant with mono-cropping of kharif rice. This is particularly because of very limited irrigation facilities available in the sample villages in Purulia. Of late, boro paddy (summer paddy) is being cultivated by few farmers with ground water irrigation but they are mostly diverting their areas from vegetables. In general, agriculture is very non-remunerative in this part of the state with very little irrigation facilities and frequent occurrence of dry spells. Even those farmers, willing to go for multiple cropping, are unable to do so because of lack of irrigation facilities and erratic rainfall. Therefore, the farmers in Purulia need to be encouraged to grow less water consuming crops like pulses, til, and other oilseed crops.

On the other hand the level of crop diversification in Burdwan used to be quite high since long. Because of very high level of irrigation facilities, farmers in Burdwan used to grow potato, boro paddy, sugar cane and other water consuming crops. There has been an excessive reliance on these water consuming crops which led to the depletion of water resources, and deterioration in water quality. However, during last 10 years a tendency of specialization towards Aman Paddy is observed in Burdwan district too. Area under boro

paddy has declined mainly due to ground water related problem. Boro cultivation was being done with either canal irrigation or assured irrigation from electrified tube-wells. But indiscriminate use of ground water resulted into fall in water table as well as arsenic contamination in the ground water. Every year the water table decreases at an alarming rate. The farmers have to deepen their well (shallow pumps) regularly due to the declining of the water table depth. It causes a serious ecological imbalance and scarcity of drinking water. As a result cost of irrigation has also increased. At the same time, canal irrigation is now less assured as because of competing claims on the same water from domestic and industrial sectors. This led to contraction in area under boro paddy and other water consuming crops. Earlier, in the study villages of Burdwan district, potato was cultivated as a cash crop. Now, area under potato has also decreased mainly due to the low prices of this crop at the time of harvest. Due to lack of storage facilities, potato farmers are forced to sell their crop at a low price which is not enough to recover even the cost of production. Another point to note here is that the area under pulses, which was almost negligible, is now increasing in Burdwan district.

Table 3.3 Changing cropping pattern in the study area

(% of GCA)

Seasons	**Crops**	**Burdwan**		**Purulia**	
		2007-08	**2017-18**	**2007-08**	**2017-18**
Kharif	Paddy	50.32	65.60	97.75	94.72
	Sugar cane	0.49	0.20	0.00	0.00
Rabi	Mustard	8.95	7.49	0.00	0.02
	Til	4.44	0.71	0.00	0.00
	Potato	5.50	4.20	0.00	0.00
	Pulses	0.05	1.69	0.00	0.00
	Wheat	0.00	0.00	0.00	0.00
	Aurum	0.02	0.00	0.00	0.00
	Vegetable	1.00	0.05	2.25	0.73
Boro	Paddy	29.23	20.06	0.00	4.55

Data Source: Primary Survey

3.1.1.2 Diversification out of agriculture

In recent years, the real income from traditional crop cultivation has declined in spite of the fact that the prices of agricultural crops have increased modestly. But at the same time the costs and risks involved in agricultural production has also increased because of rise in input prices as well as stagnant yield and price instability at post-harvest period. In this situation the only way to survive for the rural households is either to adopt additional sources of livelihoods or changing cropping pattern. As a consequence rural households in the study area have engaged in various types of non-agricultural activities.

In the previous section it is clear that the condition of agriculture is very poor in Purulia and it is difficult for rural households to rely on agriculture for survival. Mere crop cultivation is not capable of supplying basic needs for subsistence. Therefore, for only three percent of the households, farming is the main source of income. Many household try to earn a bit through backyard poultry keeping and piggery. Employment opportunities in the local area are also very poor. In this situation the only way out for the poor household is the seasonal migration to the nearby towns and urban centres in search of wage earning in the non-agriculture sector. A large number of people from the study area goes to the nearby towns like Asansol, Burnpur, Durgapur, Kulti, Adra, etc. in search of non-agricultural jobs namely construction work, contract and wage earning in mines and steel factories, rickshaw pulling, etc. But that too fails to provide the poor households a reasonable standard of living. Migration is always difficult and more so the seasonal migration for few weeks or months in a year and thus cannot be a sustainable livelihood alternative. The situation as stands today warrants that farmers in Purulia take to either non-crop enterprises or modify their farming system for higher productivity.

In Burdwan the situation was not that bad few years back. Agriculture was a profitable enterprise in this part of the state but the scenario is changing fast. In fact agriculture is still quite developed here but farming alone fails to provide sustainable livelihood to majority of the households. Therefore a large number of households are either leaving agriculture or supplementing their livelihoods from a diverse portfolio of activities like bidi making, e-rickshaw pulling, mason work, petty business, etc. Bidi making is an important job for a number of rural families of the study area. A large number of households depend mainly on the income from bidi making. Not only the landless labourers and small farmers, medium farmers are also engaged in bidi making. While the educated rural youths are now engaging themselves e-rickshaw pulling and petty business, the poor and landless labour force are relying more on casual and marginal works like daily labourers. This may not help them in improving the economic conditions of the households but enable them to struggle against the odds they face. In recent times migration to cities and even other states has also become very popular. In the study villages of Burdwan a large number of rural youths have migrated to Kolkata, Hyderabad, Chennai, Ahmedabad and other parts of the country in search of job.

Another important activity is drum paddling, a caste occupation, among a large number of SC/ST populations in Burdwan. But this is a part-time activity. During the Puja session the demand for the paddler rises up substantially and during offseason they work as casual labour. In recent time there is a vast increase in the demand for paddler from the urban areas. The rural households in Burdwan also earn substantially from backward poultry keeping and livestock rearing, particularly goat and buffalo, in addition to their main source of livelihood.

Many rural youths are now engaged with petty business activities like sale of telecommunication items, consumer durables in urban area, sales agent, etc.

3.1.2 Extent of livelihood diversification

The extent of livelihood diversification is analyzed from three points of view. The starting point is an analysis of the number of sources of income and number of crops grown by different livelihood groups. Second, diversification is analyzed through the share of agricultural (or farm) and non-agricultural (or non-farm) income in the total household income. Third, by construction of appropriate diversification indices, both for crop diversification and livelihood diversification for different livelihood groups.

3.1.2.1 Number of sources of income and number of crops grown

One way in which diversity in livelihood can be measured is by counting the number of income sources on which households depend. Table 3.4 and Table 3.5 compare the number of different income sources as well as number of crops grown by a household in each livelihood groups in Burdwan and Purulia district, respectively. Both the tables show that almost all livelihood groups have diversified income sources. However, in Burdwan district number of income sources varies from 2 to 7 per household, whereas in Purulia it varies from 1 to 4 per household. The majority of the households in both the district had more than two income sources. On an average each household has more than three (3.52) sources of income in Burdwan district, and for Purulia the corresponding figure is 2.19. However, during 2007-08, average number of income sources per household was marginally higher at 3.67 in Burdwan district and the corresponding figure for Purulia was just 1.87. So it is clear from the Table 3.4 that for each livelihood group the average number of income sources has remained more or less same in Burdwan district but marginally increased in Purulia district.

So far as number of crops is concerned, a clear tendency of crop specialization at farm level is observed in both the districts. The average numbers of crop grown per household have declined during last 10 years across all the livelihood groups. During the Period-I, on an average, more than four crops were being cultivated by the landholding class in Burdwan. But the same is now reduced to around two only. This is not a desirable tendency so far as crop diversification in an agriculturally developed district is concerned. Even in a backward district like Purulia, the average number of crops grown has been reduced.

The average highest number of crops is grown by cultivator group followed by petty business group in Burdwan district. While, in Purulia the highest number of crops grown by a household is only two. In fact there is not a single household, among sample households, who grew more than three crops in a year. The low level of crop diversification in Purulia

may be due to distress induced by the agro-climatic factors, particularly due to erratic rainfall pattern and lack of any kind of irrigation facilities in the study villages but the situation in Burdwan district has changed significantly during last 10 years. The average number of crops grown by the farmers of Burdwan district has declined significantly.

Table 3.4 Average numbers of income sources in Burdwan and Purulia

Livelihood Groups	Average no. of income sources			
	2007-08		2017-18	
	Burdwan	Purulia	Burdwan	Purulia
Agriculture and allied activities	3.84	2.16	3.64	3.00
Agricultural labourers	3.14	N.A.	3.62	N.A.
Non-agricultural labourers	3.22	1.83	3.64	2.20
Salaried group	3.75	1.92	3.33	2.35
Casual labourers	3.67	1.50	3.75	1.90
Petty business	3.33	1.83	3.27	2.00
Others	2.83	1.66	2.75	2.00
All occupations	***3.67***	***1.87***	***3.52***	***2.19***

Data Source: Primary Survey

Whether it is more diversified or less diversified region the general trend is the decrease in number of crops grown during last 10 years. This only shows the poor health of agriculture in the state, in providing a remunerative livelihood to the rural masses. During our field survey (FGDs), a common response was that 'agriculture is no more a remunerative enterprise' and given an opportunity majority of farmers would like to 'leave agriculture'. This is a matter of serious concern and government must think of strategies to make agriculture a remunerative enterprise.

Table 3.5 Average numbers of crops grown in Burdwan and Purulia

Livelihood Groups	Average no. of crops grown			
	2007-08		2017-18	
	Burdwan	Purulia	Burdwan	Purulia
Agriculture and allied activities	4.36	2.00	2.48	1.33
Agricultural labourers	1.88	N.A.	1.20	N.A.
Non-agricultural labourers	2.77	1.74	1.44	1.31
Salaried group	4.00	1.80	2.00	1.37
Casual labourers	2.80	1.00	1.00	2.00
Petty business	3.00	2.00	2.12	1.00
Others	3.20	1.80	1.00	2.00
All occupations	***3.35***	***1.79***	***1.90***	***1.36***

Data Source: Primary Survey

3.1.2.2 Income from agricultural and non-agricultural activities

Another important way to measure the livelihood diversification is the proportion of income that a household derive from farm and non-farm activities. A common view is that, in rural West Bengal, livelihood is mostly driven by agriculture sector. This is particularly true so far as only dependence on agriculture as employment is concerned. But so far as income is concerned, agriculture alone failed to provide a sustainable livelihood to the rural people in the study area.

Table 3.6 Sources of household income in Burdwan in 2007-08 (at current price)

Livelihood groups	Rupees/annum/household				
	Total	**Farm**	**Non-farm**	**Farm (%)**	**Non-farm (%)**
Agriculture and allied activities	64658	47145	17512	73	27
Agricultural labourers	20431	16459	3971	81	19
Non-agricultural labourers	31188	10866	20322	35	65
Salaried group	165666	35362	130303	21	79
Casual labourers	34258	8066	26191	24	76
Petty business	33190	10793	22396	33	67
Others	*66854*	*8475*	*58379*	*13*	*87*
All occupations	***55591***	***29203***	***26387***	***53***	***47***
CV% (Across the livelihood group)	84.11	78.72	108.29	66.06	44.04

Data Source: Primary Survey

Table 3.7 Sources of household income in Purulia in 2007-08 (at current price)

Livelihood groups	Rupees/annum/household				
	Total	**Farm**	**Non-farm**	**Farm (%)**	**Non-Farm (%)**
Agriculture and allied activities	28833	16500	12333	57	43
Agricultural labourers	N.A.	N.A.	N.A.	N.A.	N.A.
Non-agricultural labourers	28765	1665	27100	6	94
Salaried group	71824	2294	69529	3	97
Casual labourers	31500	1500	30000	5	95
Petty business	57250	2083	55167	4	96
Others	39000	3556	32746	12	88
All occupations	***37059***	***4312***	***32746***	***12***	***88***
CV% (Across the livelihood group)	41.54	127.73	54.94	145.24	24.63

Data Source: Primary Survey

Table 3.6 to Table 3.9 shows the magnitude and proportion of farm and non-farm income in total income across the livelihood groups in our study area during 2007-08 and 2017-18. Agriculture was the most important source of livelihood in more diversified regions (Burdwan) during Period-I, though the same was not true in backward region like Purulia. In Purulia, wage earning particularly in non-farm mining and construction sector was the main source of livelihood. Too much reliance on non-farm sources of income, in Purulia was mainly because of very low income from highly rainfed nature of agriculture. The rainfed agriculture could not provide them with the basic needs for subsistence. So people were forced to do non-farm works for their survival.

