CESS MONOGRAPH 22
RULNR MONOGRAPH - 9

Study on Identification of Livelihood Opportunities and Challenges of Forest Dwellers in Upland Areas of North Eastern States of India

Insights and Pointers from Field Studies in Three States

Barna Baibhaba Panda
Abhijit Sharma

BASIX
The Livelihood School
In
Collaboration with RULNR - CESS

RULNR
RESEARCH UNIT FOR LIVELIHOODS AND NATURAL RESOURCES
(Supported by Jamsetji Tata Trust)

CENTRE FOR ECONOMIC AND SOCIAL STUDIES
Begumpet, Hyderabad-500016
December, 2011

CENTRE FOR ECONOMIC AND SOCIAL STUDIES MONOGRAPH SERIES

Number - 22 December, 2011
ISBN 978-81-922201-3-0

Series Editor : S. Galab

Note: The views expressed in this document are solely those of the individual author(s).

Rs. 200/-

Published by :
Centre for Economic and Social Studies
Begumpet, Hyderabad-500 016
Ph : 040-23402789, 23416780, Fax : 040-23406808
Email : post@cess.ac.in, www.cess.ac.in

Printed by :
Vidya Graphics
1-8-724/33, Padma Colony,
Nallakunta, Hyderabad - 44

Foreword

The Centre for Economic and Social Studies (CESS) was established in 1980 to undertake research in the field of economic and social development in India. The Centre recognizes that a comprehensive study of economic and social development issues requires an interdisciplinary approach and tries to involve researchers from various disciplines. The Centre's focus has been on policy relevant research through empirical investigation with sound methodology. Being a Hyderabad based think tank, it has focused on, among other things, several distinctive features of the development process of Andhra Pradesh, though its sphere of research activities has expanded beyond the state, covering other states apart from issues at the nation level.

The CESS has established the Research Unit for Livelihoods and Natural Resources (RULNR) in the year 2008 with financial support of Jamsetji Tata Trust. The core objectives of the RULNR are to conduct theoretical and applied research on policy relevant issues on human livelihoods and natural resource management, especially in areas related to river basins, forest and dryland ecosystems and to provide an effective platform for debates on policy relevant aspects for academicians, policy makers, civil society organizations and development practitioners. RULNR intends to adopt a multi-disciplinary approach drawing on various disciplines such as ecology, economics, political science, and social anthropology.

The present monograph titled "Study on Identification of Livelihood Opportunities and Challenges of Forest Dwellers in Upland Areas of North Eastern States of India: Insights and Pointers from Field Studies in Three States" was undertaken as a collaborative endeavour of The Livelihood School, an institution engaged in livelihood education and research and the RULNR. The study used multiple instruments to explore the livelihood opportunities for forest dwellers in the states of Arunachal Pradesh, Meghalaya and Mizoram to understand the current livelihood portfolio of forest dwellers and the bottlenecks in various livelihood activities pursued. Similarly, the local markets were studied to understand the demand patterns of major produces sold in the local market.

The study points out that each of the areas studied is unique in terms of physiographic, social, cultural and economic factors. Given such diversity, the households have evolved unique mechanisms of livelihood mix on the opportunities to manage their risks. This has led them to have several activities but low quantum of output from each of them. One of the major bottlenecks is the lack of water to irrigate the agricultural fields. Given the terrain this would continue to be so, although innovative farming techniques

such as terrace cultivation have the potential to augment production. However, it would also mean reduction of the forests which in all the cases have been the most important source for food, fodder and fuel of the households. The authors observe that reduction in forest cover without a providing alternative sustainable means of livelihoods could be detrimental for these communities particularly the poor and the vulnerable.

The study points out that the appropriate strategy to be adopted for livelihood intervention should naturally follow the development of the "local economy". This strategy would ensure that it reinforces the traditional systems and also builds upon people's initiative. Building up the value chain with people centric approach would be more feasible and community friendly rather than implanting systems and products which are alien to the community.

At the end, I am hopeful that this timely study will be useful to formulate policies based on ground level realities.

Manoj Panda
Director, CESS

CONTENTS

List of Tables

List of Figures

Acknowledgements

The study on "Identifying Livelihood Opportunities for Forest Dwellers in Upland Areas of North East India" is a collaborative effort among RULNR-Centre for Economic and Social Studies (CESS), Hyderabad, The Livelihood School, an academic institution engaged in livelihood education and research and Indian Institute of Bank Management (IIBM), Guwahati. As part of the study, field work was conducted in three states namely Arunachal Pradesh, Meghalaya and Mizoram to understand the household livelihood profile of forest dwellers including their livelihood portfolio, capacities and strategies. Primary data was collected from households and local markets. This monograph providing insights on livelihood portfolios and emerging trends, local economy and poverty scenario in the region is a collective endeavour of a group of faculty members and researchers of the three esteemed institutions mentioned above.

At the outset, we convey our gratitude to Sir Jamsetji Tata Trust for extending financial support for conducting the study. Our sincere thanks go to the three research associates namely Dr Jawan Singh Rawat, Ms Judith Lalhmingliani and Ms Tamsin Sangma who painstakingly collected data from households as well as local markets/bazaars over a period of six months. Study and the choice of sample demanded traveling to distant districts and villages in difficult terrains for collection of data. Without the sincere efforts of the three young researchers, this monograph would not have been possible. We are grateful to the host organizations namely BASIX in Meghalaya and Bethany Social Welfare Society and Ferrando Integrated Women Development Centre in Mizoram. We are extremely thankful to Ms Christina of FXB India Suraksha, Aizawl, Ms Shirley and Mr Pankaj Bezbaruah of BASIX and Prof Susanta Nayak of Rajiv Gandhi University, Itanagar for their support during fieldwork. Mr Anindya Bhattacharya of The Livelihood School who provided critical support during design and development of data collection instruments and thereafter in orienting the research associates deserves our heartfelt thanks. Our thanks also go to the team at Centre for Micro Finance in IIBM Guwahati who did the job of data entry and analysis. We are indebted to Prof Girindra Kumar of Mizoram University and Prof Abhay C Mohapatra of North Eastern Hill University, Shillong who helped us in designing a robust sampling strategy. We are grateful to Prof. M V Nadkarni and Prof Prodyut Bhattacharya, external referees of the monograph for their insightful comments and suggestions for thorough revision. We also thank to Mr. Jogindra Naik and Mr. B. Sreedhar for efficient proof reading of the manuscript.

Our special thanks to IIBM for making its facilities available as and when required.

We record our sincere thanks to villagers especially women, farmers, traders, officials in the study areas who not only shared data but also gave insights that form the backbone of this publication.

M Gopinath Reddy – RULNR-CESS

Barna Baibhaba Panda, The Livelihood School

CHAPTER - I
Introduction

Decades of economic growth and expansion, low or high, and pre or post liberalization, has created wealth and enhanced opportunities for earning livelihoods. However, its distribution amongst both physical and social landscapes has been a matter of debate and concern. Economists, social scientists and policy makers agree that there has been an uneven distribution of incremental benefits and this has societal implications. It is a matter of concern that targeted programmes for specific geographic regions and social groups have not been able to bridge the development deficit, and the net result is a livelihood crisis for the most vulnerable segments of our society.

North East India as a geographical entity, and forest dwellers as a social group, have always been least impacted by the changes in mainstream policies, especially the economic policies. The trickle down effects are minimal in this region and more so for the forest-dependent poor inhabiting this land. Hence, there is increasing realization of the need to probe and understand livelihood challenges faced by the forest dwellers separately and the instruments, economic or otherwise, designed to impact their livelihoods.

The undulating terrains of the North Eastern India, though rich in various natural resources, pose a serious challenge to the livelihoods of the millions of people, especially the poor, living in these areas. These challenges arise from the fragmentation and dispersal of productive units, especially land, caused by the topography. This is further accentuated by the distance from both the input and output markets, while the local markets remain small due to thinly spread economy and fragmented communities. Hence, the North East, being strategically important for the nation, has attracted policy attention for many years. As a result, several attempts have been made in these states to augment the livelihoods of the poor in this area. However, in spite of several such efforts in the past, the poor have continued to face the challenge, in the era of globalizing markets, rapid technological changes, and increasing population pressure.

In this backdrop, The Livelihood School, in collaboration with CESS RULNR, initiated a study on identification of livelihood opportunities and challenges of forest dwellers in upland areas of the North Eastern states. This research attempts to articulate the livelihood

challenges faced by the poor people of this area, especially the forest dwellers in the upland areas, which are mostly covered with forests, and identify livelihood possibilities that can be harnessed by them. It will also attempt to identify policy actions that will be required to transform these possibilities into opportunities, taking a few steps in alleviating poverty faced by forest dwellers in the region.

1.0 Definitions, Objectives and Scope

Two terms namely 'forest dwellers' and 'upland areas' are critical for the study. Hence it was imperative to define these terms at the design stage itself. The study relied on the definition used for 'traditional forest dwellers' in Scheduled Tribes and Other Traditional Forest Dwellers(Recognition of Forest Rights) Act, 2006, which recognises twelve bonafide uses of forest land by a forest dweller. The study mainly focuses on North Eastern rural households that depend on forest lands and resources for cultivation, collection of forest products both for consumption and sale, rearing of livestock, fishing, building and repair of houses, etc. Similarly 'upland areas' in the context of North Eastern states include the hills and the narrow valleys created by the smaller rivers and streams. In effect, it means the entire North Eastern region minus the Brahmaputra and the Barak valleys of Assam.

The livelihoods of forest dwellers residing in upland areas include utilization of some of the forest products besides activities such as livestock rearing, cultivation of crops, sericulture, and wage labour. As each of these activities constitute only a part of the livelihoods of the family, any effort at understanding livelihoods and improving the same must focus on enhancing the gross returns from the bundle of activities, including those arising from the forest produces. Hence, the study is about the 'livelihoods of forest dwellers' and not necessarily 'forest-based livelihoods' as is conventionally understood.

The study had the following objectives.

- To identify livelihood opportunities and device a strategy for the forest dwellers of the upland areas in the North East, while ensuring ecological sustainability of the area
- To identify bottlenecks for promoting or supporting large number of livelihoods on these identified livelihood strategies
- To identify specific interventions by the state and/or other agencies, required to overcome these bottlenecks and strengthen the livelihood strategies in the region

A consultation workshop was held on 13th March 09 in Guwahati to discuss, design and devise methodology for the study. Selected academics and development practitioners of the North Eastern states participated in this workshop. The methodology draws largely from the inputs received from this esteemed group of people. The methodology would involve:

- Review of literature: There have been several studies which have looked into the livelihood patterns in different parts of the North East. These would include, apart from research papers, many project documents and their impact studies. These will be reviewed.

- Structured consultation with key resource persons and institutions: These would include various players engaged in trade and manufacturing activities in the region, various financial institutions, people from government and non-government support institutions, and academic institutions studying the problems of the North East.

- Field investigation looking into livelihood profiles of the people living in the upland forest areas using the methodology indicated in Datta et al. (2004) with special emphasis to identify current livelihood practices in small pockets that may not be captured given the diversity of the region.

- Developing eight case studies of livelihood interventions made by the state, civil society organizations, private sector, and community initiatives.

- Study of various policies including institutional and regulatory frameworks that affect the livelihoods of a large number of people through various government publications and their review documents.

Hence, operationally the study had four major components, namely literature review, policy analysis, case studies and field investigation in sample sites. The information and insights emanating from each of the four components were synthesised in a workshop in March 2010 to suggest opportunities and strategies for forest dwellers, keeping in mind the identified bottlenecks. This monograph focuses on the insights from the field investigation conducted in three states namely Arunachal Pradesh, Meghalaya and Mizoram. The other components of the study are captured in separate documents and are hence outside the ambit of this document. This monograph dwells on the livelihood profiles of people, including major livelihood activities of the local population, bottlenecks in each such activity, engagement with the local market, and the coping strategies in case of stress and risks. The document is divided into nine chapters. Chapter

2 gives a profile of the region including poverty and unemployment status in the region, in addition to the profiles of the three states where the field study has been conducted. Chapter 3 covers the methodology including sampling strategy and data collection methods. Chapter 4 describes the context, covering the physiographic, demographic, economic and social situation in the sample sites. Chapters 5, 6 and 7 present the livelihood profiles of the studied population in Arunachal Pradesh, Mizoram and Meghalaya respectively. Chapter 8 presents the summary of findings, and Chapter 9 presents the conclusions.