Table 3.6 and 3.7 shows that on an average 47 per cent of rural household income was derived from non-farm sources in Burdwan district and the same was as high as 88 per cent in Purulia district, during 2007-08. However, these proportions varied widely across different livelihood group. For cultivators and agricultural labourers in Burdwan district, farm income was the main source of livelihood. And for other livelihood groups also, farm sector contributed a sizable amount of income in Burdwan district. In contrast to the findings from more diversified district Burdwan, for all most all the livelihood groups except cultivators, in Purulia district less than 10 per cent of the household income was derived from farm sector. Dependence on non-farm income was (and still is) a common feature in Purulia. Seasonal migration to the neighboring towns in search for work was also very common in Purulia.

The findings of our study shows that the rural households, in past, used to be involved in non-farm employment as a way of supplementing income from agriculture and hence diversifying their livelihood options (Khatun and Roy, 2012). But during last 10 years, there has been a structural change in income and employment of rural households in both the district. Dependence on agriculture as primary source of livelihood is also diminishing. Agriculture is no more the main source of income for rural households, even in an agriculturally developed district of Burdwan. Over time, the share of farm income in the total household income reduced substantially across all the livelihood groups. It is clear that rural households are now increasingly relying on non-farm income sources for their livelihood and for most of the rural households; non-farm income is the main source of household income in the study area

This is quite natural in a development process but what is disturbing is that an increased inequality in household income across the livelihood groups during 2007-18. Agriculture failed to generate sufficient income to the farming communities in rural West Bengal. The growth in the nominal average annual income per household (measured at current price) was more among the livelihood groups relying on non-farm sources of income like salaried class or petty business as compared to farmers or laborers. The increased inequality is also evident

from the table 3.6 to 3.9 as the value of co-efficient of variations in household income is substantially higher during 2017-18 in both the district.

Table 3.8 Sources of household income in Burdwan in 2017-18 (at current price)

Livelihood groups	Rupees/annum/household				
	Total	**Farm**	**Non-farm**	**Farm (%)**	**Non-farm (%)**
Agriculture and allied activities	84832	58032	26800	68	32
Agricultural labourers	33862	25031	8831	73	27
Non-agricultural labourers	24492	5296	19196	22	78
Salaried group	228613	41680	186933	19	81
Casual labourers	37000	12900	24100	35	65
Petty business	127624	24045	103578	19	81
Others	53500	5500	48000	10	90
All occupations	***84700***	***28507***	***56093***	***34***	***66***
CV% (Across the livelihood group)	86.67	79.19	107.87	71.98	39.00

Data Source: Primary Survey

Table 3.9 Sources of household income in Purulia in 2017-18 (at current price)

Livelihood groups	Rupees/annum/household				
	Total	**Farm**	**Non-farm**	**Farm (%)**	**Non-farm (%)**
Agriculture and allied activities	41767	30617	11150	73	27
Agricultural labourers	NA	NA	NA	NA	NA
Non-agricultural labourers	35518	10940	24578	37	63
Salaried group	205110	15360	189750	7	93
Casual labourers	28317	8833	19483	31	69
Petty business	127450	8950	118500	7	93
Others	93200	14800	78400	16	84
All occupations	***76266***	***9978***	***66288***	***13***	***87***
CV% (Across the livelihood group)	77.82	54.89	95.56	87.92	35.05

Data Source: Primary Survey

3.1.3 Livelihood diversification indices

Livelihood diversification should not be measured only in terms of number of activities but on the degree of reliance on multiple sources. Livelihood diversification index is an important tool for measuring the extent of diversification in livelihood options or strategies. In the present study Livelihood diversification is measured by Simpson Index.

It is found from the Table 3.10 that the level of diversification for almost all major livelihood groups was very low in the Purulia district (SI: 0.2063) than Burdwan district (SI: 0.5615) during 2007-08. The level of diversification has marginally increased during last 10 years, but is still very low, in Purulia district. In Purulia not only the average household income is low but also the number of income sources is limited. The low level of livelihood diversification in Purulia may be due to the distress induced by socio-economic and agro-climatic factors. But in more diversified region of Burdwan, the level of diversification is quite high i.e., more than 0.5000 among almost all the livelihood groups. During last 10 years, there has been a minor setback in the level of diversification in Burdwan district across all the livelihood groups mainly due to reduced diversification within agriculture sector.

Among different livelihood groups, the level of diversification is still highest among the salaried class in Burdwan and for cultivator group in Purulia. In general, the livelihood is less diversified for the labourers groups in both the district. The low level of diversification among the labourers groups are mainly due to entry barriers for them due to their poor social, physical and human capital base.

Table 3.10 Livelihood diversification indices (SI) in Burdwan and Purulia

Livelihood groups	**Burdwan**		**Purulia**	
	2007-08	**2017-18**	**2007-08**	**2017-18**
Agriculture and allied activities	0.5768	0.5050	0.3223	0.3366
Agricultural labourers	0.5682	0.5729	NA	NA
Non-agricultural labourers	0.5133	0.5335	0.1556	0.2261
Salaried group	0.6111	0.6441	0.2682	0.3113
Casual labourers	0.5560	0.4040	0.1326	0.2328
Petty business	0.5832	0.5155	0.1397	0.2860
Others	0.4268	0.4295	0.2755	0.2112
All occupations	***0.5615***	***0.5329***	***0.2063***	***0.2634***

Data Source: Primary Survey

Table 3.11 Crop diversification indices (SI) in Burdwan and Purulia

Livelihood groups	**Burdwan**		**Purulia**	
	2007-08	**2017-18**	**2007-08**	**2017-18**
Agriculture and allied activities	0.6023	0.5013	0.0446	0.0246
Agricultural labourers	0.3350	0.2557	NA	NA
Non-agricultural labourers	0.4688	0.3456	0.0400	0.0848
Salaried group	0.5882	0.4760	0.0542	0.0890
Casual labourers	0.3737	0.0000	0.0000	0.3353
Petty business	0.4565	0.4412	0.0624	0.0000
Others	0.4828	0.0000	0.0538	0.1540
All occupations	***0.4944***	***0.4137***	***0.0426***	***0.0910***

Data Source: Primary Survey

So far as crop diversification is concerned, it is evident from the Table 3.11 that the level of crop diversification is very low for all the livelihood groups in Purulia perhaps because of agro-climatic and socio-economic constraints. The level of crop diversification, as measured by SI, is of moderate magnitude for all the livelihood groups in Burdwan. The magnitude is highest for cultivators followed by salaried group. A tendency away from diversified cropping patter is observed in Burdwan district, which is a matter of concern for sustainability of agricultural production system in the state.

From the above analysis, one thing is clearly emerging that irrespective of tools or methods used, the estimated level of livelihood diversification is greater in Burdwan district than in Purulia; and among different livelihood groups salaried class and cultivators are in a better position perhaps due to their asset base. But during last 10 years, the level of both livelihood diversification as well as crop diversification has reduced substantially in Burdwan district, though the same has been marginally increased in Purulia district. Further, rural households in both the districts are now relying more on non-farm wage earning as agriculture is no more a profitable enterprise in West Bengal. Agriculture failed to provide a sustainable livelihood to the rural masses and therefore, a large proportion of rural households are leaving agriculture in order to cope up with the situation. The job creation, in rural areas, has now been shifted towards casual and marginal works. And this has resulted in increased inequality in household income across the livelihood groups. The poor wage earners, the landless and marginal farmers are the worst sufferers.

3.2 Determinants of Livelihood Diversification

Based on literature review and field experience, the present study included quite a few explanatory variables that can influence livelihood diversification at household level in rural areas. The result of the censored regression (Tobit) model is presented in Table 3.12. It is to be noted here that after trying with various combination/sets of explanatory variables, the results of best fit are presented here. The model produced a reasonably good fit as indicated by all the three parameters namely, Log Likelihood, McFadden Pseudo R^2, and Likelihood Ratio of χ^2 test. Further, all the estimated co-efficient, except age and dependency ratio, have expected signs. Not only the estimated coefficients have expected signs but also most of them are statistically significant. Results are discussed in detail in the following.

The study shows that age has a significant but direct relationship with diversification level, which indicates that older decision makers have more ability and willingness to look for alternative employment opportunities. In other words multiplicity of activities increases with the increase in age. This result is quite contrary to our expectations and might be because of two reasons. First, instead of taking age of all the working members, we have taken the age of the

family head alone and out of 400 samples in our study most of the household heads are of middle aged. Second, experience increase with age and aged persons are more experienced than the younger ones in assessing the livelihood risks and managing the same through diversifying livelihood portfolio.

Table 3.12 Determinants of livelihood diversification in West Bengal

Explanatory Variables/ Particulars	**Dependent Variable:** *LDI (Simpson Index of Livelihood Diversification)*	
	Estimated Co-efficient Value	**Standard Error**
Age	0.01641**	0.00832
Dependency Ratio	-0.00312	0.00185
Education	0.01104*	0.00473
Family Size	0.00253**	0.00125
Land Man Ratio	-0.01631*	0.00472
Asset Value	0.02127*	0.00632
Irrigation	0.00265	0.00164
Distance	-0.01342**	0.00743
Access to institutional credit	0.13807*	0.02159
Membership	0.06473	0.04115
Training/Skill Development	0.07217*	0.01573
Regional Dummy (Purulia=0, Burdwan=1)	0.14721*	0.01356
Temporal Dummy (Year 2007-08=0, 2017-18=1)	0.07325**	0.03467
Constant	0.15072*	0.04874
Number of observations	400	
Log Likelihood	88.32	
McFadden Pseudo R^2	1.91	
F (13, 400) or LR χ^2 (13)	370.17*	

**** 1% level of significance, ** 5% level of significance***

The level of education showed a positive and significant impact on livelihood diversification index. Higher was the education level of the farmer, more was the chance to have a diversified livelihood. Educated households have better understanding of the risks and greater access to information. The result is in the lines of previous studies conducted elsewhere. As elsewhere in India, in West Bengal too education is considered to be one of the most important barriers to entry in the non-farm jobs particularly for salaried jobs and petty business. The illiteracy among the farmers and agricultural labourers are quite rampant in rural areas and higher education is quite costly for the poor households. As a result, the high educated person diversifies their livelihood options through salaried job, self-employment activities, etc. whereas low educated and illiterate persons engaged themselves in cultivation or wage earning. Therefore, investment in education and ensuring access to higher education will help the rural households in their struggle for getting alternate income. Improvement in the education level will increase the probability of engaging in rural non-farm activities and diversification.

In line with our expectation, family size is found to be positively related with the level of diversification. Higher the family size, more the number of working peoples available. At the same time, more will be the compulsion to find an alternative livelihood outside the farming.

The co-efficient for land-man ratio is also turned out to be an important and statistically significant determinant of livelihood diversification. As expected the relationship between the land-man ratio and diversification level is found to be negative. The excessive employment pressure on agriculture is an important trigger for non-farm diversification. This implies that households with lesser land resource and more labour resource look for income opportunities in the labour market and non-farm activities.

The value of physical assets owned by the household is found to have significant and positive effect on the level of livelihood diversification. Poor asset base is one of the most limiting factors towards livelihood diversification in rural West Bengal.

Access to institutional credit is found to have a positive effect on the level of livelihood diversification. Households having access to institutional credit had higher chances of diversified livelihood. The co-efficient is also statistically significant at 1 per cent level of significance. As for most of the rural households, the resource base is very poor, providing credit to households will improve their livelihood.

As expected the relation between skill enhancing training and level of diversification are positive and statistically significant. This implies that human capital in terms of capacity building

through skill development help in diversifying livelihoods in rural area. But the same is not the case with membership to formal social organizations.

The co-efficient for membership is positive but statistically non-significant even at 10% level of significance. In contrary to our hypothesis, dependency ratio is found to be negatively related with level of diversification but again the co-efficient turned out to be statistically non-significant at 5 per cent level. The co-efficient for irrigation too is positive but statistically in-significant this may be because of fact that irrigation leads to higher crop diversification rater livelihood diversification in to non-farm enterprises.

But the co-efficient for distance from city had significant impact on livelihood diversification. More the proximity to the town (less the distance) higher is the value for livelihood diversification. This might be because proximity to towns or cities provides an opportunity for employment in non-farm sectors.

The sign of the estimated co-efficients for regional dummy is positive and statistically significant at 1 per cent level of significance which implies that ceteris paribus the households residing in advanced region (Burdwan) of our study have more diversified livelihood than those in the backward region and this difference is particularly because of differences in the location specific agro-climatic and socio-economic factors.

The co-efficient for temporal dummy is also positive and statistically significant. This means, rural households have more diversified livelihood at present than during base period (2007-08). During last 10 years a lot of changes happened in rural West Bengal, like development of road, telecommunication, urban orientation, etc. which facilitated livelihood diversification.

From the estimates of Tobit model, it is found that households with higher endowments of natural and physical assets are more likely to engage in multiple activities. In a nutshell, it may be concluded that the rural households in our study regions are most likely to have a diversified livelihood when they have experience (age) and skill (training), have more working hands, the workers are educated, possess some physical assets, and have access to institutional credit. The scope for livelihood diversification also gets boosted when there are better infrastructure and urban market in the proximity. Agro-climatic condition and overall socio-economic development of an area also have a strong influence on rural livelihood diversification.

3.3 Constraints to Livelihood Diversification

Several constraints act as obstacles for successful diversification. Identification of constraints for a particular agro-ecological region is crucial for future policy formulation. This study attempts to identify some of the socio-economic, technological, institutional and policy

constraints to diversification. Our results show that these constraints vary across regions as well as across livelihood groups. The results are given in the subsequent sub-sections.

3.3.1 Constraints to crop diversification in Burdwan district

The major constraints to crop diversification in Burdwan district, during 2017-18, are shown in Table 3.13. As evident from table, the main constraints are low prices of agricultural commodities, lack of credit facilities, poor asset base, absence of marketing facilities, incidence of pest and diseases, erratic rainfall, labour scarcity and small size of land holdings. Table 3.14 presents the main constraints faced by the rural households in Burdwan districts during 2007-08 and during 2017-18. A perusal of the table reveals that the top six constraints to crop diversification remain almost the same. This shows the poor state of agriculture in the district. The top six constraints are:

Low prices of agricultural goods: Prices of agricultural goods is most important constraint to crop diversification in Burdwan. In recent years, the cost of production has increased substantially, but the farm gate prices of the agricultural goods have not increased to that proportion. If there is an increase in prices for some crops then the profits accrues to the middleman, the farmers do not get the benefits. As a result the profitability of crop cultivation has become low, e.g. potato cultivation. Previously potato was cultivated only for home consumption. But at present potato is cultivated for market also. At the time of harvest, a price of potato remains very low. Without adequate storage facilities, farmers are forced to sell their crop at low prices. Sometimes they were not even able to recover the production cost.

Lack of credit facilities: To get the required credit (institutional) farmers have to go through a complicated paper works and processes. There is mortgage restriction which is in general holding of land acreage. There are two main problems farmers face in getting institutional loan. Firstly, average farmers have landholding less than the requirement for institutional loan. Secondly, if they have the required land holding they do not possess the proper record for the same. As a last resort they are forced to borrow from the moneylender at an exorbitant rate of interest (24 - 60 per cent per annum).

Table 3.13 Constraints to crop diversification in Burdwan during 2017-18

Livelihood Group	Drought	Flood	Irrigation facility	Erratic Rain fall	Land size & quality	Asset Base	Prices of agricultural Commodities	Labour scarcity	Marketing facility	Credit facilities	Lack of awareness /training	Non-availability of seeds etc.	Pest/Disease/Insect problem
Agriculture and allied activities	1.55	1.00	2.64	2.33	3.22	4.20	3.91	2.50	3.67	4.13	2.89	1.67	3.67
Agricultural labourers	1.71	1.00	3.00	2.50	2.40	3.22	3.50	2.75	3.00	3.63	2.40	2.67	2.00
Non-agricultural labourers	2.17	1.00	2.67	4.00	2.83	3.65	3.50	2.50	3.53	3.56	2.67	4.00	2.00
Salaried group	1.20	1.00	2.50	2.00	1.75	3.40	3.50	3.00	3.50	3.67	2.80	1.50	3.00
Casual labourers	3.00	1.00	4.00	1.00	2.00	1.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00
Petty business	2.20	1.00	3.33	2.00	1.50	3.20	4.29	2.75	2.75	4.00	2.67	1.00	2.67
Others	1.00	1.00	2.00	1.00	3.00	3.00	2.00	3.00	2.00	2.00	3.00	1.00	2.00
All occupations	***1.81***	***1.00***	***2.68***	***2.45***	***2.53***	***3.63***	***3.86***	***2.68***	***3.27***	***3.79***	***2.72***	***1.92***	***2.75***

Data Source: Primary Survey

Table 3.14 Rank of major constraints to crop diversification in Burdwan

Constraints	2017-18		2007-08		Most vulnerable groups
	Score	Rank	Score	Rank	
Low prices of agricultural commodities	3.86	I	3.93	I	Petty business, Agriculture and allied activities
Lack of credit facilities	3.79	II	3.29	VI	Agriculture and allied activities, Petty business
Poor asset base	3.63	III	3.41	IV	Agriculture and allied activities, Non-agricultural labourers
Lack of marketing facilities	3.27	IV	3.34	IV	Agriculture and allied activities, Non-agricultural labour
Pest/disease/insect problem	2.75	V	3.86	II	Agriculture and allied activities, Salaried group
Lack of awareness/training	2.72	VI	3.72	III	Casual labourers, Others

Lack of capital or poor asset base: For crop diversification different types of farm assets and farm machineries are needed which require initial investment. Modern farming practices are also capital intensive. But most of the farmers are resource poor and therefore they cannot afford modern farm inputs and implements.

Lack of marketing facilities: Farmers face problems to sale their products. There is no regulated market or co-operative society where they can sale their products at reasonable prices. They force to sell their products to the local agents at low prices under distress. This is particularly so for potato and other perishable crops.

Pest-diseases-insect problem: Pest-diseases-insect problem is one of the serious constraints to crop diversification in Burdwan. There is an emergence of new pests and diseases in the district. Several insect pests also developed resistance to pesticides. It is a well-known fact that HYV seeds are easily susceptible to pest-diseases-insect problem. To manage this problem high quality pesticides are required. But most of the farmers are resource poor and cannot able to buy the high quality pesticides which are costlier. So they use low quality pesticides yielding low productivity. Some farmers even reported that the pesticides available in the local market are duplicate pesticides of branded companies and thus failed to given result even after their application.

Lack of awareness and training: Modern agricultural practices are continuously changing and more knowledge intensive. But many farmers are unaware still unaware about the modern farm practices. Extension services provided by the state are not reaching to the poor

cultivators. The farmers are also interested to grow high value crops but they do not get the information and training from the concerned departments.

3.3.2 Constraints to crop diversification in Purulia district

In Purulia district main constraints to crop diversification are quite different from Burdwan district. As evident from Table 3.15, major constraint to crop diversification in Purulia district is related to rainfall and access to resources. Frequent drought, erratic rainfall, lack of irrigation facilities, poor asset base, lack of credit facilities, labour scarcity during peak period and small size of holdings are the major constraints to crop diversification in Purulia. Table 3.16 shows that the five most important constraints faced by the rural households in Purulia district during 2007-08 and during 2017-18 remained same and are:

Drought: Drought is a recurring problem in Purulia district and all the households, crops and livestock are affected because of it.

Erratic rainfall: Amount of rain fall in the district is not only low but also very irregular. As irrigation infrastructure has not developed, erratic rainfall causes severe problems to cultivator households. Cultivation has become the gamble of monsoons.

Lack of irrigation facility: Level of irrigation in Purulia district is very low. In fact in the sample villages there were virtually no irrigation facilities. Cultivation is fully rainfed. As a result farmers are unable to diversify their cropping pattern despite their immense interest to do so.

Lack of capital or poor asset base: Lack of capital is an important constraint for crop diversification. The resource-poor farmers are not capable of making any investment in agriculture. As a result productivity of agriculture is very low in Purulia district. Most of the Farmers are not even capable of purchasing the fertilizers required for cultivation.

Lack of credit facilities: Availability of credit facilities is important for cultivation particularly to the resource poor households. However, without any access to institutional credit, farmers are forced to go to the moneylender. They are forced to borrow at a high rate of interest from the moneylender.

Table 3.15 Constraints to crop diversification in Purulia during 2017-18

Livelihood groups	Drought	Flood	Irrigation facility	Erratic Rain fall	Land size & quality	Asset Base	Prices of agricultural Commodities	Labour scarcity	Marketing facility	Credit facilities	Lack of awareness/ training	Non-availability of seeds etc.	Pest/Disease/Insect problem
Agriculture and allied activities	4.00	1.00	4.00	3.75	2.33	3.00	2.00	2.33	2.00	3.33	3.00	2.00	2.56
Agricultural labourers	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Non-agricultural labourers	4.41	1.00	3.35	3.67	2.63	4.00	3.29	3.07	2.33	3.11	2.75	1.00	1.12
Salaried group	4.00	1.33	4.00	3.33	3.00	2.00	3.67	3.50	3.00	2.67	2.00	2.00	2.12
Casual labourers	4.50	1.00	3.00	2.33	2.67	2.67	3.33	2.00	3.00	3.00	1.33	2.00	1.00
Petty business	4.00	1.00	4.00	4.00	3.00	3.50	2.50	3.00	2.00	3.00	1.00	1.00	1.00
Others	4.00	1.00	4.00	3.00	3.00	1.00	3.00	2.00	2.50	3.00	2.00	2.00	1.12
All occupations	***4.30***	***1.05***	***3.54***	***3.55***	***2.67***	***3.11***	***3.05***	***2.89***	***2.43***	***3.05***	***2.25***	***1.86***	***1.23***

Table 3.16 Rank of major constraints to crop diversification in Purulia

Constraints	2017-18		2007-08		Most vulnerable groups
	Score	Rank	Score	Rank	
Drought	4.30	I	4.15	II	All most everyone but specifically wage earners.
Erratic rainfall	3.55	II	4.11	III	Petty business, Agriculture and allied activities
Lack of irrigation facilities	3.54	III	4.81	I	Agriculture and allied activities, Salaried class
Poor asset base	3.11	IV	3.67	IV	Non-agricultural labour, Petty business
Lack of credit facilities	3.05	V	3.39	V	Agriculture and allied activities, Non-agricultural labour

To sum up, a perusal of Table 3.13 to Table 3.16 shows that while agro-climatic factors are the main constraints to crop diversification in Purulia, institutional constraints are the major obstacles to crop diversification in Burdwan. Further, the average magnitude of the problems is higher in backward regions like Purulia as compared to Burdwan. During last 10 years, there is not much change in the nature or magnitude of constraints faced by the farmers. It indicates either non recognition of problems or failure of the programmes meant for agricultural development in the study area. For example, the farming in Purulia is still dependent on erratic rainfall with very little technical knowhow about modern crop farming practices. Similarly, price instability in potato and paddy is an important constraints faced by the farmers in Burdwan. Therefore a differentiated policy measures like drought proofing in Purulia and efficient marketing in Burdwan are the need of the time.