CHAPTER - II
North East India: A Brief Profile

The North Eastern Region(NER) in India comprising eight states namely Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura accounts for 7.9 per cent of the total geographical area and 3.75 per cent of the total population of the country. Hills and mountains constitute 70 per cent of the landmass whereas plains are mostly confined to distinct broad valleys namely Brahmaputra and Barak valleys in Assam, Imphal valley in Manipur and south Tripura plains. Out of a population of 39 million, 88 per cent live in rural areas. The population density varies from 13 per sq km in Arunachal Pradesh to 340 per sq km in Assam. The region is rich in natural resources especially land, water and forests. The average size of holding varies from 0.60 ha in Tripura to 4.83 ha in Nagaland. NER as a group accounts for 25 per cent of the forest area in the country. Another critical feature of this region is its diversity. No two states of this region are similar. Each state has its own set of ethnic groups, unique cultural practices, languages and dialects, resource endowments, governance systems, and political history. Geo strategically the region shares international boundaries of India with Bangladesh, Myanmar, Tibet(China), Bhutan and Nepal. In fact, 98 per cent of its border, stretching about 4500 km, is with the neighbouring countries. It is connected to the rest of the country through a tenuous 22km Siliguri corridor. The region is a gateway to the fast growing ASEAN markets through Myanmar and serves as a launch pad for trade with increasingly affluent south China.

Agriculture is the mainstay of the economy, accounting for 40 per cent of income and engaging around 70 per cent of the working population. The region is considered suitable for horticulture, floriculture and plantation crops. Pineapples, oranges and bananas are abundantly grown in the region. The region is also known for the production of areca nut, ginger and large cardamom. A number of exotics like apple, grapes, kiwi, strawberry, rubber and aloe vera have been introduced in various states of the region in the last three decades. The possibilities in production are nullified when it comes to disposing off the produce in the market, as the region lacks quality infrastructure. All the eight states of the region are at the lowest rung of the infrastructure index ladder as per the report of the Twelfth Finance Commission. The government statistics regarding poverty in the region, especially in the hill states, is little misleading. NSSO data for 2004-05 estimates rural poverty in the NER at 22.3 per cent. But this is actually the data for

Assam which is used for the region as a whole. In truth, the typical feature of this region is the working poor. An analysis of the prevailing unemployment and poverty in this region reveals that the number of working poor far outnumbers the unemployed in the region. Nonetheless, NSSO data consistently shows rising youth unemployment rates in the region. According to NSSO 61st rounds of 2004-05, rural unemployment is highest in Tripura and lowest in Mizoram(3). It was found to be eleven(11) in Arunachal Pradesh, and seven(7) in Meghalaya. A look at the macro picture reveals that the growth rate in per capita income during 1991-2002 was below the national average growth rate for all the states except Tripura. Rising rural unemployment, increased number of people in low-end jobs as reflected in the number of working poor, and not so encouraging per capita income growth presents a livelihood scenario that demands attention and systematic analysis.

The State Profiles

Arunachal Pradesh

Arunachal Pradesh, known as North East Frontier Agency(NEFA) under the British rule, is one of the eight states of North East India. Constitutionally NEFA was a part of Assam till 1972 and was directly administered by the President of India through the Governor of Assam as its representative. On 21 January 1972, the North East Frontier Agency became the Union Territory of Arunachal Pradesh and was placed under the charge of a Chief Commissioner. Three years later in 1975, it acquired a legislature and finally on 20 February 1987, statehood was conferred on Arunachal Pradesh and it became the 25thstate of the Union of India.

Arunachal Pradesh, which means "the land of the rising sun" or "land of the dawn lit mountains" (in Sanskrit) is one of the largest states in India, in terms of area with a total area of 83,743 sq km, which is about 2.55 per cent of the country's land area. It is bordered by Bhutan on the west, China (Tibet) on the north and northeast, Myanmar(Burma)on the east and southeast, and the states of Assam and Nagaland to the south. China disputes the border, which is the McMahon Line, agreed upon by Great Britain in a 1914 treaty. Itanagar is the capital of the state, and a part of the famous Ledo Burma Road, also known as the Stilwell Road, which was a lifeline to China during World War II, passes through the eastern part of the state.

Most of the landscape of the state falls in the Himalayan region; however some parts also fall under the Patkai Hills region, i.e., Purvanchal Hills. The physio-climatic condition ranges from sub-tropical plains and valleys along the foothills in the south to temperate and alpine mountains to the north. The altitude varies from 200 m to 7000 m respectively. The average annual rainfall in the state is 350 cm. This wide range of

physio-climatic conditions has not only supported rich endowment of flora and fauna, making Arunachal Pradesh one of the 12 bio-diversity hotspots, but has also enhanced its potentiality in terms crop diversification. The major rivers probing the corridors of movement from south to north are Siang, Subansiri, Dibang, Lohit, Kameng and Tawang, while the Noa-Dihing and Tirap rivers flow from east and south respectively.

As per 2001 census the total population of the state is 1.1 million. The state has the lowest population density 13 persons per sq km amongst all Indian states. There are 26 major tribes and about 110 sub-tribes inhabiting the state. However, only 15 of them have a population of more than 5000 according to Census 2001. Some of the major tribes are Nyisi, Adi, Galo, Tagin, Apatani, Mishmi, Khampti, Tangsa, Singhpho, Nocte, Wangcho, Monpa and Sherdukpen. Most of these communities are ethnically similar, having derived from an original common stock, but their geographical isolation from each other has brought amongst them certain distinctive characteristics in language, dress and customs. Of the total population, 64.22 per cent belong to the Scheduled Tribes.

Management of natural resources like land and forests is still determined by the customs and usages of various tribal communities. No cadastral survey has been conducted in Arunachal Pradesh on agricultural land. Therefore, the property rights regime, especially land ownership, is not well established. However, preparations for cadastral survey are on since the enactment of the Land Settlement and Revenue Bill 2001. Majority of the people are predominantly engaged in slash-and-burn cultivation (commonly known and *as jhum cultivation*)which caters to the subsistence requirements of the households and hence, low marketable surplus. Most of the agricultural land was, until very recently, meant for paddy cultivation and for growing other staple foods. Besides agriculture, the tribal communities of Arunachal Pradesh also depend on hunting, fishing and food gathering from the forests. The market economy is a post-independence development in Arunachal Pradesh and barter is still a mode of exchange in the interior areas of the state. The common livestock in the state include cow, *mithun*, buffalo, yak, pig, goat, sheep, poultry, etc. The production of fruits like apple, kiwi, orange, pineapple, etc., are coming up in recent years, and districts such as Tirap, Changlang, East Siang, and Upper Siang have also started tea cultivation.

Most of the places being hilly do not have good roads. In fact, for moving from one part of the state to another part, one has to travel through Assam. Recently, there has been a move to construct a road which criss-crosses the state from the West to the East. There is no railway line touching the state, and the capital city Itanagar is connected to Guwahati by a Government helicopter service.

Mizoram

Lushai Hills district of the then Assam was carved out as an independent political entity as part of North Eastern Areas(Reorganisation) Act in 1972. Mizoram or the land of the Mizos was conferred with statehood in 1987 after signing the Mizo Accord, ending the decade-long insurgency for a homeland for the Mizos. The state has a geographical area of 21,087 sq km with a population of 888,573 as per 2001 census. It has an average population density of 42 persons per sq km. It is surrounded by Assam in the north, Tripura and Bangladesh in the west and south, and Myanmar in the east. It has a very long international border. Though the state is often associated with Mizos, it also has a small population of Reangs in the south and west, especially in areas nearer to the Tripura border.

Geographically, the state can be divided into three divisions: i) The mountainous regions; ii) the ridges and high land regions; and iii) the plain or flat lands. Most of the area is covered with hills which are fairly steep especially in the western region, making it difficult to either cultivate or inhabit. Hence, most of these areas are thinly populated. There are only a few areas which are flat or plain. These are found mostly near Bhairabi in the north, Demagari in the south-west, and Champhai in the east where wet rice cultivation takes place.

Mizoram presents a picture, which is in sharp contrast to the typical one associated with a hilly area farthest from the centre of the country. This state not only boasts of being the second most literate state in the country but also is one of the most urbanised states in the country. Nearly 50 per cent of the state's population lives in urban areas. Two factors have led to this unique situation. The first is geographical. A large segment of the population resides in Aizawl, the state capital (almost 30%). The second factor is historical. During the period of armed insurgency in the state, which began in the 60s, the Government of India started a process of relocating the villages closer to the roadways from the distant parts in order to provide security to the people. This is referred to as the "grouping of villages". Over time, these villages became small urban centres.

Despite a large segment being urban, rural livelihoods in the state continued to be dominated by factors which are common to the other parts of the region. More than 80 per cent of the land is officially declared as forest land. However, no cadastral survey has ever been conducted in this state as well. The ownership and management of land is vested with the village councils, which are traditional institutions in a modern avatar. In fact, the city of Aizawl is governed by 63 village councils as far as land issues are concerned.

The state is rich in bamboo resources. The famous bamboo famine called "*mautam*", which occurs when large scale flowering of bamboo leads to rodents invading and

destroying paddy crops, has its origins in this state. Paddy, ginger, banana, chilli and vegetables are the major crops cultivated by the people in Mizoram. Of late, oranges, grapes and kiwi fruits are also being cultivated in select pockets. The state has emerged as one of the major producers of exotic flowers like *Anthurium*, which is almost entirely exported.

The state is connected to the rest of the country via National Highway 54. Another national highway connects it to Tripura. Roads maintained by Border Roads Organisation are the lifeline of the state. A metre gauge rail track touches its northern tip at Bhairabi. A new railway line called Bhairabi Sairang Rail Link is being built to connect the state capital Aizawl to the rest of the country. The state has a good commercial airport, at Lengpui which is 30 km from Aizawl, having commercial services to Guwahati, Imphal and Kolkata.

Meghalaya

Meghalaya literally means "the abode of clouds" in Sanskrit. It is an elongated strip of land which is hilly, measuring about 300 km from east to west, and 100 km wide. Geologically, it is referred to as the north eastern detached extension of peninsular India with the Malda gap detaching it from Chhotanagpur Plateau. It has a total area of 22,720 sq km. The total population was 2,175,000 as per Census 2001.

There are 5044 recorded villages of which 4874 are inhabited. It is bounded by Assam in the north and Bangladesh in the south. The present state of Meghalaya came into existence in 1972 after remaining an "autonomous state" within Assam from 1969-72. The state is associated with three tribes and hill ranges named after these tribes namely Garo, Khasi and Jaintia. Khasis and Jaintias are considered hills tribes whereas Garos are considered plains tribes having commonality with Bodos of Assam. It was one of the first few territories in the north east hills to come under British colonial influence. The mission hospital at Tura is the oldest missionary institution in the North East Region. Shillong was the seat of British administration and was the capital of undivided Assam till the creation of the new state of Meghalaya. The Guwahati- Shillong- Sylhet highway built during the British rule provided connectivity between Brahmaputra Valley of Assam and the Gangetic delta of then East Bengal(now Bangladesh). It is primarily an agrarian state, the major crops being potato, rice, maize, jute, pineapple, banana, orange, and other plantation crops such as areca nut, cashew nuts and ginger. This is a state where the traditional *jhum* cultivation is fast giving way to settled cultivation with *jhum* cycles having come down significantly. The state is also known for *eri* silk cultivation.

Like Arunachal Pradesh and Mizoram, it is also a part of the Schedule VI of the Constitution of India. Hence the ownership and management of resources like land

and forests is governed by customary laws. Village headmen, clan heads, and priests enjoy powers to determine the land and the quantity of land to be cultivated by households in a village. The elected district councils provide a decentralised governance structure serving as the apex of the traditional tribe-specific governance system.

The state has a rich base on mineral deposits including coal, limestone, kaolin, and granite. The state is promoting tourism in a big way by exploiting its natural beauty, salubrious climate, and the modern planned nature of Shillong Township. Cherrapunji, often considered as the wettest place on earth, is in Meghalaya. Nepalis and Bengali Muslims are the two major migrant communities contributing to the economic life of the state. They are mostly in the tertiary sector providing multiple services. Some Nepali herders are into dairying. The state does not have rail connectivity. However, it has two airports near Shillong and Tura.