3.3.3 Constraints to livelihood diversification in Burdwan district

Table 3.17 shows the magnitude of different constraints faced by different livelihood groups in Burdwan in diversifying their livelihood portfolio during 2017-18. As evident from the table, the main constraints to livelihood diversification in Burdwan district at present is lack of employment opportunity in the study area. But this was sixth most important constraints during 2007-08 (Table 3.18). Other constraints, at present, are lack of infrastructure, poor access to credit, poor asset base, poor awareness and training, marketing problems, problems of ability, and labour problems. Top five constraints during 2007-08 and 2017-18 are given in Table 3.18. The major constraints are:

Table 3.17 Constraints to livelihood diversification in Burdwan district during 2017-18

Livelihood groups	**Climate & Weather**	**Marketing problems**	**Credit problems**	**Asset Base /Capital problems**	**Road & transport problems**	**Lack of infrastructures**	**Lack of scope**	**Ability/Skill/education**	**Fear of taking risk**	**Labour problem**	**Lack of awareness (Training/Technology)**
Agriculture and allied activities	3.00	1.00	4.00	4.33	3.50	1.00	4.38	1.00	1.00	1.00	3.50
Agricultural labourers	2.50	3.00	4.00	1.00	2.00	2.00	1.00	4.00	1.00	1.00	2.00
Non-agricultural labourers	2.00	1.00	4.67	1.00	2.00	5.00	4.50	4.00	1.00	1.00	3.00
Salaried group	2.50	4.00	3.33	3.25	4.00	2.00	3.60	3.00	1.00	5.00	2.00
Casual labourers	4.00	4.00	2.00	1.00	1.00	3.00	1.00	3.00	1.00	1.00	4.00
Petty business	2.83	3.17	3.22	3.50	2.33	4.33	3.43	2.70	1.00	3.50	2.33
Others	1.00	4.00	1.50	4.00	3.00	4.00	1.00	3.00	1.00	1.00	4.50
All occupations	***2.59***	***3.08***	***3.33***	***3.28***	***3.00***	***3.67***	***3.75***	***3.06***	***1.00***	***3.00***	***3.25***

Table 3.18 Rank of major constraints to livelihood diversification in Burdwan

Constraints	2017-18		2007-08		Most vulnerable groups
	Score	Rank	Score	Rank	
Lack of scope	3.75	I	3.23	VI	Non-agricultural labourers, Agriculture and allied activities
Lack of infrastructure	3.67	II	3.24	V	Non-agricultural labour, Petty business
Lack of credit	3.33	III	3.75	II	Non-agricultural labourers, Agriculture and allied activities
Poor asset base	3.28	IV	3.99	I	Agriculture and allied activities, Petty business
Lack awareness and training	3.25	V	3.73	III	Others, Casual labourers
Fear of taking risk	1.00	XI	3.41	IV	Petty business, casual labourers

Lack of scope - Opportunities for non-farm jobs, within or around the sample villages, are very low. Therefore, household does not have much scope to diversify their livelihood portfolio. Several youths, both educated and unskilled, are migrating to far off places in search of job. But migration is always difficult, and therefore lack of scope is turned out to be the most important constraints now.

Lack of infrastructure - Infrastructure has an influential role for the development of rural livelihoods. Improved communications help easy access to market which is important both for buying and selling of goods and services and for getting non-farm jobs.

Lack of credit facilities - Non-availability of institutional credit is a deterrent factor in livelihood diversification of the study area. In the absence of credit support from the institutional agencies, the resource poor households are unable to start their own non-farm business or enterprises. Many households in the sample area reported that after completion of training, provided by private or government agencies on some self-employment activities, they could not start their own business due to lack of finance.

Poor asset base - Poor asset base is the most important constraint to livelihood diversification in this district. Possession of some asset enables the households to take the opportunities in the non-farm sector, particularly in the self-employment sector. For example,

ownership of a sewing machine can make a person to start his own tailoring business. Similarly possession of a bicycle may help the worker to access easily to the nearby town for non-agricultural employment. Most of the landless and small farmers in this area do not have assets which act as a barrier to livelihood diversification.

Lack of awareness and training - Rural households in our study area are unaware about the schemes provided by the government for the development of rural sector. There is no government mechanism, nor any NGO to inform the rural households regarding this.

Fear of taking risk - Because of poor asset base and lack of institutional support, the risk bearing ability of the rural poor are very low. So, the poor households were hesitant to take up new livelihood options earlier.

3.3.4 Constraints to livelihood diversification in Purulia district

A perusal of Table 3.19 shows that the major constraints to livelihood diversification in Purulia district during 2017-18 are lack of opportunities, poor asset base, and inabilities to take up alternative livelihoods, poor access to credit, unfavourable agro-climate, lack of awareness and training, poor road transport facilities, and lack of basic infrastructure. Like Burdwan district, the main constraint to livelihood diversification in Purulia district too is lack of employment opportunity in the study area. But this was ninth most important constraints during 2007-08 (Table 3.20). Top five constraints to livelihood diversification in Purulia during 2007-08 and 2017-18 are given in Table 3.20.

Lack of scope - Opportunities for both farm and non-farm jobs, within or around the sample villages in Purulia, are very low. Therefore, household does not have much scope to diversify their livelihood portfolio.

Poor asset base - Extreme poverty and widespread unemployment are the common feature of Purulia. Per capita income of Purulia district is lowest in the state. Low per capita income results in low level of capital formation. Poor asset base hinders the rural households to take up any self-employment activities.

Lack of skill and poor ability: Higher education is not very common among the sample households in Purulia district. They also do not have much expertise in specialized livelihood options. Therefore, because of poor resource base and limited capacity to take up alternative livelihoods, the rural households in Purulia are afraid of diversifying their livelihood portfolio in new areas.

Table 3.19 Constraints to livelihood diversification in Purulia during 2017-18

Livelihood groups	Climate & Weather	Marketing problems	Credit problems	Asset Base /Capital problems	Road & transport problems	Lack of infrastructures	Lack of scope	Ability/Skill/education	Fear of taking risk	Labour problem	Lack of awareness (Training/Technology)
Agriculture and allied activities	3.33	1.00	3.33	4.33	3.00	2.00	4.00	2.00	3.00	2.00	3.33
Agricultural labourers	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Non-agricultural labourers	3.60	2.00	3.00	4.00	4.33	3.10	4.13	4.33	4.67	3.00	3.33
Salaried group	3.00	4.00	3.56	4.00	2.60	3.00	3.13	3.57	2.71	4.00	3.00
Casual labourers	3.00	2.50	3.50	3.00	3.33	3.50	4.00	3.50	3.33	3.00	3.00
Petty business	3.00	2.40	3.75	4.00	2.83	3.00	3.67	3.00	3.17	3.00	4.00
Others	3.00	3.00	4.00	4.00	3.50	3.00	4.50	3.50	4.00	2.00	2.00
All occupations	***3.35***	***2.56***	***3.53***	***4.00***	***3.13***	***3.00***	***4.03***	***3.64***	***3.29***	***3.00***	***3.33***

Data Source: Primary Survey

Table 3.20 Rank of major constraints to livelihood diversification in Purulia

Constraints	2017-18		2007-08		Most vulnerable groups
	Score	Rank	Score	Rank	
Lack of scope	4.03	I	2.73	IX	Non- agricultural labourers, Others
Poor asset base	4.00	II	3.91	II	Agriculture and allied activities, Petty business
Ability/education/skill	3.64	III	2.33	VIII	Non-agricultural labourers, casual labourers
Poor access to credit	3.53	IV	3.53	III	Agriculture and allied activities, Non-agricultural labourers,
Unfavourable climate	3.35	V	2.56	VI	Non-agricultural labourers, Agriculture and allied activities
Lack of Awareness/training	3.33	VI	3.45	IV	Agriculture and allied activities, Non-agricultural labourers,
Road and transport problem	3.13	VIII	4.10	I	Others, Petty business
Lack of infrastructure	3.00	X	3.37	V	Agriculture and allied activities, Others

Unfavourable agro-climate - Along with poor transport network, the agro-climate of the district is highly unfavourable. Frequent drought, extreme temperatures, erratic rainfall, and water scarcity prevents the rural households to move from one place to another in search of livelihood.

Lack of awareness and training - Most of the villages of Purulia district situated in very interior region and communicating system is also very poor. As a result rural households have no information regarding the modern income generating activities. So they remained with their traditional activities like wage work, rural artisan, caste occupation, etc. They have neither information nor any training about modern activities like typing, machine knitting and hosiery, dyeing and printing, brassier manufacturing, etc. Also they have no access to information facilities from government institutional system.

Lack of road and transport facilities - Purulia is one of the backward districts of West Bengal. The transport network is very poor. Most of the villages are situated at far away from pucca road. The villagers of our study area have to cross a distance of 9-10 kilometers to

reach the main road to avail bus or any public transport. So they cannot travel to the urban centres easily. This poses serious obstacle to improve their livelihood strategy.

Lack of infrastructure - Provision of basic infrastructure like electricity and water supply has an important role in the development of the region. Because of poor infrastructure, Purulia is one of the industrially backward districts of West Bengal. There are only two large industries in this district. As a result rural households have little or no opportunity in non-farm sectors. Though the district is enriched with many natural resources, industries are not developed in this region because of infrastructural bottlenecks. As a results there is virtually no scope exists to the rural households to diversify their livelihood.

To sum up, the principal constraints faced by the rural households in the study area are of various kinds. While most of them are socio-economic in nature, some constraints are of agro-ecological nature. Many of the socio-economic constraints have their origin in policy failure. Lack of scope or opportunities to find out an alternative livelihood is the most important constraints faced by the rural households in West Bengal. With agriculture sector becoming non-remunerative and shrinking manufacturing sector in West Bengal, job creation is now shifted towards casual and marginal works only. As elsewhere in the country, a large number of government assisted livelihood programmes are in vogue in the study area too. But they failed to provide a sustainable livelihood option to the poor households. So far as capacity building programmes are concerned, most skill enhancing training programmes focuses on organized sector, whereas most of the rural households in the study area are engaged in the unorganized sector. Further, the ability of organized sectors in absorbing rural surplus workforce is very limited, less than the population growth rate (Datta, 2015).

Rural households in West Bengal do not face identical constraints across the space and time. It also varies livelihood groups. Spatial variation leads to cross sectional heterogeneity thereby influencing diversification pattern. For example, property rights in productive assets such as land and livestock, labour availability, and access to credit differs across livelihood groups. Therefore, though all the livelihood groups faces these constraints because of poor asset base, the severity of the constraints are more for the landless labourers groups and least for the resource rich salaried class. Such constraints not only impede demand pull diversification into remunerative activities; they also compel diversification into low-return non-farm wage earning activities.

3.4 Contexts in Livelihood Diversification

Livelihood activities and strategies are taken place in a particular or specific context. Without context analysis any livelihood study is incomplete. By context we mean not only the broad political and economic structures but also the immediate local, physical, social and cultural

environments. Livelihoods are essentially contextual and can only be understood with particular context. Context also refers to the external shocks, trends and aspects of seasonality those can create constraints as well as opportunities for people to actively construct a livelihood.

Many factors induce diversification. Sometimes diversification is born of desperation, sometimes it is viewed as an opportunity, or sometimes it is considered as a risk management strategy to cope with livelihood shocks or damages. Multiple motives or pressures prompt households to diversify their livelihood portfolio in terms of assets, incomes and activities. In the literature all such motives are classified into two groups: distress push factors & demand pull factors.

Distress-push factors - Distress-push factors are those for which diversification is taken as an involuntary response to a crisis for survival. These are a response to diminishing factor returns in any given use. Distress push diversification occurs in an environment of risk, market imperfection and agricultural unemployment. Thus when rural population engaged in economic activities that are less productive than agricultural production and are trying to avoid further decrease in income, push factors are at work.

Demand-pull factors - Demand-pull factors are those for which diversification is taken as a deliberate attempt to reap the benefits of diversification. These are a set of factors that appear because of the strategic complementarities between activities, like crop-livestock integration, specialization according to comparative advantages by superior technology or skill. Households are pulled to diversification when they take the advantages of the new opportunities in the non-farm sectors. Reardon et al. (1998) suggests that when relative returns are higher in non-farm sectors than in farming and returns to farming are relatively more risky, pull factors are at work.

The distinction between demand pull and distress push diversification has an important bearing on policy formulation and public interventions. The policy requirements for distress push diversification ought to be different from that for demand pull diversification. So it is very essential to know the context in livelihood diversification in the study area. The key features of distress-push and demand-pull diversification in our study regions, based on the information gathered in FGDs, are outlined in Table 3.21 and 3.22.

A perusal of the Table 3.21 and Table 3.22 shows that different motives work for different regions. Earlier, most of the rural households in Burdwan district (76 per cent) used to diversify their livelihood portfolio due to pull factors i.e., either they tried to exploit the new opportunities generated or it was a deliberate attempt by them to increase household income and employment. Whereas in Purulia, livelihood diversification used to be driven by push

factors i.e., to cope with the challenges/shocks they are facing in their livelihoods or as a measure for spreading the risk involved in their livelihoods. The reason might be the fact that agriculture as well as overall economic development in Burdwan district is better than Purulia district. Purulia district is one of the most backward districts in West Bengal. Dry and rough agro-ecological condition of the district makes the livelihood of the rural household too much challenging.

Table 3.21 Push and Pull factors of livelihood diversification

Pull factor	**Push factors**
• Higher return on labour in non-farm sectors • Higher employment opportunities in non-farm sectors • Lower risk of non-farm activities • Generation of cash in order to meet household expenditure • Development of rural infrastructure	• Increase in cost of living • Non-remunerative agriculture • Very small size of farm/business • Seasonality in agricultural production • Risky/rainfed nature of farming • Limited employment opportunity in organised sector • Poor asset base and skills

Table 3.22 Principal motives behind livelihood diversification in West Bengal

(percent of households)

Reasons/Motives	**Burdwan**		**Purulia**	
	2007-08	**2017-18**	**2007-08**	**2017-18**
Pull Factors	76	40	20	35
Deliberate attempt to enhance income/ employment	28	21	8	23
Exploiting new opportunities/scope	48	19	12	12
Push Factors	24	60	80	65
To cope with the challenges/shocks	14	32	52	36
For spreading risk	10	28	28	29

Another disturbing feature is that, over the years the contexts of livelihood diversification have changed considerably, particularly in Burdwan district where, the pull factors have gradually been replaced by the push factors during last 10 years due to limited expansion of job opportunities in organized non-farm sector and falling profitability of agricultural enterprises. Since long, Burdwan district was known for both a highly developed agriculture in eastern part (Purba Barddhaman) and a well-developed manufacturing hub in western part (Paschim Barddhaman). But both the sectors are at stake during last two decades.

In Purulia, the situation was already bad due to its agro-climatic limitations and socio-economic backwardness. The distress push factors like poverty, unemployment and adverse agro-climate dominated the livelihood pattern in Purulia which also forced the rural households to migrate in search of non-farm wage earning as to supplement their farm income. Though there has not been much improvement in job opportunities during last 10 years, but improvement in transport facilities and telecommunication has helped migration, whereas expansion of construction activities increased the scope for wage earning within the locality.

Table 3.23 Principal motives behind livelihood diversification in Burdwan

(in percent household)

Livelihood groups	**During 2007-08**		**During 2017-18**	
	Pull	**Push**	**Pull**	**Push**
Agriculture and allied activities	85	15	31	69
Agricultural labour	87	13	25	75
Non-agricultural labour	75	25	22	78
Salaried class	85	15	73	27
Casual labour	80	20	33	67
Petty business	50	50	78	22
Others	75	25	33	67
All occupations	***76***	***24***	**40**	**60**

Data Source: Primary Survey

The motives towards livelihood diversification in the study area, across the livelihood group, during 2007-08 and 2017-18 are presented in Table 3.23 and Table 3.24. A perusal of the table indicates that for most the livelihood groups, sans salaried class or petty business, livelihood diversification became a strategy to survive against the emerging livelihood crisis now. Rural households are not diversifying their livelihood portfolio to enhance their income rather forced to diversify their livelihoods towards wage earning in the absence of a viable or sustainable livelihood opportunities in organised sectors.

Table 3.24 Principal motives behind livelihood diversification in Purulia

(in percent household)

Livelihood groups	During 2007-08		During 2017-18	
	Pull	**Push**	**Pull**	**Push**
Agriculture and allied activities	15	85	50	50
Agricultural labour	NA	NA	NA	NA
Non-agricultural labour	20	80	11	89
Salaried class	45	55	79	21
Casual labour	10	90	13	88
Petty business	NA	NA	71	29
Others	20	80	67	33
All occupations	***20***	***80***	***35***	***65***

Data Source: Primary Survey

As a whole the households of the study region perceives that cultivation is a non-profitable business. In one hand too many people are engaged in small pieces of land, on the other hand the cost of living is increasing in rural areas too. Therefore for survival, they have to diversify their livelihood through petty business, off-farm activities, and non-farm works. But the growth in non-farm employment in the organised sector is either negative (manufacturing) or remained inadequate to absorb the growing labour force. The job creation has now been shifted towards casual and marginal works where the educated rural youths are the worst sufferers. Scope for job opportunities are mainly restricted with MGNAREGA, construction works, e-rickshaw pulling, petty business, and in contractual manual works in unorganised sectors.

3.5 Impacts of Livelihood Diversification

This section discusses the impact of livelihood diversification on household livelihood security in the study area. Not all the households have a diversified livelihood. During 2007-08 only 21 per cent sample households in Purulia and 61 percent sample households in Burdwan had diversified livelihood. The corresponding figure increased to as high as 69 per cent in Purulia and 72 percent in Burdwan during 2017-18. The study tries to examine the average impact during last 10 years (i.e., during 2017-18 as compared to the base year 2007-

08) only for those households who relies on a diversified portfolio of activities for their livelihood. Impacts are measured through changes in economic status, changes in household employment, and changes in household consumption pattern.

3.5.1 Impact on socio-economic status

The impact of livelihood diversification on household's socio-economic status is based on the perceptions of the concerned household. The impact is positive if the concerned household thinks that his/her socio-economic status has improved after diversifying livelihoods. The results are presented in Table 3.25.

Table 3.25 Change in socio-economic status during post livelihood diversification period

(in per cent households)

Livelihood groups	Burdwan district			Purulia district		
	Improved	Deteriorated	No Change	Improved	Deteriorated	No Change
Agriculture and allied activities	19	13	69	50	0	50
Agricultural labourers	17	17	67	NA	NA	NA
Non-agricultural labourers	22	17	61	23	9	69
Salaried group	73	9	18	71	0	29
Casual labourers	33	33	33	25	25	50
Petty business	56	0	44	86	0	14
Others	0	33	67	67	0	33
All occupations	***32***	***14***	***54***	***42***	***7***	***51***

Data Source: Primary Survey

A perusal of the Table 3.25 shows that in both the districts, diversification of livelihood has moderate impact on economic status of the rural households as for nearly half of the sample households' economic condition remained unaltered even after diversifying livelihoods. This is because of the fact that the diversification in recent years is mainly due to push factors i.e., rural households in both the region are forced to diversify their livelihoods as a coping measure in order to avoid further deterioration in their socio-economic status. In case of Purulia, a better picture is emerging. The impact of livelihood diversification for 42 per cent households is positive, and it is negative only for 7 per cent of households. This may be due to the fact that most of the rural households in Purulia are dependent on non-farm activities and already had a very low level of income. So far as various livelihood groups are

concerned, improvement in economic status is most significant among the salaried class and households relying on petty business. This is perhaps because the salaried and petty business classes have higher endowments to physical, financial and human assets as compared to others, which helped them to diversify in remunerative enterprises. The worst sufferers again are the landless labourers and the cultivators.

3.5.2 Impact on household employment

The impact of livelihood diversification on household employment is judged through both `with and without' and `pre and post perspective'. The pattern of employment of the rural households, both who have diversified their livelihood and those who have not, are analysed for each livelihood groups and presented in Table 3.26 and 3.27. It is to be noted here that the employment figures includes on-farm, off-farm and non-farm employments for the entire households. Perusals of these two tables indicate that those households who have diversified their livelihood are getting more employment per annum than their counterparts in both the districts and during both the period. On an average diversified household have 18 to 23 percent higher employment than non-diversified households during 2017-18. The corresponding figures during 2007-08 were 8 to 13 percent.

Table 3.26 Differences in employment level during 2017-18

(Mandays/household/year)

Livelihood groups	**Burdwan**			**Purulia**		
	Diversified	**Non-diversified**	**Difference (%)**	**Diversified**	**Non-diversified**	**Difference (%)**
Agriculture and allied activities	285	254	12.20	189	165	14.55
Agricultural labour	192	175	9.71	NA	NA	NA
Non-agricultural labour	221	188	17.55	192	171	12.28
Salaried class	397	288	37.85	392	298	31.54
Casual labour	256	234	9.40	188	161	16.77
Petty business	377	266	41.73	320	240	33.33
Others	203	187	8.56	292	211	38.39
All occupations	***271***	***229***	***18.34***	***232***	***188***	***23.40***

Data Source: Primary Survey

Table 3.27 Differences in employment level during 2007-08

(Mandays/household/year)

Livelihood groups	Burdwan			Purulia		
	Diversified	Non-diversified	Difference (%)	Diversified	Non-diversified	Difference (%)
Agriculture and allied activities	282	264	6.82	184	174	5.75
Agricultural labour	190	183	3.83	NA	NA	NA
Non-agricultural labour	231	214	7.94	180	172	4.65
Salaried class	321	273	17.58	297	272	9.19
Casual labour	240	224	7.14	177	160	10.63
Petty business	258	211	22.27	198	170	16.47
Others	257	228	12.72	193	186	3.76
All occupations	***262***	***231***	***13.42***	***191***	***177***	***7.91***

Data Source: Primary Survey

Table 3.28 Change in employment level between 2007-08 and 2017-18

(% change over 2007-08)

Livelihood groups	Burdwan		Purulia	
	Diversified	Non-diversified	Diversified	Non-diversified
Agriculture and allied activities	1.06	-3.79	2.72	-5.17
Agricultural labour	1.05	-4.37	NA	NA
Non-agricultural labour	-4.33	-12.15	6.67	-0.58
Salaried class	23.68	5.49	31.99	9.56
Casual labour	6.67	4.46	6.21	0.63
Petty business	46.12	26.07	61.62	41.18
Others	-21.01	-17.98	51.30	13.44
All occupations	***3.44***	***-0.87***	***21.47***	***6.21***

Data Source: Primary Survey

The change in employment level during last 10 years across different categories of households in both the district is given in Table 3.28. It is evident from the table that the

overall employment growth remained more or less stagnant in Burdwan district, while in Purulia the growth in employment is moderate to high. One reason for this is because of a lower base during 2007-08 but another reason is that the share of diversified livelihoods in Purulia has increased from a mere 21 percent in 2007-08 to as high as 69 percent during 2017-18. But in both the district, the relative gain is more for those households with diversified livelihoods. In fact the growth in employment is negative for wage earners and cultivators who failed to diversify their livelihood. This is a worrisome affair and a matter of serious concern.