CHAPTER - III
Methodology

In order to understand the status of livelihoods of the forest dwellers, three states were chosen to represent the upland areas. These were Arunachal Pradesh, Meghalaya and Mizoram. The region is divided into five agro-climatic zones, but two of these lie in the Brahmaputra Valley and are hence eliminated, as the study pertains to the upland areas. The security situation in some states like Manipur was kept in mind while zeroing in on the states. One state each was chosen from the other three agro-climatic zones, and two districts were chosen from each of the three states. While choosing the districts in Arunachal Pradesh, it was kept in mind that the two districts were not in the same elevation range. In Mizoram, one district was in the eastern part of the state while the other was in the western part. In Meghalaya, one Garo Hills district and one Khasi Hills district were chosen initially. The fieldwork could not be conducted in the identified Khasi Hills district due to an ongoing agitation, protesting against the proposed uranium mining. The selection of villages was based on the proportion of people who are dependent on forest-based livelihoods and the accessibility of the site. The final selection was based on the presence of a host (an individual or NGO) who was familiar with the area. The selection of the households within the village was made in a stratified random basis. The households were divided into APL and BPL families. Then equal percentages from both categories were taken as sample households. Care was also taken to cover all the habitations of the village.

Data Collection Methods

The purpose of the study was to identify the potential livelihood options(sub-sectors) by looking at the household livelihood portfolio and the opportunities perceived from the market. Accordingly, two data collection instruments were designed: household portfolio mapping format and market mapping format. These were used to collect the data(see Annexure). The portfolio mapping format was used to collect data on the basket of activities in which a household is engaged in, the seasonality of such engagement, participation of men and women in each activity, gross income derived from each such activity, and the bottlenecks in carrying out/ expanding such activities. The market mapping format was used to collect data on goods and services traded in the local

market, number of players in each category, volume of transaction for major products,and the products that come in and go out of the area. Two local markets(haats) servicing the villages selected for household portfolio data collection were chosen for market data collection. At least two visits to each market were made over a period of three months so that the seasonality aspects of availability of various products were reasonably taken care of. Since the data collection was technical in nature and also demanded use of PRA tools for the qualitative responses, the research investigators were trained for two weeks on various issues of livelihoods, particularly on forest-based livelihoods. Both the household and market data was collected during November 2009 to April 2010. The data collected from the households and markets along with the secondary data available on resources and endowments of villagers and households were triangulated to identify the potential livelihood options.

Selected Sites

The sites selected from the three states of Arunachal Pradesh, Meghalaya and Mizoram are given in Table 3.1

Table 3.1: Location of the Selected Sites

State	Sub-Region	District	Name of the Village
Arunachal Pradesh	Eastern Himalayas	West Kameng	Morshing
	Siwalik Hills	West Siang	Domkho
			Daring
			Padi
Mizoram	West Mizoram	Champhai	Hmunhmeltha
	East Mizoram	Mamit	Khawbung
			Darlak
			Bawngva
Meghalaya	West Meghalaya	West Garo Hills	Rengsangre
			Tapra Adla
	Central Meghalaya	West Khasi Hills	

Arunachal Pradesh

The study selected two districts from two different geographical areas. In Arunachal Pradesh, these included:

i) West Kameng, which is from the western-most part of the state; and

ii) ii) West Siang, which is from the central part of the state.

Both of them are located far away from each other and also fall in different vegetation belts. The villages in West Kameng fall in the temperate middle Himalayan Zone, and West Siang consists of the sub-tropical outer Himalayan zone. They are also inhabited by different tribes. The villages in West Kameng are inhabited by the Monpa tribes and the villages in the West Siang District are inhabited by the Galo tribes.About 50 households were selected randomly within the villages, based on the proportion of the APL and BPL families. Care was taken to cover all the habitations within the village.

Mizoram

In Mizoram the sites were located in:

i) Mamit District, which is a part of eastern Mizoram; and

ii) Champhai District, which is a part of western Mizoram.

The eastern part had ties which connect to Tripura and Bangladesh, whilst the western part had ties which connect to Myanmar. The eastern part consists mostly of Mizos but is also interspersed with habitations of Reang tribes, which are largely concentrated in neighbouring Tripura. Similarly, the western part has Raltes, which are part of the larger Mizo group. About 135 households were selected from four villages(Table 3.2).

Meghalaya

In Meghalaya the sites were located in Garo Hills, which lie in the western part of the state, and are connected to Bangladesh and Assam Plains. This area is mainly inhabited by Garo Tribes. Two villages were selected from West Garo Hills. About 100 households were sampled from the two villages.

The total number of households covered is given in Table 3.2.

Table 3.2: Distribution of Household Samples across the Different States

States	Village	No; of Households	No. of BPL Households	Total
Arunachal Pradesh	Morshing	50	21	100
	Domkho	50	18	
	Daring	49	22	99
	Padi	50	24	
	Sub-Total			**199**
Mizoram	Darlak	35	23	65
	Bawngva	30	17	
	Hmunhmeltha	35	16	70
	Khawbung	35	14	
	Sub-Total			**135**
Meghalaya	Rengsangre	70	27	
	Tapra Adla	30	12	
	Sub-Total			**100**
	Grand Total			**434**

.

CHAPTER - IV
The Context of the Three Sites

Arunachal Pradesh

West Kameng District

Natural and Physical Resources

The district of West Kameng is mostly mountainous; a greater part of it falls within the higher mountain zone. Climatically, it is mostly in the temperate zone; the southern part consists of low hills falling in the tropical zone. The district is filled with peaks and valleys. It is bounded by Bhutan, Tibet and Assam on the three sides. Coal, copper, dolomite, etc., are some minerals found here, but have been hardly exploited. The district abounds in forest resources with pines and other teak varieties like hollock and gamari, which are found in abundance. Land is mostly forested, but *jhum,* wet rice cultivation, and terrace cultivation is also practised in the lower parts. Horticulture is also being increasingly practised in recent times.

Human and Social Resources

Given the highly mountainous terrain, it is but natural that the population would be less. The total population of the district is 74,599 as per 2001 census, with a density of only 10 persons per sq km. The sex ratio is only 754, suggesting a large number of migrants into the district. The literacy rate in the district is 60per cent. The major tribes are Monpa, Miji, Sherdukphen, Aka and Khowa. Most of the inhabitants are Buddhist, although Aka, Khowa and Miji practise a form of animism called the Donyi-Polo. Governance is mostly carried out through village councils in these villages. There are only 8 bank branches in the entire district.

Two villages were selected as sample sites for undertaking the household survey in the district. These are: i) Domkho and ii) Morshing.

Domkho Village

Domkho Village under the Kalaktang Circle of West Kameng District in Arunachal Pradesh lies around the 27°10'28"N latitude and 92°12'46"E longitude and at an elevation of 2017m (Figure 1). It is approximately 100 km towards the southeast from the District Headquarters; and Bomdila closes the India-Bhutan boundary. As per 2001

census there are 90 households in the village with a total population of 386, out of which 199 are males and remaining 187 are females. The village is inhabited by Monpa tribes, with 60 per cent ST population. The villagers are mainly engaged in agriculture, with 69.7 per cent of the total workers being cultivators and agricultural labourers which include both main and marginal workers. The village is touched by a blacktopped road leading from Rupa to Dirang via Mandala top. Domkho is located in the upland area.

Morshing Village

Morshing is close to Domkho and is located at around 27°10'96"N latitude and 92°11'49"E longitude, at2112 m elevation. There are 56 households in the village with total population 207 out of which, male population is 116 and female population is 91. Like Domkho, Morshing is also dominantly a Scheduled Tribe village inhabited by Monpa tribes with 78.7 per cent ST population. The cultivators and agricultural labourers together constitute 72 per cent of the total workers in the village. Morshing is connected by an un surfaced road. The main crops produced in Domkho and Morshing area are maize, millet, pulses, and a limited amount of rice. The horticultural production in these villages includes apple, kiwi fruit, etc. Besides, the people also practice animal husbandry.

The household portfolio mapping was carried out in Domkho and Morshing villages from10th February to 13th February 2010. These villages fall under the Kalaktang Circle with approximate distance of 100 km towards southeast from the District Headquarters at Bomdila. Both the villages are inhabited by the Monpa tribes. Morshing is situated in the intermontane valley.

Data Information Gap in the Study Area

As per 2001 census there are 90 households in Domkho and 56 household in Morshing. However, during household portfolio mapping only 50 households(HHs) were found in Domkho and 36 in Morshing. The remaining 14 HHs had to be taken from the Sanglem Village, which is adjacent to Domkho Village and has similar characteristics.

This points out to the severe data gap for these areas, and usage of secondary data could be very dangerous and lead to highly erroneous conclusions!!

West Siang District

Natural and Physical Resources

The district of West Siang is located in the central part of Arunachal Pradesh and is mostly mountainous. The northern part falls within the higher mountain zone. Climatically, it is mostly tropical, with the northern part falling in the temperate zone. The district is filled with peaks and valleys. It is bounded by Tibet in the north and Assam in the south. Coal, copper and dolomite are the minerals found here but have hardly been exploited. The district abounds in forest

resources with k varieties like Hollock and Gamari which are found in abundance. Land is mostly forested but *jhum,* wet rice cultivation and terrace cultivation is also practised in the lower parts. Horticulture is also being increasingly practised in recent times.

Human and Social Resources

Given the highly mountainous terrain it is but natural that the population would be less. The total population of the district is 103,575 as per 2001 census with a density of only 13 persons per sq km. The sex ratio is 913. . The literacy rate in the district is 60 per cent. The major tribes are Gallong, Miyong, Bori, Bokar, Membas, Pailibo, Ramo. Most of the population pratice DonyiPolo, a form of animism. Governance at the village level is mostly carried out through the village councils in these villages. Each tribe has their own village councils.

Two villages were selected from the West Siang District. These are: i) Old Daring and ii) Padi Village.

Old Daring

Old Daring is located on the piedmont area of the hill between Likhabali and Basar at 499 m elevation around the latitude 27°51'57.3" N and longitude 94°49'18.77" E. It lies exactly on the Main Boundary Thrust (MBT), a geological boundary between Central Himalayas and Foothill Himalayas. There are 58 households in the village with a population of 366 as shown in Table 2. The male population is 184 and the female population is 182. The literacy rate in the village is 26.55 per cent with male literacy rate at33.73 per cent and female literacy rate at 19.41 per cent. Out of the total population, 98.6 per cent are Scheduled Tribes belonging to Galo community, one of the major tribes of Arunachal Pradesh. Around 90 per cent of the total workers in the village draw their livelihood from agriculture and cultivation. The proportion of working population in primary activities as per 1991 census was 68.66 per cent in undivided Daring Village (Old Daring and New Daring). An unsurfaced road connects Old Daring Village with the main district road.

Padi Village

Padi or Pading Village is located along the roadside at 455 m and around 27°51'19.80" N latitude and 94°44'35.33" E longitude. The total number of households in the village is 68, and the total population is 442 out of which male population is 239 and female population is 203. About 72 per cent of the total population of the village belongs to an indigenous Scheduled Tribe, i.e., the Galo tribe. The literacy rate in the village is 37.19 per cent - male literacy rate is 43.01 per cent and female literacy rate is 30.59 per cent. About 63 per cent of the workers in the village are cultivators and agricultural labourers.

Both the villages are inhabited by the Galo tribe, one of the major tribes of Arunachal Pradesh. People in both the villages practice Wet Rice Cultivation (WRC) along the bottom of the valley and the piedmont plains; and *jhum* cultivation along the hill-slopes.

Mizoram

Champhai District of Mizoram

Natural and Physical Resources

Set in the beautiful state of Mizoram with its colourful tribal traditions, orchids and butterflies, Champhai boasts of a fabulous view of the Myanmar Hills. It covers an area of 3185 sq km. This frontier district has a special place in the history of the tiny North Eastern state and its people. It is said that the history of Mizo starts from Champhai and ends in Champhai. The major towns in the state are Ngopa, Khawhai and Khawzawl. It is a fast-developing trade point on the Indo-Myanmar border. The famous Rihdil Lake is only about 50 km away from the town of Champhai. Although most of the district is hilly, it also boasts of the only plain areas in the entire state. This has given it the sobriquet "The Rice Bowl of Mizoram". Champhai has a salubrious climate and a number of tourist attractions. A chain of green hills encircle the luxuriant rice fields, which add to the beauty of this place. The area of WRC land is 2374 ha and the number of WRC farmers is 2630. Sericulture is also practiced in the district.

Human and Social Resources

It has a total population of 108,392, out of which 55,756 are male and 52,636 are female. As per 2001 census, the density of population is 34 persons per sq km. Decadal growth is registered at 29.90 per cent. Literacy rate stands as high as 91.20per cent. Out of the total population, 97 per cent belong to ST category. The sex ratio is 944 females per 1000 males. A large segment of the population, almost 38.8 per cent, is urban based. A total of 10 bank branches are present in the district, out of which one is a nationalised commercial bank, i.e. SBI, and there is one branch of the Mizoram Cooperative Apex Bank, and eight branches of Mizoram Rural Bank.

Two villages were selected from the Champai District of Mizoram. These are: i) Hmunhmeltha and ii) Khawbung.