Among different livelihood groups, the impact of livelihood diversification on household employment is more prominent (higher) for salaried class and petty business group and least for cultivators and wage earners. For those cultivators and wage earners, who failed to diversify their livelihood, the average level of employment has reduced by 4 to 12 per cent during last 10 years. This shows that farming sector is already over-populated and farming alone is unable to provide additional employment to the growing rural population. Creation of off-farm and non-farm job opportunities is therefore essential for a sustainable rural livelihood.

From the above discussion, it is clear that household with diversified portfolio of livelihoods have higher level of employments than their counterparts across all the livelihood groups, in both the study regions and during both the period. Further, the growth in employment during last 10 years is positive (and higher) among the diversified group than non-diversifiers. This clearly demonstrates the positive impact of livelihood diversification on household employment.

3.5.3 Impact on household consumption pattern

Income, or even employment, alone is not a good indicator for household well-being. Income may be a flawed measure of well-being for a number of reasons. First, households particularly rural households tend to under report it for strategic reasons. Second, income particularly in rural areas is irregular and subject to various shocks. Both income and employment can be a misleading indicator of economic status as they are susceptible to temporary fluctuations due to transitory events. Finally, income and employment may fail to capture disparities in consumption that result from differences across families in the accumulation of assets or savings. Therefore, for households that face poverty and high extent of material deprivation, income and employment are poor measure and is not reliable (Meyer and Sullivan, 2003). Most researchers suggest the use of expenditures as a measure of well-being. According to the World Bank (2001), consumption is conventionally viewed as the preferred well-being indicator for practical reasons of reliability, because consumption is thought to capture long-run well-being levels. Consumption is less vulnerable to under

reporting bias and ethnographic effects for poor households with low resources (Meyer and Sullivan, 2003; Ravallion, 2003).

However, like income, data on consumption expenditures too has some special limitations because rural household does not record carefully all the goods consumed by the family. For instance, it does not measure the home consumption of livestock products like milk, eggs, cheese, or chickens, which in many cases represent an important source of food. Also the prices of various items of consumptions changes at different pace, along with changes in the consumption basket which varies significantly across the regions and groups of households. To overcome these problems, we have recorded the present consumption of different food items in physical quantities and converted the same in value terms using current market price for different food items. The past values of consumption were derived using current price.

As done in case of employment, the impact of livelihood diversification on household consumption behaviour is also assessed through both `with and without' and `pre and post perspective'. The pattern of monthly per capita consumption expenditure (MPCE) on food by the rural households, both who have diversified their livelihood and those who have not, are analysed for each livelihood groups for cereals (staple foods), pulses and oilseeds, and all other food items like fruits, vegetables, milk, egg, chicken, muttons, spices, sugar, etc. and presented in Table 3.29 to 3.32.

The perusal of above tables shows wide variation in per capita monthly expenditure towards food items across different types of livelihood groups, regions as well as over time. Among different livelihood groups, the consumption spending is highest for salaried class and lowest for the non-agricultural labourers in both the region and during both the period. In general, per capita consumption expenditure is low in backward regions (Purulia) as compared to the developed region (Burdwan). But one positive change is that not only there has been improvement in consumption expenditure in both the regions during last 10 years but also the gap between the two districts has reduced substantially during the same period. However, irrespective of district, time period and livelihood groups, average consumption expenditure is higher for those households having diversified source of livelihoods than their counterparts with single source of livelihood. Further, not only the consumption expenditure is higher for diversified households but also their consumption basket is more is in favour of high value foods rather staple foods (Fig. 3.1 and Fig. 3.2).

Table 3.29 Consumption pattern among different categories of households in Burdwan during 2007-08

(MPCE on food in Rs.)

Livelihood groups	Diversified				Non-Diversified				Difference (%)
	Cereals	Pulses and oil seeds	Other food item	Total	Cereals	Pulses and oil seeds	Other food item	Total	
Agriculture and allied activities	245	122	233	600	247	87	201	535	***12.15***
Agricultural labour	252	55	137	444	265	54	108	427	***3.98***
Non-agricultural labour	259	95	163	517	257	88	132	477	***8.39***
Salaried class	258	197	325	780	250	183	221	654	***19.27***
Casual labour	262	115	159	536	255	96	151	502	***6.77***
Petty business	247	113	147	507	250	86	117	453	***11.92***
Others	265	146	163	574	254	99	155	508	***12.99***
All occupations	***252***	***119***	***209***	***580***	***256***	***96***	***150***	***503***	***15.39***

Data Source: Primary Survey

Table 3.30 Consumption pattern among different categories of households in Burdwan during 2017-18

(MPCE on food in Rs.)

Livelihood groups	Diversified				Non-Diversified				Difference (%)
	Cereals	Pulses and oil seeds	Other food item	Total	Cereals	Pulses and oil seeds	Other food item	Total	
Agriculture and allied activities	313	141	273	727	309	106	221	636	***14.31***
Agricultural labour	333	109	189	631	339	83	166	588	***7.31***
Non-agricultural labour	311	129	194	634	322	105	179	606	***4.62***
Salaried class	309	211	355	875	425	108	232	765	***14.38***
Casual labour	322	147	234	703	389	121	191	701	***0.29***
Petty business	343	149	201	693	365	137	188	690	***0.43***
Others	320	163	213	696	297	125	181	603	***15.42***
All occupations	***318***	***155***	***248***	***721***	***323***	***110***	***190***	***623***	***15.73***

Data Source: Primary Survey

Table 3.31 Consumption pattern among different categories of households in Purulia during 2007-08

(MPCE on food in Rs.)

Livelihood groups	Diversified				Non-Diversified				Difference
	Cereals	Pulses and oil seeds	Other food item	Total	Cereals	Pulses and oil seeds	Other food item	Total	
Agriculture and allied activities	252	56	91	399	236	50	76	362	10.22%
Agricultural labour	NA	NA	NA	NA	NA	NA	NA	NA	NA
Non-agricultural labour	235	22	75	332	282	11	53	292	13.70
Salaried class	247	139	166	552	242	131	127	500	10.40%
Casual labour	228	38	61	327	227	24	40	291	12.37%
Petty business	237	68	125	430	230	75	88	393	9.41%
Others	245	73	122	440	239	80	102	421	4.51%
All occupations	***243***	***56***	***100***	***399***	***232***	***41***	***81***	***353***	***13.24%***

Table 3.32 Consumption pattern among different categories of households in Purulia during 2017-18

(MPCE on food in Rs.)

Livelihood groups	Diversified				Non-Diversified				Difference
	Cereals	Pulses and oil seeds	Other food item	Total	Cereals	Pulses and oil seeds	Other food item	Total	
Agriculture and allied activities	331	110	134	575	317	69	98	484	***18.80***
Agricultural labour	NA	NA	NA	NA	NA	NA	NA	NA	***NA***
Non-agricultural labour	351	48	127	526	339	21	80	440	***19.55***
Salaried class	387	181	271	839	358	138	181	677	***23.93***
Casual labour	301	106	128	535	306	45	79	430	***24.42***
Petty business	346	105	177	628	324	106	89	519	***21.00***
Others	338	118	174	630	335	84	108	527	***19.54***
All occupations	***337***	***121***	***175***	***633***	***319***	***73***	***124***	***516***	***22.67***

Data Source: Primary Survey

Figure 3.1 Monthly per capita consumption expenditure on food items by different categories of household

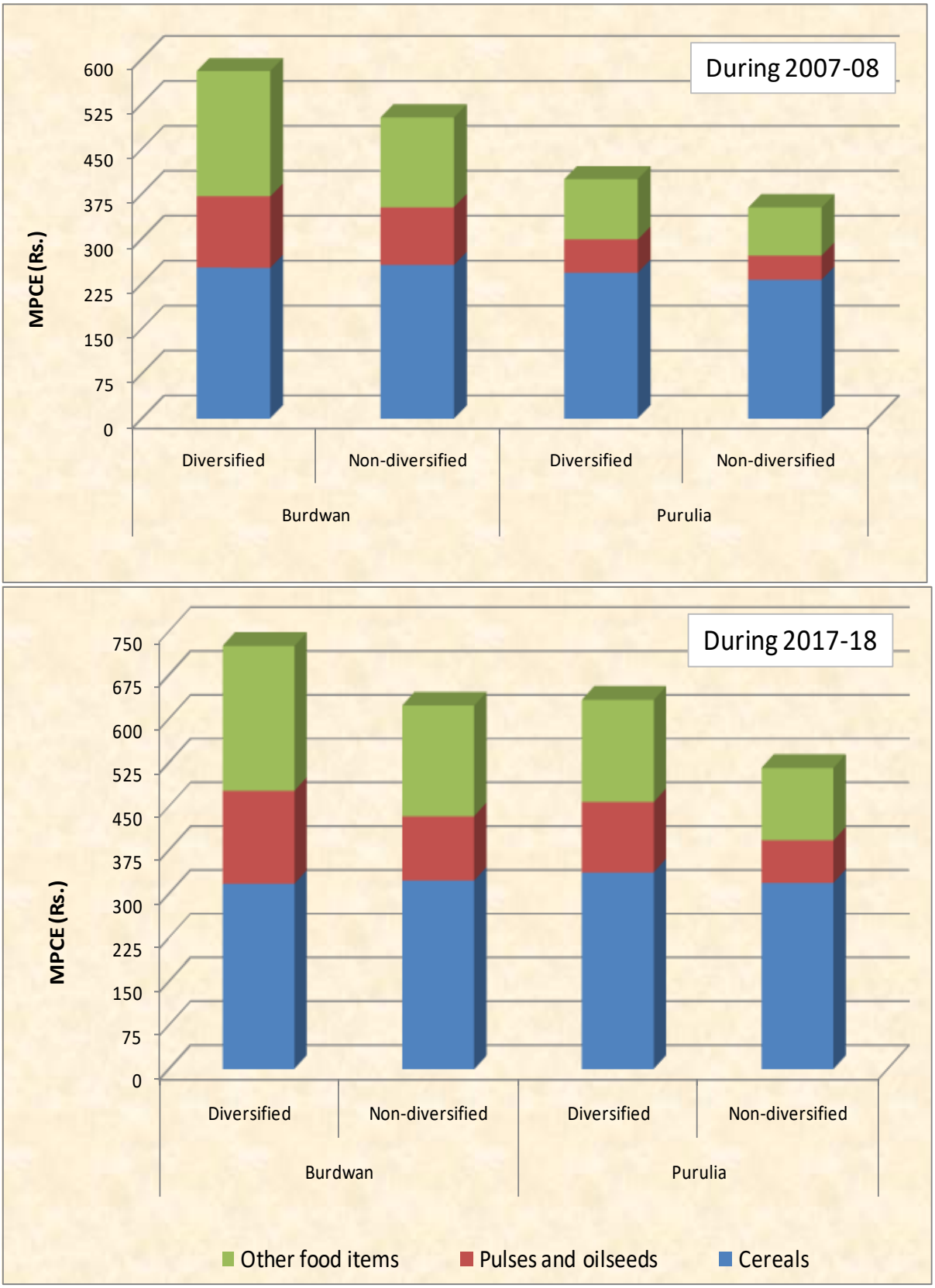

Figure 3.2 Changing pattern of food consumption among different categories of households