Hmunhmeltha Village

The village is just on the outskirts of the district headquarters Champhai. It is located on a hill top with streams flowing below. This is one of the oldest villages of the district having completed 100 years of its existence in 2010. It may be mentioned here that it is difficult to find old habitations in north eastern hills as slash and burn cultivation demanded frequent shifting of villages from one area to another. There are around 250

households in the village. All of them belong to Mizo tribe. The population is around 1100. The cropping pattern is dictated by the market with almost all households producing vegetables. Orange is also produced in substantial quantities. Small quantities of banana are also produced. Around 45 people work in government offices mostly in low paid jobs.

Khawbung Village

The village is located at a distance of 77kms from the district head quarters Champhai, approximately a three hours drive by taxi. There are around 429 households in the village. The population as per 2001 census is 2156. The number of households living below poverty line stands at 263. There are three primary, three middle English and one high school in the village. The village also boasts of a higher secondary school. The primary occupation of the villagers is cultivation. They cultivate vegetables like mustard leaves, brinjal, pumpkin, etc. Spices like chilli and ginger are also cultivated. The village is known for orange cultivation in the local area. Most of these produces are sent to the district headquarters Champhai and state capital Aizawl. Rearing livestock is another important means of earning livelihood. Almost all the households rear livestock both for domestic consumption and generating income. Some women do engage in weaving for meeting household and neighbourhood clothing demands. The Village Council distributes the land for cultivation amongst the households every year. Only around 50 households have their own paddy field as the village is located in a hilly terrain.

Mamit District

Natural and Physical Resources

Mamit district is on the extreme north western border of the state bounded by Assam in the north and Tripura and Bangladesh on the west. The district occupies 3075 sq kms of land. Most of the district has steep hills with a few intermontane valleys.

Human and Social Resources

It has a total population of 62785 as per 2001 census. The density of population comes to 21 persons per sq kms. Literacy rate stands at 79.14per cent which is on the lower side in the state. . The sex ratio is 896 females per 1000 males as 2001.

Meghalaya

West Garo Hills District of Meghalaya

Natural and Physical Resources

The district of West Garo Hills is located in the westernmost part of Meghalaya. The district is nature's wonderland, blessed with beautiful hills, crystal clear rivers, streams and waterfalls, green virgin forest and a wide variety of flora and fauna. *A'Chik* is the

general title used for the various groups of people living here, after their division on the basis of race.

Majority of the people depend on agriculture for their livelihood. Paddy being the main crop besides mustard, sugarcane, jute, potato, tapioca, cotton, etc. The sizeable crops with commercial potential are chillies, ginger, pineapple, turmeric, and also banana in areas adjoining Assam. *Tezpata* leaves (bay leaf) and *bidi* leaves for making *bidis* have bright commercial prospects. WRC is practiced in the plains areas, whereas in the hills, the people practice *jhum* or shifting cultivation. Most of the existing cultivation is practised around villages. Normally allocation of plots is based on precedents, and a family cultivates the same plot for about two years. After cleaning the jungle and burning the litter sometime between March and April, cereals such asmaize and millets are sown. Besides food crops, cash crops such as cotton are grown in many parts of Garo Hills. The grossed cropped area in this district is 89,570ha.

West Garo Hills with a wide variety of agro-climatic conditions, soil and rainfall provide opportunities for growing a varied range of horticultural and plantation crops. The important fruit crops grown in the district are oranges, pineapple, litchi, banana, jackfruit and other citrus fruits, and the important plantation crops are areca nut, cashew nut, coconut, tea, black pepper, bay leaf, betel leaf and rubber. Spices like ginger, turmeric, chillies, large cardamom, and cinnamon are also grown along with Kharif and Rabi vegetables. The district has tea nurseries at Rongram, Damalgiri and Zikzak. The Rubber Board has a regional office in Tura and has been promoting cultivation of rubber in the region.

The major minerals found in the district are coal, sedimentary clay, iron ore, sillimanite, feldspar, quartz, glass and gypsum, etc.

Human and Social Resources

The district, covering an area of 3677sq km has a population of about 518,390. Out of this 263,424are male and 254,966are female. The ex Ratio stands at 968 females per 1000 males, and the literacy rate is 50.7 per cent, out of which 57 per cent are male and 44.1 per cent are female. As per 2001 census, the density of population is 141 persons per sq km. Tura has a mixed population of Garos or A'chiks (as they prefer to call themselves),Bengalis, Nepalis, Assamese, and members of other ethnic groups such as the Hagongs, Rabhas, Koches, Mizos and a fair sprinkling of South Indians in the Catholic Church. The number of scheduled commercial bank offices as on 30th June 2006 stands at 30, out of which 27 are SBI and its associates, and 3 are other nationalised banks.

Rengsangre Village

Rengsangre Village comes under the Rongram Block of West Garo Hills. It is situated next to Asanang village in Tura- Williamnagar Road. All the inhabitants of the village belong to Garo tribes. There are 250 households in the village. Most of the villagers depend on forest land for their livelihood. They practice shifting cultivation on the forest land. Some of the villagers also have paddy fields. They cultivate various crops like rice, maize, millets, in addition to sorrel, ginger, turmeric, egg plant, gourd, tapioca, yam, sesame, etc. Their production is sufficient for their own consumption. They sell the surplus in the market or on the roadside. Some of the households also have their own paddy fields, but the production is only sufficient to feed the family. Almost all the villagers cultivate areca nut and sell the surplus. Most of the households also cultivate tea. There is a tea factory in Rongram. Some years ago the villagers could produce more in the forest land. But nowadays the forest has become very dense and the villagers find it difficult to cultivate the land. Due to this reason the output has come down. The headman of the village is from the Sangma clan. But people from other clans also get a portion of the land for cultivation. The village headman distributes land for cultivation.

Another activity which the people undertake is livestock rearing. Almost all the households rear cows, pigs or chicken for their consumption or for sale. They do it individually or as a group. Some households also rear cattle. Apart from cattle rearing most of the households also rear chicks and pigs. But most families rear it just for own consumption and sell the surplus. Most people also indulge in bee keeping as a group, whilesome villagers also engage in other activities such as driving, teaching, etc.

The villagers mostly sell vegetables, areca nut, ginger, etc. The people mostly depend on rains for their crops. The PHE Department supplies water. They use the stream water for paddy cultivation. The market place is located about a few kilometres away from the village and is called Rongram Bazar. In this market place, a weekly market is also held every Friday where the villagers from different places come to sell their produce. Merchants come from Tura, Mankachar, Krishnai, Dudhnoi, Chibinang, etc. The villagers also work as labourers either as a group or individually in order to support their families. The closest banks for the village people are State Bank of India, Rongram Branch, which is located in the market area. The women's Self Help Group (SHG) and Natural Resource Management Group (NaRMG) also play an important role in the village. The main problem faced by the villagers is less production, and destruction of crops being by animals, pests, etc.

TapragreVillage

Tapragre Village comes under Rongram Block of West Garo Hills. It is situated close to Baljek(Tura) Airport. There are over 70 households in the village. The people depend

on forest land for their livelihood. They practice shifting cultivation on the forest land. Cultivation of crops such as rice, maize and millets, and vegetables such as sorrel, ginger, turmeric, egg plant, gourd, tapioca, yam, sesame, etc., is the major livelihood activity. They sell the surplus in the market or on the roadside. Some households also have their own paddy fields, but the production is only sufficient to feed the family. Most of the people also have areca nut plantations. Another commercial crop which the villagers have adopted recently is the plantation of rubber; saplings were received from IFAD as part of a project. In addition to these, the people also undertake livestock rearing. Some rear cattle, which are mostly of local breed. However, the milk production is less and is only sufficient for own consumption. Apart from cattle rearing, most of the families rear chicken and pigs. But families rear it in small units for home consumption. The people mostly depend on rains for their crops. The PHE Department supplies water, which is used by four or five families. They use the water from streams for paddy cultivation.

The market place, which is called Jengjal Market, is located about three kilometres from the village. Here, a weekly market is held every Thursday and villagers come from different places such as Tura, Mankachar, Krishnai and Dudhnoi, etc., to sell their produce. The villagers also work as labourers either as a group or individually in order to support their families. There is the State Bank of India, Jengjal Branch, which is located in the market area. The women's Self Help Group (SHG) and Natural Resource Management Group (NaRMG) also play an important role in the village. The main problem faced by the villagers is less production, and destruction of crops being by animals, pests, etc.

CHAPTER – V

Livelihood Profiles of the Forest Dwellers in the Upland Areas of Arunachal Pradesh

This section presents the livelihood profiles that emerged from the primary data collected from households and local markets. Given the diversity within the state, the data and inferences from the data have been presented district wise. An analysis of household-level endowments followed by the analysis of livelihood basket of forest dwellers in each district has been made. The major livelihood activities and their share in the basket have also been captured, giving an indication of the activities that support the highest number of livelihoods. Similarly, the data on scale of each activity has also been presented to give an idea about the possibilities and feasibility of promotion of certain activities on a larger scale. Bottlenecks that hinder production, productivity and higher per unit revenue realisation have been presented so that inferences are drawn on intervention points in that particular livelihood activity.

West Kameng

The profile of the households in both the studied villages in this district presents a similar picture. The average household size is large, with an average of seven persons in Morshing and six in Domkho. Both the villages have positive sex ratios indicating a higher number of women per 1000 men. The work participation rate in both the villages is slightly higher than the national average and almost similar inboth the villages. Female participation rate is slightly higher in Morshing, whereas the male participation is marginally higher in Domkho. However, the proportion of children between the villages shows a significant difference -in case of Domkho, a large segment is that of children. There is a little difference in the work participation rate between the two villages, suggesting that there are more children involved in work in Domkho village.

Landholding and Changes in Landholding Patterns

Land remains the principal productive asset of a rural household. The studied sites present a picture of uneven distribution of land amongst the households. The distribution of land is shown in Table 5.1. The table clearly shows that the landholding size differs considerably across the two villages. The average land holding in Domkho, which is in the upland area, is much smaller compared to Morshing, which is situated in the valley. The stark difference between the minimum and the maximum holdings in Morshing is

to be noted. While the ratio between minimum and maximum in Domkho stands at 1:4, the same for Morshing is 1:145. Both the villages have only one landless household each.

Table 5.1: Distribution of Land amongst the Households

(in acres)

Particulars	Morshing	Domkho
Average land per household (acres)	4.3	2.8
Minimum land of a household	0.22	1.6
Maximum land of a household	32.2	6.8
Households with no cultivable land	1	1
Average forest land	0.8	0.001
Minimum (forest land)	0	0
Maximum (forest land)	7.41	0.49
Households with no forest land (in %)	80%	98%

It clearly indicates that the productive lands in the valley, which are much better in terms of quality, are being gradually usurped by an influential group within the village. This group has managed to corner some of the best cultivable land. Thanks to the absence of codification of land laws, it is easy to transfer vast community lands informally into private hands (households). This has also led to usurpation of some forest land as well. A more detailed probe revealed that the households with higher amount of land were also the major farmers of plantation crops. They have got the land from the village council and by virtue of the nature of the crop, they retain it for years. This indicates a transition from a subsistence production system to commercial farming of crops, particularly fruits and other plantation crops. The village of Domkho, being more remote and mountainous, still retains its "subsistence economy". The land resources are therefore more equitably distributed here as compared to Morshing. The forest lands are still part of the community and have not been transferred into private hands. Thus, the two villages present two contrasting scenarios in terms of land ownership and distribution. Moreover, this is also indicative of the emerging local economy where both food and non food crops would be traded. This will have significant implications on livelihood options as also on the food security of the households.

Livestock Resources

Livestock are set of assets that households possess, particularly in the tribal areas. They are used as beasts of burden, and for transportation, food as well as savings instrument

at times. However, as the population in the sample villages are predominantly Buddhist, it is a taboo for most of them to rear pigs. Other livestock such as poultry are also not so preferred. The average number of cows per household in both the villages is three - 18-20 per cent households own more than four cows, while 54-62 per cent do not own a cow. Similarly, 82-94 per cent of the households do not own poultry. Cattle are not favoured here both due to lack of grazing grounds as well as because they can hardly be used for cultivation or transportation. Rather, horses are more favoured. Yaks are commonly used by the Monpas in preference to cows for milk. However, being the lower reaches of Himalayas, yaks are also not so common amongst the households. A handful of households own horses. Hence, the livestock asset bases of households are poor, making them vulnerable in case of crop failures.

The Livelihood Portfolio Mix

The data about household livelihood portfolio reveals that the forest dwellers in the studied villages pursue at least seven or more economic activities. The total number of activities in which households are engaged is 25 in Morshing and 26 in Domkho. The primary sector, comprising agriculture, forestry, and animal rearing, accounts for all but one activity. The average annual income from each of these activities per household comes to less than Rs.20,000. The average annual household income is Rs.155,733 for households in Domkho, whereas the same for households in Morshing is slightly lesser at Rs.127,556. Though Morshing has a more developed economy with more farmers into commercial cultivation of cash-yielding crops, yet it has lower average income. This indicates inequity and a greater number of poor households in Morshing. Thus the change in cropping pattern, combined with the unequal distribution of landholdings has major implications for the financial status of the households. ‘

Coming to the livelihood of households (HHs) in West Kameng District, there are 13 activities that engage more than 25 per cent of the households. The major activities pursued by the HHs in the two villages and the percentage of HHs engaged in each such activity are given in Table 5.2. Activities in which at least 25% of HHs are engaged have been considered for the purpose.

We observe from the data presented in Table 4 that there is a diversified portfolio of livelihoods surrounding the primary sector activities. Gathering forest produce for both food and fuel is the most important amongst all activities. Forest, therefore, continues to remain central to the household’s daily needs in these villages. The main food crops are maize, millet, *brusma* and *drunchen*(local millets), vegetables, and a little bit of paddy. This suggests that the economy is largely subsistence in nature. However, traces of commercialization can be seen in the cultivation of cash crops such as chilli, a local

Table 5.2: Share of Activities across Households (pursued by more than 25% HHs)

Activity	% of HHs pursuing the activity in West Kameng	% in Morshing	% in Domkho
Collection of forest produce for home consumption	91	90	92
Maize Cultivation	89	80	98
Cultivation of plantation crops (local spices, ginger, chilli, *jhabram*)	84	70	98
Millet	79	60	98
Cultivation of vegetables (cabbage, cauliflower, onion, radish, garlic)	74	64	84
Common buckwheat (called *brusma*, produced for local consumption)	59	34	84
Common buckwheat (called *drunchen*, produced for local consumption)	54	28	80
Cattle/yak for milk	43	38	48
Potato	37	56	18
Cultivation of fruits(apple, kiwi)	36	34	38
Tomato	28	46	10
Paddy cultivation	25	24	26
Govt. service	25	28	22

spice called *jhabram* and ginger, vegetables such as cabbages, cauliflowers and onions, and fruits such as apples and kiwi. Cultivation of maize for food is undertaken by most households in both the villages. But cultivation of cash crops such as local spices, chilli and *jhabram* is also undertaken by the two villages but mostly in the upland areas of Domkho. Cash crops such as potato and tomato are however extensively cultivated in valley regions of Morshing, but very little in upland areas of Domkho. Commercialization is therefore evident in both the villages despite poor communication linkage. About 25 per cent of the households have members employed in government service.

The HHs have also evolved a mechanism of a mix of both cash and food crops for their own consumption. The larger incomes for individual households, especially in Morshing, come from government service, transport, and also from cash crops like tomato and potatoes. In case of Domkho, the activities are more land based, and there are very few non-farm activities. Both the villages cultivate chilli and a local spice called *jhabram*, which is cultivated in the *jhum* lands. This particular spice is in good demand not only

in other parts of Arunachal Pradesh but also in the neighbouring Bhutan, where similar tribes reside. Unfortunately, with no overland route, the products go to Kolkata for onward shipment to Bhutan.

In terms of the scale or size, government service occupies the topmost position in both the villages. This is followed by cultivation of vegetables and spices. Though the number of livestock seemed to be less, with a lesser number of households owning the asset, the income is relatively higher, placing milch animal rearing among the top four activities. However, there is significant variation between the two villages. Table 5.3 gives an idea about the major activities and their share in the total income.

Table 5.3: Scale of Activities across Households

Activity	West Kameng (% to total)	Morshing (% to total)	Domkho (% to total)
Govt. Service	31.1	39.2	24.5
Cultivation of vegetables (cabbage, cauliflower, onion, radish, garlic)	12.9	6.2	18.5
Cultivation of plantation crops (local spices, ginger, chilli, *jhabram*)	10.1	2.7	16.1
Cattle/yak for milk	6.7	11.7	2.7
Maize cultivation	5.0	2.1	7.3
Cultivation of fruits(apple, kiwi)	4.6	1.4	7.3
Local transport	3.9	7.3	1.2
Retail/*kirana* shops	3.7	8.2	0
Tomato	3.4	4.9	2.1
Potato	3.2	4.9	1.7
Collection of forest produce for home consumption	2.4	3.3	1.7
Millet	2.4	1.0	3.6
Individual wage labour	1.9	0	3.4
Common buckwheat (called *brusma*, produced for local consumption)	1.5	0.8	2.0
Eateries/*dhabas*	1.2	0	2.2
Timber trade	1.1	0.3	1.7
Paddy cultivation	1.1	1.6	0.6
Total income (Rs.)	14166462	6377792	7788670

Cash Crops

In case of cash crops, it is found that the major portion of the income comes from vegetables like cabbage, cauliflower, radish, etc. Most of these come from the upland village of Domkho. Similarly, the cultivation of crops such as chilli, and local spices such as *jhabram* is practised in the upland village of Domkho. Potato and tomato show much smaller cash inflow and most of it flows to the valley village of Morshing.

Food Crops

Cultivation of food crops is more in Domkho not only in terms of the number of households practising it, but also in terms of the quantity produced. We also observe that paddy is more extensively cultivated in the valley. The WRC method is used for cultivation of paddy in the valley region.

Rural Non-Farm Activities

In the case of rural non-farm activities, government service dominates and contributes to a major share of income of the villages. Although most of the government jobs are in the bottommost rung, like peons, drivers, etc., the incomes are still high enough to dominate all the other activities. Not only is the income high from this activity, it is also regular and predictable. The households who hold these positions are therefore held in high esteem in the community. Local transport also brings in income, especially for the more accessible village of Morshing. The people in Domkho Village have also started taking up government works as wage labourers; eateries have sprung at few places, and timber trade has a small presence in the village. Most of the rural non-farm activities are observed in Morshing, as it is more accessible. Moreover, Morshing has a powerful group which has important connections, and hence, can influence outside resources for securing govt. jobs, bank credits for purchasing, transport, etc.

Table 5.4: Distribution of Rural Non-Farm Activities

Activity	Share of HHs		Share of Income	
	Morshing	Domkho	Morshing	Domkho
Govt. service	28%	22%	39.2%	24.5%
Local transport	14%	0	7.3%	1.2%
Retail/*kirana* shops	10%	2%	8.2%	0
Individual wage labour	0	10%	0.0	3.4%
Eateries/*dhabas*	0	4%	0.0	2.2%
Timber trade	2%	8%	0.3%	1.7%

Understanding the Bottlenecks

The extension of paddy cultivation (Wet Rice Cultivation) is limited to few households in Morshing due to non-availability of the irrigation facility. A variety of dry paddy, which is a traditional coarse variety, is grown mostly in Domkho and also in some parts of Morshing because it largely depends upon the rainfall. Millet, maize, and common buckwheat (*Fagopyrum esculentum*), locally known as *brusma* and *drunchen* have no market demand and are grown for self consumption.

As regards the food crops, it can be seen from Figure 1 that the households are facing major problems with regard to input. Three major problems are cited by the households: poor irrigation facility, poor quality of seeds and fertilizers, and most importantly, lack of labour during cropping season. The first constraint is geographical, as water availability in hilly areas would always remain a constraint. However, lack of labour to work in the agricultural fields is a major constraint. Labour is particularly needed for the in cultivation of maize and millet, as these crops require continuous weeding. In earlier days of subsistence agriculture, the entire village would be involved in the fields, helping one another. This system would function as long as the production levels are just enough to meet their food requirements. Increasing production would mean clearing more land and using more labour, which is in short supply. This could be one the major reasons for the households' not increasing the production levels.

The cash crops cultivated in the two villages are chilli, potato, tomato, pulses (*rajma*, *orsiya*, soybean, etc.), cabbage, cauliflower, radish, onion, garlic. Constraints similar to those experienced in case of the food crops continue to plague the cash crops too. Labour is particularly a major problem in cultivation of spices and vegetables, which need a lot of tending. However, market linkage is also a major problem for cash crops. Farmers are not getting the right price, and lack of other forward linkage facilities such as processing plant and cold storage facilities, are also problems cited by the households. The usual practise of traders/middle men buying the produce in the field itself is the most prevalent practice. Traders come from Bomdila and from as far as Assam plains to collect the cash crops. The result is that the price is also not up to the expected level of the villagers -the price is very low particularly during the season. The perishability of the items such as tomato, cabbage, cauliflower, etc., makes things worse. Cold storage is a facility demanded by the households. However, given the low outputs, feasibility of cold storage facility would be only a remote possibility. Pest attacks on chilli during flowering and fruiting stage, and tomato blight are common diseases.

Despite the good potential for growing apples, lack of large tracts of land as well as insufficient capital deters households for taking this up as a livelihood. Similarly, the

seedlings supplied by the government are sub-standard and are reported to bear sub-standard fruit (sour). High mortality rates of apple seedlings are also reported. This is because no proper soil testing has been undertaken, which would give an understanding of the type of seedling to grow in that soil. Rearing of cattle is mainly constrained by the non-availability of adequate pastures and fodder.

Figure 5.1: Common Bottlenecks in Food Crop Production

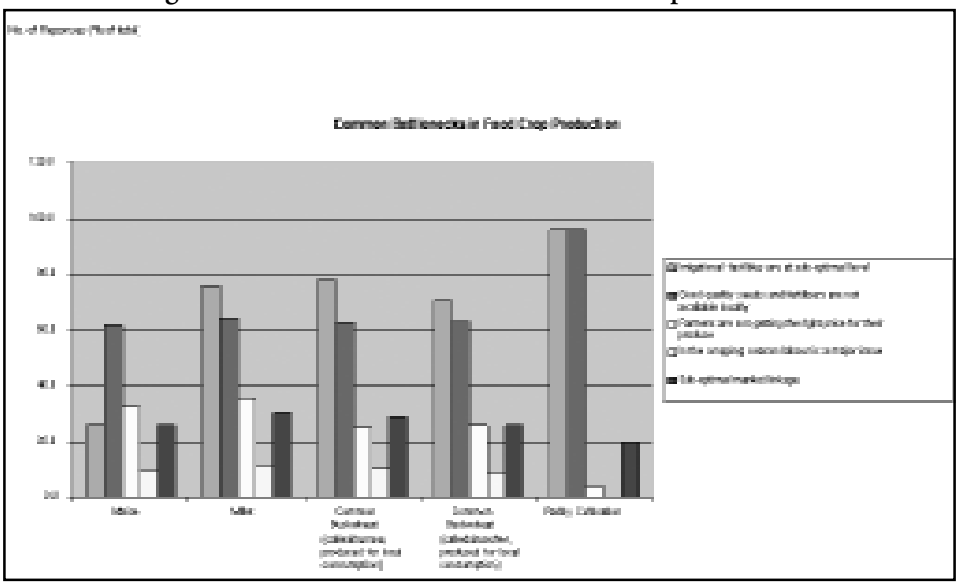
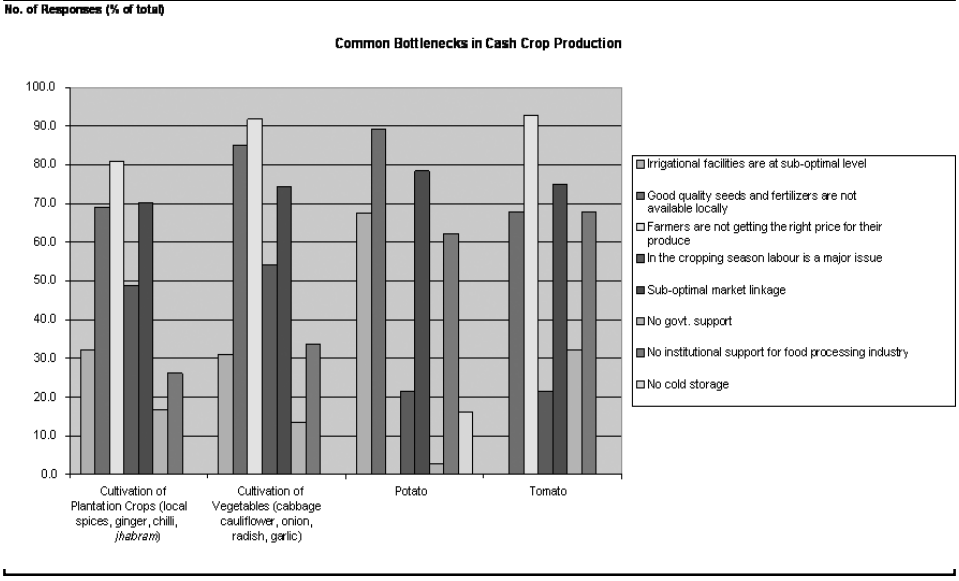


Figure 5.2: Common Bottlenecks in Cash Crop Production



The villagers abstain from owning goat and sheep for want of pastureland. Moreover, veterinary service and medicines are not available in both Morshing and Domkho villages. Fishery is prohibited by religion and is hence not practised.