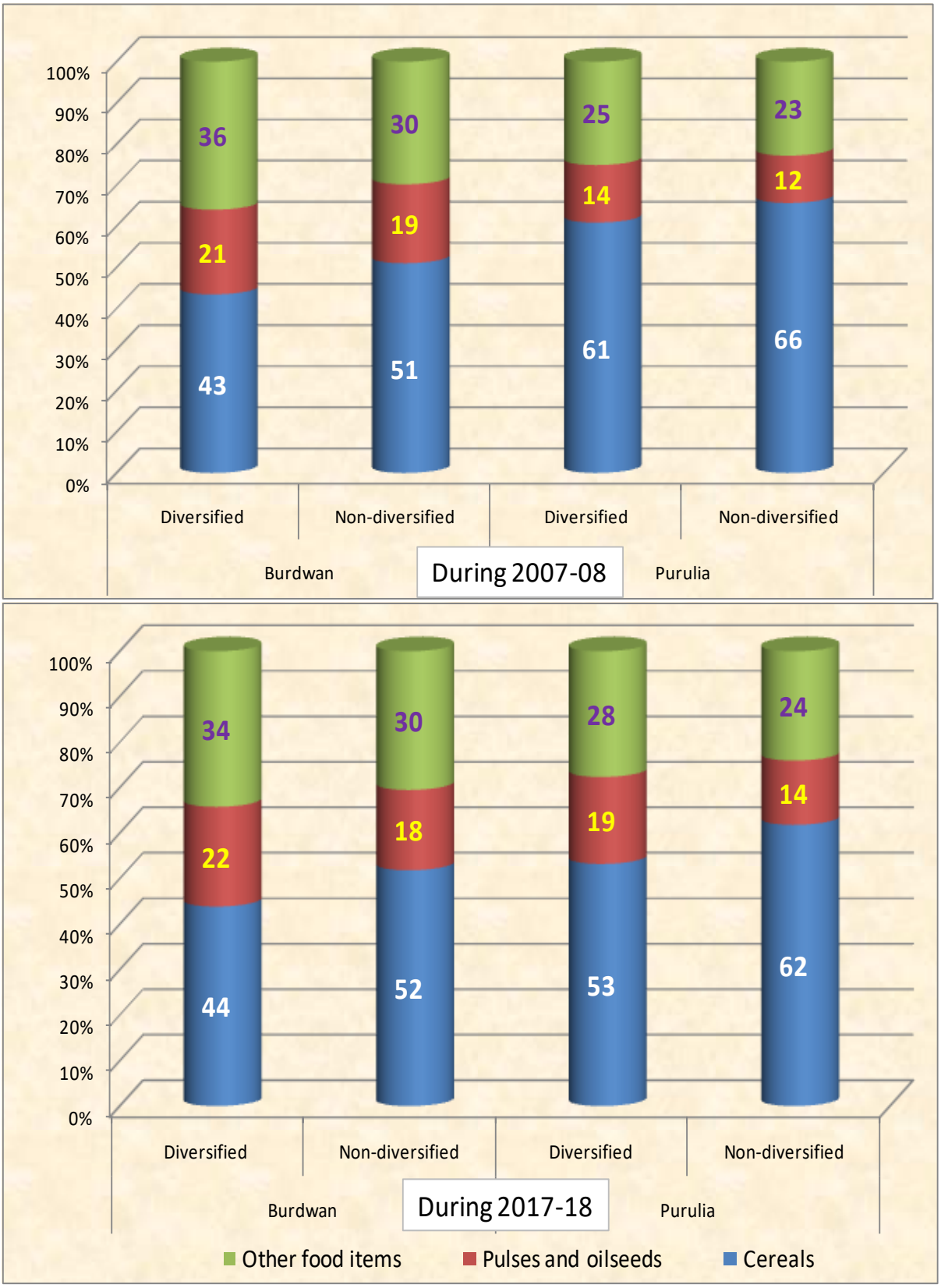

Fig. 3.1 and Fig. 3.2 show the per capita consumption expenditures on different food items and its changing pattern across the household categories in both the region during 2007-08 and 2017-18. The composition of different food items in the consumption basket varies considerably across regions and categories of households. From Fig. 3.1 it is clear that the variation in consumption expenditure, across the districts as well as over time, is mainly due to variation in consumption expenditure towards non-cereal food items. Monthly per capita consumption expenditure towards cereals is more or less same in both the regions and among both categories of households. Fig. 3.2 shows the qualitative changes in the consumption basket. In Purulia, not only the average level of consumption is low but also the share of non-cereal items in the total expenditure on food is lower than their counterparts in Burdwan districts. However, during last 10 years both the average consumption level as well as consumption expenditure towards high value foods increased substantially in Purulia particularly for those households engaged in diversified sources of livelihood. The results are in the tune of Engel Law of consumption (increase in level of income more will be the expenditure on superior foods and vice-versa).

The results support the hypotheses that livelihood diversification has a clear and positive impact on household income, employment, consumption, and overall well-being of the rural households. While there are a number of cases where livelihood diversification led to more consumption, more employment, better asset position and overall improvement in the standard of living, there are cases where there is no or very little improvement. In some cases, there are deteriorations in terms of income, employment and overall well-being. Therefore, it can be firmly established that diversification is good but it alone does not guarantee sustainable livelihood rather the context is very important which is determined by a set of agro-ecological and socio-economic variables which Chambers and Conway (1992) termed as five capitals. Therefore, in the next section we tried to explore the scope for augmenting rural household income in the study area.

3.6 Scope for Augmenting Rural Household Income

From the above discussions it is clear that rural households in West Bengal viewed livelihood diversification as a strategy to enhance household income as well as to mitigate livelihood risks. Therefore, it is very important to examine the scope for enhancing household income through livelihood diversification and other interventions. This has been explored through a linear multiple linear regression model discussed in methodology section. The result of the model is presented in Table 3.33. After trying various sets of explanatory variables, only the results of best fit are presented here. The model produced a reasonably good fit as indicated by a reasonably good adjusted R^2 value and highly significant F-value coupled with expected signs of the co-efficient.

Table 3.33 Determinants of rural household income in West Bengal

Explanatory Variables/ Particulars	Dependent Variable: *(Annual household income in thousand rupee)*	
	Estimated Co-efficient Value	**Standard Error**
LDI	17.2317*	2.4283
Land holding	7.6623*	3.3268
Family Size	1.0436	1.2651
Education	2.0547**	1.0022
MGNAREGA	3.6574**	1.8321
Non-farm income	0.4562*	0.2294
Asset Value	7.6589	6.7215
Irrigation	0.3458*	0.1596
Distance	-2.0534*	0.9143
Access to institutional credit	3.5476**	1.8064
Training/Skill Development	3.3652	2.6583
Regional Dummy (Purulia=0, Burdwan=1)	8.5673*	3.5412
Temporal Dummy (Year 2007-08=0, 2017-18=1)	-1.5614	0.9435
Constant	18.4519**	9.2789
Number of observations	400	
Adjusted R^2	0.63	
F-Value (11, 400)	30.15*	

**** 1% level of significance, ** 5% level of significance***

The positive and statistically significant co-efficient for livelihood diversification (LDI) suggesting the importance of livelihood diversification in increasing household income in West Bengal. The coefficient is significant at 1 per cent level and it implies that, households with diverse income sources will have a much better livelihood outcome (income wise) compared to those who have less. The results of the regression analysis, as evident from Table 3.35, also points to the fact that livelihood diversification into non-farm activities can

further help in augmenting household income as the co-efficient for the share of non-farm income is positive and statistically significant. This is particularly because, average remuneration or income from non-farm activities are higher than in farming activities.

Positive and statistically significant co-efficient for the variable 'land holding' suggests that if land holdings can be increased, there will be an increase in household income. Land holding not only raises farm incomes but also provides an opportunity for off-farm and non-farm employment through self-employment and petty business. One of the main problems in rural West Bengal is over dependence on land based agricultural activities with very small size of operational holding. Due to population growth sub-division and fragmentation of land holding is on the rise and average land holding is continuously declining. Therefore, consolidation of holding may be an important intervention to make farm units economically viable.

It is not surprising to see that education has a strong effect on household income. The co-efficient for education is positive and statistically significant at 5 per cent level of significance. This suggests that, acquiring higher levels of formal education increases the prospect of having a higher income in the area and those with a lower level of education, have a lower income. This may be due to the facts that more educated individuals often seek opportunities in salaried activities rather than getting engaged in low-paid wage activities.

Rural infrastructure, particularly irrigation infrastructure and marketing infrastructure (proximity to town), are found to be significant determinant for enhancing household income in the study area. The co-efficient of irrigated area is found positive and statistically significant at 1 per cent level of significance. This shows that there is a strong positive relationship between development of irrigation facilities and income generation for rural households. When there is an increase in irrigation coverage, crop diversification towards high value crops increases which in turns results into higher income. The co-efficient for distance from the town is also found to be negative and statistically significant at 5% level of significance. Proximity (reverse of distance) to town gives opportunity for better livelihood outcomes in terms of earning higher income from the nearby cities or towns.

There is a positive relationship between household income and MGNREGA card holders. This implies that, *ceteris paribus*, MGNREGA provides an extra income to the rural peoples in West Bengal particularly to the large numbers of landless labourers unable to get employment during lean periods. The access to institutional credit had a positive impact in augmenting household income in the study area. The availability of credit at low rate of interest (institutional credit) led to investment in income generating sources such as petty business, poultry keeping, purchase of e-rickshaw, cultivation of high value crops, etc.

The family size and skill enhancing trainings had no significant impact on raising household income. The co-efficient for both the variable are positive, but statistically non-significant at 5 per cent level. When compared with the results from the Tobit model, these two variables were found to influence livelihood diversification. But their impact on raising household income is not significant. This implies that extra member in the rural families and getting skill development trainings may leads to livelihood diversification but possibly towards wage earning.

The positive and statistically significant co-efficients for regional dummy suggests that average household income is more in advanced regions like Burdwan than in backward regions like Purulia. But the same is not true with time dummy. The co-efficient for time dummy is negative but statistically non-significant.

To sum up, the rural livelihood in West Bengal is fast diversifying though job creation has mainly been shifted towards casual and marginal works. But the silver lining is that livelihood diversification represents a promising opportunity to enhance household income in rural areas. There has been a debate whether rural livelihood diversification has been due to "pull factors" or "push factors" and our study shows that, both the factors are operating but with different magnitude across the space and over time. In general, the capacity of agriculture sector in providing employment to the rural masses reached saturation, but there are still scope within agriculture to increase the farm income through development of irrigation facilities and promoting diversification towards high value crops and agri-business activities. So far, the growth in non-farm employment opportunities remained inadequate to absorb the surplus labour left agriculture sector due to push factors. Therefore, creation of off-farm and non-farm employment opportunities for rural households holds the key for a sustainable livelihood. It is a challenging task but employment opportunities need to be created, otherwise the goal of doubling farmers' income will remain as a slogan only.

Chapter – IV

Summary and Policy Implication

Livelihood diversification is an important strategy by which rural people may work to exit from poverty. It is a process by which rural families construct a diverse portfolio of activities and social support capabilities in their struggle for survival and in order to improve their standards of living. Rural livelihoods can be derived from a range of farm, off-farm and non-farm activities, which together provides a variety of means and strategies for living. In West Bengal context, where average farm size is too small and unemployment continue to be preponderant among rural households, the notion of sustainable rural development ought to be viewed in the context of need for enhancement of employment generation, productivity, and profitability of rural enterprises and above all, for improvement in the economic conditions of the rural households. The present study is a longitudinal study and is an attempt to explore the changes in livelihood sources, its determinants and impact on sustainable rural livelihood in West Bengal.