Jhabram, the local spice, has great demand both in the local market as well as in Bhutan, but the collection of *jhabram* fruits from its thorny bush is labour intensive, time-consuming, and requires much precision. This increases the time and therefore the cost of the cultivation. Although Bhutan is adjacent and similar communities reside there, non-availability of direct links results in a circuitous route of the goods travelling all the way to Kolkata and back to Bhutan. Providing access can therefore create better market linkages.

West Siang District

The villages of Daring and Padi are located in the intermontane valley area in the outer Himalayas. Padi is located in the district road which travels to Along, the District Headquarters. Daring is located slightly in the interior, but has access to a larger tract of plain land as compared to Padi. Both the villages are inhabited by the Galo tribes. The household size is fairly large, with an average of 9 and 11members per household in Padi and Daring respectively. The work participation rate is low across the villages and across genders. Male work participation rate stands at 23 per cent. However, Padi has a higher female participation rate at 28.4 per cent.

Landholding and Changes in Landholding Patterns

The landholding sizes are almost similar across both villages. However, the minimum holding is much higher in this district as compared to West Kameng. The minimum holding is 3.7 acres as compared to 0.22 acres for West Kameng. The higher minimum and maximum holdings in this district indicate that most of the households are into primary production activity. Like in West Kameng, we find that forest land has been usurped by a few elite within the village. In fact, the percentage of people owning forest land is 12 and 20 for the two villages studied. The process of conversion of community assets into private lands through fraudulent means is also evident here. There are no landless households in the two sampled villages. The distribution of land amongst the households is shown in Table 5.5.

Table 5.5: Distribution of Land amongst the Households

(in acres)

Particulars	Daring	Padi
Average land per household (acres)	17.9	11.6
Minimum land of a household	4.6	3.7
Maximum land of a household	41.4	32.7
Households with no cultivable land	0	0
Average forest land (Acres)	1.3	3.5
Minimum (forest land)	0	0
Maximum (forest land)	26.7	6
Households with no forest land (in %)	12.2%	20%

Livestock Resources

Households in both the villages own and rear a variety of animals to meet multiple economic, social and cultural needs. Almost all sort of livestock are present in large numbers in the two villages. Cattle are used for cultivation. Pigs are a means of delicacy and almost no festival is complete without pork meat being served. Poultry are also present in almost all the households. Other domesticated animals here are the goats and sheep. These animals are reared mostly for food. The availability of good pasture lands in the vicinity of the villages has helped in raising the animals. About 40-49 per cent of the households have more than four cows; 62-75 per cent of the HHs own more than four pigs; and 70 per cent of the HHs in Padi and 35 per cent of the HHs in Daring own more than 10 poultry birds. The average number of sheep and goats per HH varies from 6 to 8 in both villages. All these indicate the potential of livestock rearing in the area.

The Livelihood Portfolio Mix

The households' livelihoods in both the studied villages in the district comprise seven activities on an average. Except government service, all other activities pursued fall in the primary sector. Unlike in West Kameng, the staple crop in this district is paddy, with as many as 92 per cent HHs engaged in it. Though the portfolios of HHs in both the villages are almost similar, the Padi villagers seem to be richer compared to their counterparts in Daring, with an average annual income of Rs.230,000. The economy in Padi is little more diversified in Padi with 24 activities contributing to the livelihood portfolio. The number of activities stands at 20 for Daring. The average income per activity per household is about Rs.28318 and Rs.32844 in Daring and Padi villages respectively. The higher work participation rate of females in Padi seems to be a major determinant and results in higher HH income. Two livestock-rearing portfolios namely

piggery and poultry are among the top four livelihood activities of the households in the district. This is in sharp contrast to the other district where livestock does not figure in the list of major activities. Another important feature of this district is that as many as 84 per cent of households are engaged in *jhum* cultivation; and unlike in West Kameng, cash crops like fruits, vegetables and spices do not figure in the top seven activities in terms of the HHs engaged. The major activities pursued by the HHs in the two villages and the percentage of HHs engaged in each activity are presented in Table 5.6. Activities engaging at least 25% of HHs are considered for the purpose.

Table 5.6: Share of Activities across Households (pursued by more than 25% HHs)

Activity	% of HHs pursuing the activity in West Siang	% in Daring	% in Padi
Collection of forest produce for home consumption	96	96	98
Piggery	93	92	96
Paddy cultivation	92	98	88
Jhum cultivation (mixed cropping, food)	84	84	86
poultry	77	67	88
Collection of forest produce for sale (*tokou*, bamboo)	74	88	62
Cattle (*mithun* rearing)	69	80	60
Cultivation of fruits(orange, pineapple, banana)	28	10	46
Goat rearing	25	18	32
Yarn production	23	27	20
Govt. service	20	18	22

Paddy is the principal food crop and is cultivated extensively in the plain valley lands. The method of WRC is practised and the valleys are used for this type of cultivation. In fact, the production is so large that the households import labour from neighbouring Assam (Dhemaji and Silapathar areas) for their fields during the sowing season. Gathering forest produce for both consumption and cash needs is important for all the HHs. However, unlike in West Kameng, forest resources like bamboo, *tokou*, etc., are sold outside. Oranges are cultivated largely in Padi. However, cash crops are relatively less prominent. Production of yarn is a significant feature of this district.

Scale of Activity

The data of various activities in the total income of the two villages reveal that government service accounts for 30 per cent of the total income. It may be noted that 20 per cent of the HHs have a member in government service. Paddy comes next, accounting for 28.8 per cent of the income. *Jhum*, which is practised mostly for meeting the food requirements, comes third in terms of the contribution to total income. Some *jhum* lands are also used to cultivate cash crops like chilli. Apart from these three, no other activity contributes more than 10 per cent to the total income. Piggery, goatery and rearing of *mithuns* brings visible income to the HHs. Plantation crops like oranges are cultivated extensively in Padi, while sale of *tokou* leaves (a local palm) brings some income to the HHs in Daring village. The scale of various activities as measured by their contribution to the total income of all the HHs is given in Table 5.7.

Table 5.7: Scale of Activities across Households

Activity	West Siang (% of total)	Daring (% of total)	Padi (% of total)
Govt. service	30.5	28.6	32.2
Paddy cultivation	28.8	28.3	29.2
*Jhum*cultivation	14.8	17.8	12.2
Piggery	5.3	5.9	4.8
Cattle (*mithun*)	4.5	6.8	2.5
Eateries/*dhabas*	2.6	0	4.9
Cultivation of fruits(orange, pineapple, banana)	2.4	0.3	4.2
Goat rearing	2.0	3.6	0.5
Timber trade	1.5	0	4.9
Collection of forest produce for sale	1.5	2.3	0.9
Collection of forest produce for home consumption	1.2	1.3	1.0
Retail/*kirana* shops	0.9	0.2	1.6
Driver	0.8	1.9	0
Private service	0.6	0	1.0
Total Income (Rs.)	21208519	9713057	11495462

Cash Crops

Paddy is cultivated in a large way in both the villages. They use a traditional variety of rice called the *Khampti*. The production is large enough to import labour from the

neighbouring plains districts of Assam. The traditional variety has the advantage of availability of seeds, and lesser amount of fertilizers to be used, besides being more resistant to pests and diseases. Although it is mainly cultivated as a food crop, some of it is also sold, which helps earn much-needed cash. In case of other cash crops, it is found that a major portion of the cash income comes from chilli, which is produced in the *jhum* fields. Normally, *jhum* cultivation is mainly for food crops, but perhaps due to the pressures emanating from commercialization of commodities, *jhum* fields are increasingly being used for commercial production of cash crops. This has severe environmental implications as the fields would be rendered useless in a much smaller *jhum* cycle.

Food Crops

Paddy is the most important food crop. Besides, paddy, other food crops like maize, vegetables, etc., are also raised in the *jhum* fields. The dry rice cultivation method is used for paddy in the *jhum* fields.

Rural Non-Farm Activities

In case of rural non-farm activities, government service dominates and provides a major share of income to the villages. Government jobs are sought after because of their higher payouts (despite being lower-end jobs), predictability and regularity, which increase income security. The households that hold them are therefore held in high esteem in the community. Yarn production is practised by a large number of households, but is meant mostly for self-consumption. Given the urban settlement coming up around Padi, some urban-based activities such as eateries, retail shops, and private tuitions, are also making their appearance. Given the relatively large-scale production of paddy, rice milling has also made its appearance. The major non-farm activities and their relative shares in the income are presented in Table 5.8.

Table 5.8: Distribution of Rural Non-Farm Activities

Activity	Share of HHs		Share of Income	
	Daring	Padi	Daring	Padi
Govt. service	28%	22%	28.6%	32.2%
Yarn production	26.5%	20%	0.3%	0.3%
Retail/*kirana* shops	2%	6%	0.2%	1.6%
Eateries/*dhabas*	0	4%	0	4.9
Timber trade	0	8%	0	4.9
Driver	2.4%	0	1.9%	0
Private tuitions	0	2%	0	1.04%
Rice milling	0	6%	0	0.2%

Understanding the Bottlenecks

Wet Rice Cultivation (WRC)

The major role of paddy as a rural livelihood of households in West Siang has already been discussed. Irrigation for the WRC followed in Daring and Padi is arranged by diverting the streamlets, which are ephemeral in nature. Thus irrigation largely depends on the rainwater, and so the WRC is concentrated along the valley bottoms. In many cases, the individual WRC plots are found scattered along the alluvial scree or talus slope. In such cases it is difficult to develop community irrigation projects. To practice WRC, people highly depend on hired labour from Assam, which involves extra cost for fetching labour and for paying the wages. Labour therefore remains a major bottleneck. Draught animals in many cases are also procured from Assam, which perishes due to non-adaptability and consequent sickness. No HYV seed is used in the WRC. They grow the traditional variety of rice which is called *Khampti*. Hence the problem of seeds which was a major concern in West Kameng is absent here. Similarly, other inputs such as fertilizers, pesticides, herbicides, etc., are not used extensively for this variety. Some areas close to the flood plains and along the streams are affected by flood and flash floods during heavy rainfall. Plain lands or the land for WRC are very limited, because of which some households solely depend on *jhum* cultivation.

***Jhum* Cultivation**

In Daring, chilli is grown in *jhum* fields as a cash crop. Chilly is marketed in Assam mainly in Dhemaji and Silapather towns. Thus due to the relative inaccessibility to end markets, middlemen are involved, influencing the price. In other cases, mixed cropping is the norm for *jhum*. The yield of the crops *jhum* largely depends upon the quality of the land -fresh *jhum* plots with long fallow periods produce better yield. Some households, especially those that have no male member, depend on the abandoned *jhum*fields where the yield is very low. Due to the reduced *jhum* cycle, the production in the *jhum* is decreasing. *Jhum* cultivation involves intensive fencing to ward off the animals. In some cases, the crops are reported to be completely damaged by animals like *mithun*, cattle, and other wild animals.

Orange

Orange is also marketed through middlemen. The major problem encountered here is market access. The farmers sell the fruits in the garden to the middlemen on a lump sum basis. Invariably a lower price is quoted. However, the crops are usually sold off as most of them are perishable. There are no storage and processing facilities in the area or in the vicinity. A typical disease is also reported to be occurring in the orange plant; andorange gardening requires capital investment and labour during the initial stages.

Animal Rearing

Lack of adequate veterinary services inhibits the animal husbandry sector. In most households of Padi and Daring villages, fowls are reported to have died due to disease. Similarly, the cattle especially bullocks procured from Assam are reported to be prone to diseases. Animal products mainly meat are consumed locally. Hence, market is not considered a bottleneck at the present scale of production. Piggery is actively practised, but pork meat is hardly sold outside. Diseases amongst the pigs are also lower as compared to other animals. Goat rearing is also taken up but mostly for food.

It is clear from the above that despite the remoteness and poor communications, markets, especially commodity markets, have started to play a role in the livelihoods of the households inhabiting in these areas. However, several geographical constraints inhibit further expansion of activities which are considered suitable. Lack of labour to undertake the activities in a much larger scale is a serious constraint. Importing labour is also difficult, given the strong political movement against 'outsiders'. Given such a backdrop, promoting crops with an eye towards exploiting the favourable agro-climatic and resource conditions, and not taking into cognizance this basic fact would make such strategies unsustainable.