4.1 Objectives of the study

The specific objectives of the study are:

1. To study the nature and extent of livelihood diversification among rural households in the study area;

2. To identify the contexts and determinants of livelihood diversification in the study area;

3. To identify the constraints in sustainable livelihood diversification in the study area;

4. To examine the impact of livelihood diversification on household livelihood security in the study area; and

5. To suggest strategies for sustainable livelihood diversification in the study area.

4.2 Study design

The study is a longitudinal study and was conducted in the state of West Bengal during the period 2007-18. In order to examine the changing dimensions of rural livelihood, a repeated field survey was undertaken in an interval of 10 years. The first survey was conducted for the agricultural year 2007-08, and the second survey was undertaken with the same households for the agricultural year 2017-18. A multistage sampling technique was used to select the sample households from the study area. Two districts were selected purposively, one representing a more diversified (Burdwan) and the other less diversified agriculture (Purulia)

based on diversification indices. Then, one sub-division from each district, one block from each sub-division, and two villages from each block were selected randomly. The selected villages were Barampur and Debogram in the Burdwan district and Narayanpur and Goaladi in the Purulia district. Finally, 50 households from each village were selected randomly in probability proportionate to major livelihood groups in the study villages. These households were then categorized into seven different livelihood groups, viz. Agricultural and allied activities, Agricultural labourer, Non-agricultural labourer, Salaried group, Casual labourer, Petty business, and Others, based on their primary source of income. Diversity in livelihood was measured using Simpson Index of diversification. While a censored Tobit model is used to identify the drivers of rural livelihood diversification, the scope for enhancing rural household income has been explored through a multiple linear regression model.

4.3 Major Findings

For better understanding and clarity, findings of the study are summarized under major themes of the scheme as given below.

4.3.1. Nature and extent of livelihood diversification

- The major livelihood groups identified in the study area are: crop cultivators, livestock farmers, fishermen, agricultural labourers, non-agricultural labourers, casual labourers, government salaried class, private and semi-private salaried class, self-employment through petty business, caste occupation, and others.

- The level of livelihood diversification highly varies across the regions and also across different livelihood groups. Rural households in West Bengal do indeed engage in multiple activities and rely on diversified income portfolio. Livelihood diversification is greater in Burdwan district than in Purulia; but during last 10 years, the gap has been narrowed down.

- Agriculture and allied activities are the main livelihood option for rural households in West Bengal. However, during last 10 years, substantial changes occurred in the pattern of livelihood. Dependence on agriculture as a primary source of income has reduced substantially and job creation has now been shifted towards wage earning and self-employment with pretty business.

- Agriculture, failed to provide a sustainable livelihood to majority of the rural households and dependence on agriculture as a primary source of livelihood declined from 42 percent in 2007-08 to 25 percent in 2017-18 in Burdwan district and from 6 percent to just 3 percent in Purulia during the same period.

- There has been an increase in the number of salaried persons in the study area during last 10 years but almost entirely under temporary or contractual jobs in private or semi-private firms like security agencies, private schools, private health firms, insurance agencies, civic volunteers, etc. with very small salaries.

- A large number of households left agriculture, even in more diversified regions of Burdwan, since it failed to provide a means of living to them. The problem of finding a secured livelihood is most with the educated youths and there has been very little job opportunities for them in the organized sectors.

4.3.2 Determinants of Livelihood Diversification

- Households with higher endowments of natural and physical assets are more likely to engage in multiple activities.

- Rural households, in our study regions, are most likely to have a diversified livelihood when they have experience (age) and skill (training), have more working hands in their families, the workers are educated, possess some physical assets, and have access to institutional credit.

- The scope for livelihood diversification also gets boosted when there are better infrastructure and urban market in the proximity.

- Agro-climatic condition and overall socio-economic development of an area also have a strong influence on rural livelihood diversification.

4.3.3 Constraints to Livelihood Diversification

- The principal constraints faced by the rural households in the study area are of various kinds and it varies across the space, time, and livelihood groups. The severity of the constraints is more for the resource poor labourers groups and least for the resource rich salaried class.

- Lack of opportunities to find out an alternative livelihood in non-farm sector is the most important constraints faced by the rural households in West Bengal. With agriculture sector becoming non-remunerative and shrinking manufacturing sector in West Bengal, job creation is now shifted towards casual and marginal works only.

- The other major constraints faced by the sample households are landlessness or weak asset base; limited access to institutional credit; and poor irrigation and marketing infrastructure. Such constraints not only impede demand pull diversification into

remunerative activities; they also compel diversification into low-return non-farm wage earning activities.

- As far as crop diversification is concerned, during last 10 years, there was not much change in the nature or magnitude of constraints faced by the farmers. While agro-climatic factors are the main constraints in Purulia, institutional constraints are the major obstacles to crop diversification in Burdwan.

4.3.4 Contexts in Livelihood Diversification

- Different motives works for different regions and different livelihood groups in the study area. For the poor, livelihood diversification is mainly a survival strategy to cope with the adverse livelihood shocks and to manage risky environments. But for others, it is a deliberate attempt to reap the benefit of diversification.

- Most of the rural households in Burdwan district diversify their livelihoods due to pull factor i.e., to increase income and employment, whereas in Purulia livelihood diversification is driven by push factors like poverty, unemployment and adverse agro-climate.

- Over time, the contexts of livelihood diversification have also changed considerably, particularly in Burdwan district where the pull factors have gradually been replaced by the push factors due to limited expansion of job opportunities in organized non-farm sector and falling profitability of agricultural enterprises.

- Households of the study region perceive that cultivation is a non-profitable business, and therefore for survival, they have to diversify their livelihood through petty business, off-farm activities, and non-farm works.

4.3.5 Impacts of Livelihood Diversification

- Whatever may be the motives, livelihood diversification has a clear and positive impact on household income, employment, consumption, and overall well being of the rural households. It led to more consumption, more employment, better asset position and overall improvement in the standard of living.

- Household with diversified portfolio of livelihoods have higher level of employments than their counterparts across all the livelihood groups, in both the study regions and during both the period. On an average diversified household have 8 to 23 percent higher employment than non-diversified households.

- For those households who failed to diversify their livelihood beyond agriculture sector, the average level of employment has reduced by 4 to 12 per cent during last 10 years. This shows that farming sector is already over-populated and farming alone is unable to provide additional employment to the growing rural population.

- Among different livelihood groups, the consumption spending is highest for salaried class and lowest for the non-agricultural labourers in both the region and during both the period. In general, per capita consumption expenditure is low in backward regions (Purulia) as compared to the developed region (Burdwan).

- The poors, mainly labourer groups, are the most vulnerable section. Not only their ability to diversify is low but also they are the worst victim in any livelihood shocks.

4.4 Policy Recommendations:

Diversification of rural livelihoods is a heterogeneous process. It is differentiated in its causes and effects by location, time, type of livelihood activities, income level, vulnerability and many other factors. Recognition of such diversity in policy formulation is quite important. For sustainable livelihood diversification in West Bengal the following policy interventions are suggested:

- There is clear evidence that rural livelihoods are location specific. The pattern and magnitude of livelihood diversification; the context and constraints to livelihood diversification; the drivers of livelihood diversification; as well as impact of livelihood diversification on their well beings highly varies across locations. Therefore, it is important to devise appropriate livelihood policy as per regional needs.

- Given the evidence that there exists significant barriers to entry in to remunerative non-farm opportunities in rural West Bengal and that such barriers are mostly related to human capital and poor resource base, appropriate policies should vigorously be pursued in providing education and institutional credit facilities to the resource poor rural households particularly to the land less labourers groups. At present financial institutions are reluctant to provide loans to such households.

- Education is an effective means of increasing the livelihood diversification strategies as it relaxes the entry barriers to different remunerative non-farm activities, particularly salaried jobs. There is little doubt that rural education in West Bengal, as elsewhere in India, is under stress and facing a tough challenge from urban education system. Targeting of education and skill training towards poor households in rural

areas is likely to have a relatively large impact on their ability to diversify livelihood options.

- Drought proofing should be accorded high priority over drought relief particularly in drought prone areas like Purulia. Skewed policies have led to the decay of traditional water harvesting structures in the state. The state had a network of more than 25000 ponds that can be used successfully to combat drought. However, poor maintenance and sheer neglect has resulted in many of these ponds being ineffective. Efforts to be taken to dig new ponds and/or renovate the existing ponds under MGNREGS work.

- For those households who are extremely poor, because of their very poor asset base and/or lack of opportunities to sell their labour, relief and provision for work from the government or other organizations of utmost important. The social security and food assistance programmes as well as employment guarantee schemes are very relevant for these livelihood groups in fulfilling their livelihood requirements.

- As non-farm income is the main source of income for majority of the rural households, there is a need for policy strategies to promote this sector including small scale industries in and around rural areas.

- Revival of manufacturing activities is of paramount importance. The manufacturing sector in West Bengal is declining since 2000-01 and therefore majority of the rural people are absorbed in low productive agriculture and wage earning. Job creation has shifted towards marginal and casual works which failed to provide a sustainable livelihood to the rural people. Quality of rural livelihood can only improve if surplus labour force is absorbed in more productive organised sectors like manufacturing or agro-processing.

- The scope of agricultural diversification should expand to the wider dimension of value addition. Agro-processing has a huge potential in enhancing income and employment in rural West Bengal but is severely constrained by poor infrastructure (Roy and Ojha, 2013). Although there is lot of improvement in rural infrastructure during last two decades, particularly in terms of roads and telecommunications, the status of agricultural marketing, storage and processing infrastructure is still very poor in West Bengal. Development of these infrastructures will certainly increase the scope for agri-business in rural areas.

- Efforts should be made to making remunerative non-farm opportunities accessible to the rural households particularly in backward regions. This includes not only the development of rural infrastructure in terms of road, market, irrigation, electrification,

telecommunication, storage facilities, etc but also institutional innovations to reduce entry costs and barriers to poor livelihood groups.

- Finally, the findings of our study shows that sheer capability (education, asset base, etc) to diversify income sources signifies an improvement in the livelihood security in terms of employment, consumption, and overall well-being of the household. Therefore, policies that reduce various constraints to diversification and widen new opportunities like education, market, infrastructure, credit, social safety nets, etc are in general desirable.

Conclusion

To sum up, the rural livelihood in West Bengal is fast diversifying though job creation has mainly been shifted towards casual and marginal works. But the silver lining is that livelihood diversification represents a promising opportunity to enhance household income in rural areas. There has been a debate whether rural livelihood diversification has been due to "pull factors" or "push factors" and our study shows that, both the factors are operating but with different magnitude across the space and over time. In general, the capacity of agriculture sector in providing employment to the rural masses reached saturation, but there are still scope within agriculture to increase the farm income through development of irrigation facilities and promoting diversification towards high value crops and agri-business activities. So far, the growth in non-farm employment opportunities remained inadequate to absorb the surplus labour left agriculture sector due to push factors. Therefore, creation of off-farm and non-farm employment opportunities for rural households holds the key for a sustainable livelihood. It is a challenging task but employment opportunities need to be created, otherwise the goal of doubling farmers' income will remain as a slogan only.

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Appendices

Annexure – I

Reviewer's Comments on the Draft Report and Action Taken

(Reviewer: Prof. Ram Pravesh Singh, Hony. Director, AERC, Bhagalpur, Bihar)

1. **Title of the draft report examined:** Rural Livelihood Diversification in West Bengal

2. **Date of receipt of the draft report:** 03/08/2018

3. **Date of dispatch of the comments:** 10/08/2018

4. **Comments on objectives of the study:** All the objectives of the study have been addressed.

5. **General on methodology:** It is in systematic manner.

6. **Comments on analysis, organization, presentation, etc:**

a. Limitation of the study is lacking, it may be incorporated
[**Action:** As suggested, incorporated a separate section (2.6) on 'Limitations of the Study'.]

b. In 4.4 (Policy Recommendations), the first recommendation is "to devise appropriate livelihood policy as per regional needs." In this context, if a section or Chapter is added on "A Brief Review of Livelihood Policy" then the stakeholders would have background before devising the same. This section will encompass in addition to Review of Literature.
[**Action:** As suggested, incorporated a separate section (2.3) on 'Livelihood Policies and Programmes in the Study Area.']

c. At the beneath of primary tables, sources of data should be indicated as "Primary Survey".
[**Action:** Necessary changes made as suggested]

7. **Overall view on acceptability of report:**

The report is a good piece of work and thus, it may be accepted after incorporating above comments.

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