Figure 5.3: Bottlenecks in Food Crop Production

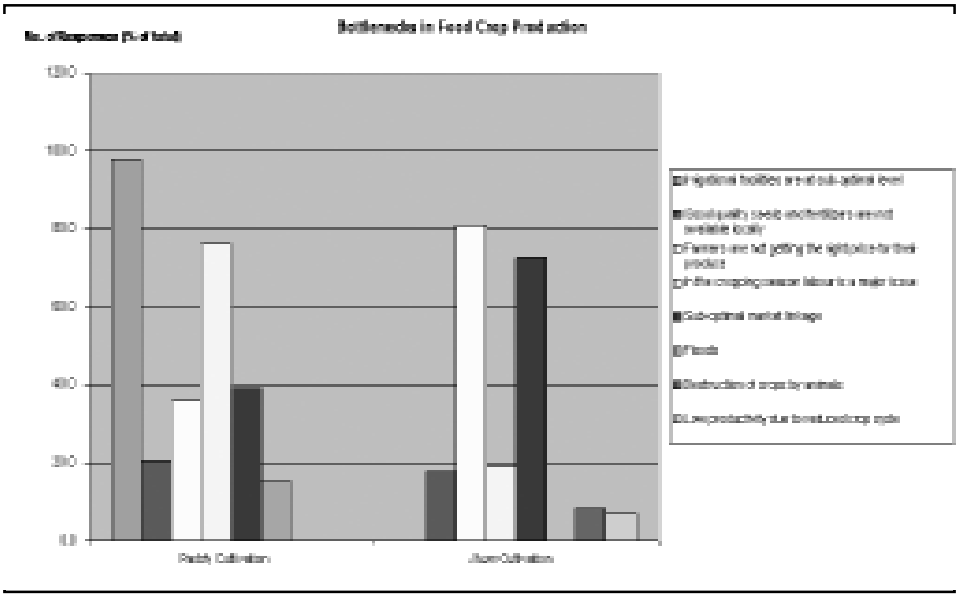
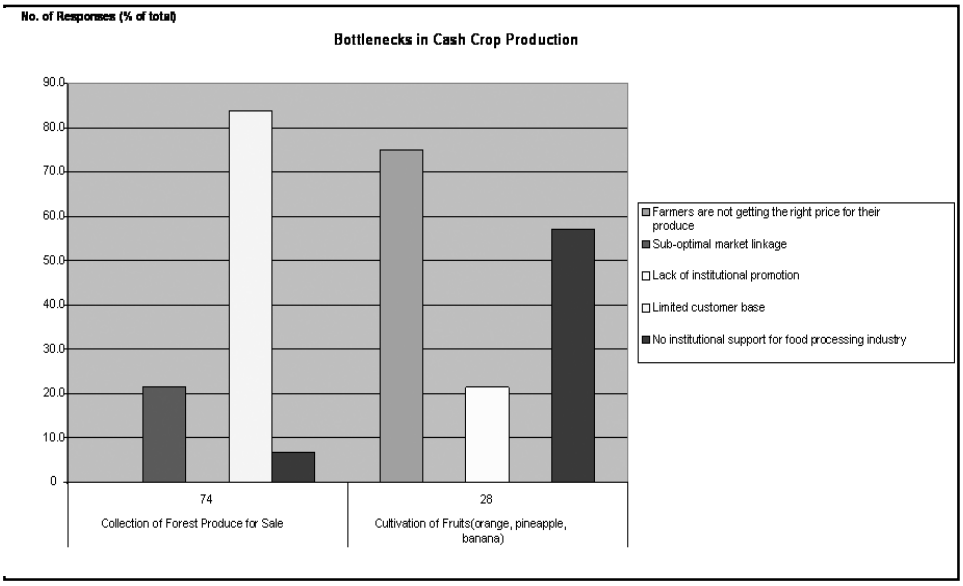


Figure 5.4: Bottlenecks in Cash Crop Production



CHAPTER - VI

Livelihood Profiles of the Forest Dwellers in the Upland Areas of Mizoram

The livelihood profiles of forest dwellers of Mizoram have been presented in this section. Analysis of primary data collected from the sample households and local markets reveals interesting features of livelihood patterns in the state. Given the diversity within the state, the data and inferences from the data have been presented district wise. An analysis of household-level endowments, followed by the analysis of the livelihood basket of forest dwellers of each district, has been made. The major livelihood activities and their share in the basket have also been captured. This indicates the activities that support the highest number of livelihoods. Similarly, the data on the scale of each activity has also been presented to give an idea about the possibilities and feasibility of promotion of certain activities on a larger scale. Bottlenecks that hinder production, productivity, and higher revenue realisation per unit have been presented so that inferences are drawn on intervention points in that particular livelihood activity.

Mamit District

The two villages studied are close to the highway from Mamit to Tripura. In fact, this is an emerging feature in Mizoram. However, these are fairly old villages. The household size in both the villages is large, with an average of seven or more members. However, the sex ratio is less than the state average in both villages though it is a little higher in Bawngva Village, compared to Darlak. The work participation rate is slightly higher than the national average and most importantly, female participation rate is much higher than the male participation rate, suggesting a very active female population in the economic sphere, engaged in various livelihood activities. The proportion of children in the villages shows a significant difference between the villages. In case of Bawngva, a significant proportion of the total population(49.2%) is children, with a lower work participation rate, as compared to Darlak; this suggests that a much higher percentage of population are dependent on family bread.

Landholding and Changes in Landholding Patterns

The size of landholding is much smaller in the studied villages in Mizoram compared to the villages in Arunachal Pradesh. The steep slopes of Mizoram hills do not permit

much of the land to be used for any sort of cultivation. Surprisingly, a large segment (almost 25% of HHs) does not have cultivable land. A small portion of them also does not have forest land. There is a historical reason for this. Darlak was a Reang village some 20-30 years back. But clashes between the Mizos and Reangs have made some of them shift to Tripura. This empty space has been gradually been taken over by the Mizos, and the consolidation is still going on. Hence, large numbers are still landless. This limits the households' ability to source income and consequently most of them would be poorer than those in villages from Arunachal Pradesh. The picture of the distribution of land amongst HHs in the two villages is shown in Table 6.1.

Table 6.1: Distribution of Land amongst the Households

(in acres)

Particulars	Darlak	Bawngva
Average land per household (acres)	3.25	3.11
Minimum land of a household	1	1
Maximum land of a household	6	5.5
Households with no cultivable land	25.7%	23.3%
Average forest land (acres)	0.88	1.23
Minimum (forest land)	0	1
Maximum (forest land)	2	3
Households with no forest land (in %)	14.3%	0%

Livestock Resources

Pigs and Poultry are the livestock assets that HHs in the sample villages own. Pigs are considered part and parcel of tribal life in Mizoram. However, in the studied villages, even pigs are not so common. Almost 65 per cent in Darlak and more than 50 per cent in Bawngva do not own pigs. The average number of pigs is only one per HH in both villages; the average unit size of poultry is 1.6 in Darlak, and 3.7 in Bawngva. Around 55 per cent of households in both villages do not own poultry. In sum, the households are poorly endowed with livestock resources.

The Livelihood Portfolio Mix

The portfolio data for the sample villages reveals that the HHs, on an average, engage in eight livelihood activities. The total number of activities stands at 30 in Darlak and 27 in Bawngva. The average annual HH income is approximately Rs.65,000, and the average income per activity per HH works out to around Rs.8200. Wage labour in government works emerges as the most pursued activity in both the villages. About 91 per cent of the HHs is dependent on wage labour as a major source of income. Cultivation

of plantation crops like ginger, chilli, sesame, and local spices comes a close second in terms of the number of HHs engaged. Fishery is also practised extensively in Darlak where there are natural ponds. Paddy and maize are the major food crops raised in both the villages. Collection of forest produce especially broomstick and bamboo are carried out by 74 per cent of households. Piggery is in the portfolio of 28 per cent HHs, whereas poultry figures in the portfolio of 36 per cent of the HHs. Fruits like lemon, bananas, etc., are also cultivated for sale. Both villages have the advantage of being located on the national highway connecting the District Headquarters of Mamit to the border towns of Tripura. This has helped provide access to markets at both the ends. The livelihood activities pursued by the HHs in the two villages and the percentage of HHs engaged in each such activity are shown in Table 6.2. Activities engaging at least 25% of the HHs are considered for the purpose.

Table 6.2: Share of Activities across Households (pursued by more than 25% HHs)

Activity	% of HHs Pursuing the activity in Mamit	Darlak (in %)	Bawngva (in%)
Wage labour in govt. works	91	97.1	96.7
Cultivation of plantation crops (local spices, ginger, chilli, sesame, etc.)	89	91.4	90.0
Cultivation of vegetables (cabbage, cauliflower, onion, radish, garlic)	84	85.7	86.7
Paddy cultivation	79	77.1	76.7
Collection of forest produce for sale	74	74.3	70.0
Collection of forest produce for home consumption	59	51.4	70.0
Cultivation of fruits (bananas, etc.)	54	60.0	53.3
Fishery	43	57.1	30.0
Maize cultivation	37	45.7	36.7
Poultry	36	25.7	56.7
Piggery	28	22.9	46.7

Scale of Activity

As many as 16 activities contribute to more than one percent of the total income of all sample households. Except for cultivation of plantation crops, no other activity contributes more than 10 per cent of total income. There is hardly any difference between the two villages when it comes to the scale or size of the activities. Except for timber

trade, the list as well as their relative share is almost the same for both the villages - timber trade, which accounts for almost eight per cent of the income in Bawngva is absent in Darlak. Table 6.3 brings out the scale of various livelihood activities in the studied villages.

Table 6.3: Scale of Various Activities across Households

Activity	Mamit (% of total)	Darlak (% of total)	Bawngva (% of total)
Cultivation of plantation crops (local spices, ginger, sesame)	28.1	25.5	30.8
Cultivation of vegetables (cabbage, cauliflower, onion, radish, garlic)	9.6	11.5	7.5
Wage labour in govt. works	7.7	7.8	7.6
Cultivation of fruits	7.2	9.0	5.3
Piggery	6.6	4.0	9.3
Fishery	5.6	7.2	3.9
Collection of forest produce for sale	5.5	5.8	5.2
Government service	4.0	3.8	4.1
Timber trade	3.8	0.0	7.9
Maize cultivation	3.7	4.1	3.3
Priesthood in religious institutions	2.4	4.6	0.0
Local transport	1.8	0.9	2.7
Cattlefor milk	1.6	2.7	0.5
Driver	1.6	1.4	1.8
Retail/*kirana* shops	1.2	1.8	0.5
Fair price shops	1.2	0.9	1.5
Total Income of the village from all activities (Rs.)	4229840	2192200	2037640

The total income from the plantation crops like ginger and sesame is significant and offers potential for expansion. Similarly, considerable income is derived from vegetables. Wage labour in government works such as road construction also emerged as a large source of cash income. Fruits such as bananas and lemons are sold outside. Fish from Darlak Village also goes to Mamit Town.

Cash Crops

In case of cash crops, it is found that the major portion of the cash income comes from cultivation of Sesame (*til*). *Jhum* lands are also used for this, and hence reduction of productivity is an issue. The produce is transported to the border towns of Tripura for onward shipment and trade. Fish and vegetables such as cabbages, cauliflower and radish are also cultivated and go to the nearest town of Mamit.

Food Crops

Paddy is the major food crop produced, closely followed by maize. Yam is also cultivated in smaller quantities for food. Paddy is cultivated in the valley regions, while maize is grown in the hilly areas, usually on *jhum* lands. Production of food is insufficient, with most HHs depending on PDS rice for more than half the year.

Rural Non-Farm Activities

In the case of rural non-farm activities, wage labour for government works holds a pre eminent position. Almost all the households practise it. This is closely followed by the selling of some minor forest products such as broom sticks and bamboo -although the income is lower, large segments of the households practise it. As the Mizo society is extremely religious, priesthood is also included in the basket of livelihood activities. There are a few retail/*kirana* shops, and a handful of households also own local transport like auto rickshaws. The major non-farm activities and their relative shares in the total income are presented in Table 6.4.

Table 6.4: Distribution of Rural Non-Farm Activities

Activity	Share of HHs (in %)			Share of Income (in %)		
	Mamit	Darlak	Bawngva	Mamit	Darlak	Bawngva
Wage labour in govt. works	96.9	97.1	96.7	7.7	7.8	7.6
Collection of forest produce for sale	72.3	74.3	70.0	5.5	5.8	5.2
Govt. service	3.1	2.9	3.3	4.0	3.8	4.1
Timber trade	3.1	0.0	6.7	3.8	0.0	7.9
Priesthood in religious institutions	1.5	2.9	0.0	2.4	4.6	0.0
Local transport	4.6	2.9	6.7	1.8	0.9	2.7
Driver	3.1	2.9	3.3	1.6	1.4	1.8
Retail/*kirana* shops	4.6	5.7	3.3	1.2	1.8	0.5
Fair price shops	3.1	2.9	3.3	1.2	0.9	1.5

Understanding the Bottlenecks

Paddy is the main food crop, which is generally cultivated in the valley. However, a variety called 'dry land rice' is also cultivated in the *jhum* fields. Maize is another crop cultivated mostly in the *jhum* fields. The major problem is the low input level due to lack of water for irrigation, which hinders expansion of production. Some amount of maize is also sold. Hence, low remunerative price is an important bottleneck. The low level of production also does not allow for full participation in the market.

Cash crops like sesame which are more durable and can be stored have input level problems including poor seed quality, non availability of fertilizers, and poor irrigation. However, output level problems of market are not so formidable. However, in case of more perishable crops like vegetables, the low consumer base of the villages and the distance from bigger markets makes the farmers sell their products at lower prices. Since land is scarce, many a time, *jhum* fields are cleared on the gentler slopes to cultivate food crops, and sometimes, cash crops. As these fields are farther away from the village and inside the denser forest areas, many a time, wild animals in search of food destroy these fields. This is a common problem faced by most villages. Furthermore, the current scale of production of the fruits also does not allow for any viable fruit processing unit to be setup.

Wage labour is much sought after, but given the high incidence of rains and less frequency of the public works, the households can afford to offer their labour only for a limited period during the year. Nevertheless, the wage rates offered and the payment terms seem to be fine with the HHs.

Figure 6.1: Bottlenecks in Food Crop Production

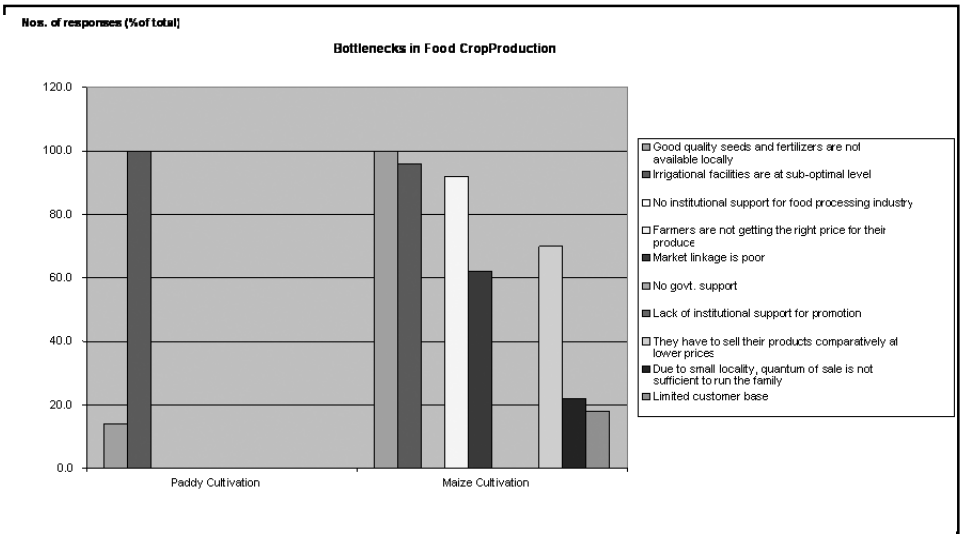
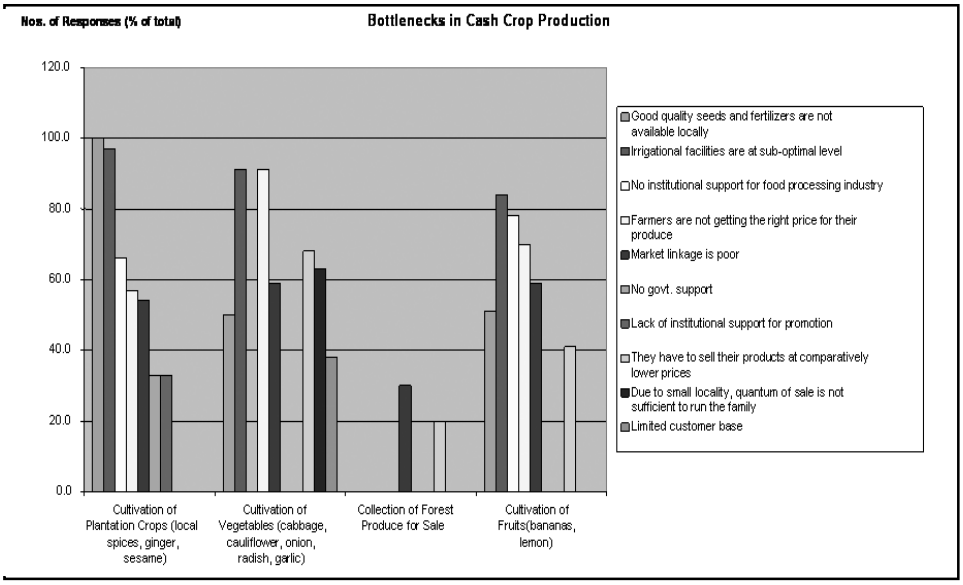


Figure 6.2: Bottlenecks in Cash Crop Production



Champhai District

The sample villages namely Hmunhmeltha and Khawbung are within a radius of 10 km of the District Headquarters at Champhai Township. One of the villages is 100 years old. It may be mentioned here that it is difficult to study older villages in Mizoram. The household size is large, with an average of 7-9 members per household. Khawbung has a favourable sex ratio of 1061 women per 1000 men. The work participation rate is slightly higher than the national average; but most importantly, female participation rate is much higher than the male participation rate in both the villages. This suggests a very active female population in the economic life of the villages. They are engaged in multiple livelihood activities. The proportion of children between the villages shows a significant difference, and Hmunhmeltha has more dependents as compared to Khawbung.

Landholding and Changes in Landholding Patterns

Land is the most visible productive asset for a forest-dwelling household. Like in the case of Mamit District, the size of landholding is extremely small as compared to those from Arunachal Pradesh. The geographical constraint of steep slopes has already been discussed. Majority of the households do not have cultivable land. In comparison, only a smaller number of households do not have access to forest land. However, the cultivable land is more equitably distributed, and the average holding is around two acres per HH, while the maximum holding is only four acres. About 68 per cent of the HHs do

not have any cultivable land. It may be mentioned here that individual landholding is a misnomer. The Village Council allocates land every year for cultivation. The holding referred in the study pertains to the holding in the current year. The distribution of land amongst the HHs is shown in Table 6.5.

Table 6.5: Distribution of Land amongst the Households

(in acres)

Particulars	Hmunhmeltha	Khawbung
Average land per household (acres)	2.17	1.8
Minimum land of a household	0	0
Maximum land of ahousehold	4	4
Households with no cultivable land	62.9%	74.3%
Average forest land (acres)	1.21	1.04
Minimum (forest land)	0	0
Maximum (forest land)	2.5	2
Households with no forest land (in %)	14.3%	31.4%

Livestock resources

Cows, pigs and poultry constitute the livestock assets of the sample HHs in Champhai District. Around 10 per cent of the HHs have more than four cows each, while 14.3 per cent of the HHs have more than four pigs. About 41 per cent of the HHs donot own pigs as an asset, while 45 per cent of HHs does not own poultry. The livestock endowments in Champhai seem to be little better than that in Mamit. However, these HHs cannot be called richly endowed either, because absence of pastures is seen as a major constraint although a few households do own a larger group of livestock.

The Livelihood Portfolio mix

A look at the data on livelihood portfolio reveals that the HHs in Champhai are engaged in around 27 activities. The average number of activities per HH is six. These HHs are slightly better placed than their counterparts in Mamit. The average annual income for the HHs is around Rs.85000 rupees in Hmunhmeltha and more than one lakh rupees in Khawbung. The activities are slightly larger in size than those in Mamit District. The average annual income of each household is also large compared to Mamit District. The livelihood activities pursued by the HHs in the two villages and the percentage of HHs engaged in each such activity are shown in Table 6.6. Activities engaging at least 25% of the HHs are considered for the purpose.

Table 6.6: Share of Activities across Households (pursued by more than 25% HHs)

Activity	% of HHs pursuing the activity in Champhai	Hmunhmeltha	Khawbung
Wage labour in govt. works	97.1	100.0	94.3
Cultivation of vegetables (cabbage, cauliflower, onion, radish, garlic)	87.1	94.3	80.0
Paddy cultivation	68.6	80.0	57.1
Piggery	50.0	48.6	51.4
Cultivation of fruits (bananas, l emon, etc.)	48.6	37.1	60.0
Cultivation of plantation crops (local spices, ginger)	40.0	40.0	40.0
Collection of forest produce for home consumption	27.1	22.9	31.4
Cattle for milk	24.3	34.3	14.3
Maize cultivation	22.9	8.6	37.1
Poultry	21.4	28.6	14.3
Tea/coffee	8.6	17.1	0.0
Private education service/tuition	8.6	8.6	8.6
Collection of forest produce for sale	8.6	14.3	2.9
Paan shops	7.1	0.0	14.3
Local transport	5.7	5.7	5.7
Goat rearing	5.7	11.4	0.0
Fair price shops	5.7	2.9	8.6
Driver	5.7	5.7	5.7

Table 6.6 points out that almost all the households are involved as labourers in government works such as road building and other community projects. Most of the other livelihood activities are primary in nature. There are as many as 10 activities in which more than 20 per cent of the HHs is engaged. Cultivation of vegetables is taken up in small quantities by the HHs, while paddy is practised extensively. Champhai is

referred to as the "Rice Bowl of Mizoram", as it comprises plain lands. Despite a large number of households practising agriculture, the production is just enough to meet the consumption requirements of the households given the very small size of landholdings. Similarly, although a large number of households own pigs, these are mostly limited to one or two and meant for household consumption only. Forests are used both for home consumption as well as for fuel. Besides, forest products such as timber and bamboo are sold also outside. Maize is another crop raised for food. Some rural non-farm activities such as running tea stalls and offering private tuitions are also pursued by households.

Scale of Activity

Wage labour continues to dominate as a source of income. Despite its irregularity, it still gives the highest income to the households. The data on various activities in the total income of the two villages reveal that wage labour in government works accounts for about 19-20 per cent of the total income in both the villages, as well as in the district as a whole. It may be noted that 97 per cent of the HHs engage in wage labour in government works. Cultivation of vegetables comes next, accounting for 14 per cent of the income. This is followed by cultivation of fruits, which contributes to 12 per of total income of HHs. Piggery also brings incomes to some households. Government service is also another source of income in one village. The scale of various activities as measured by their contribution to the total of all the HHs is given in Table 6.7.

Cash Crops

In case of cash crops, it is found that the major portion of the income comes from the cultivation of vegetables and local fruits. Vegetables being perishable due to their very low shelf life need to be sold very quickly. With low production, it is only possible to dispose off in a market which is close by. Unfortunately, most of the markets are far off at least in terms of travel time required. Ginger fetches much lower price and the pricing is determined by organised trading lobby sitting in distant places.

Food Crops

Paddy is the major food crop, closely followed by maize. However, given the very tiny holdings, its production is not even able to meet the food requirements. Paddy is cultivated in the valley regions, and maize is cultivated in the hilly parts, usually on *jhum* lands.

Table 6.7: Scale of Activities across Households (% of total)

Activity	Champhai District	Hmunhmeltha	Khawbung
Wage labour in govt. works	19.5	20.6	18.7
Cultivation of vegetables (cabbage, cauliflower, onion, radish, garlic)	13.9	18.0	10.7
Cultivation of fruits (bananas, lemon)	11.9	7.8	15.2
Piggery	9.6	10.5	8.8
Cattle for milk	6.6	10.3	3.7
Govt. service	6.0	0.0	10.8
Cultivation of plantation crops (local spices, ginger, etc.)	5.6	6.1	5.2
Fair price shops	4.6	2.0	6.6
Local transport	2.2	2.4	2.1
Driver	2.1	2.4	2.0
Retail/*kirana* shops	2.1	3.0	1.3
Paan shops	1.9	0.0	3.3
Private education service/tuition	1.8	1.2	2.2
Collection of forest produce for sale	1.8	3.4	0.5
Eateries/ *dhabas*	1.6	1.0	2.1
Total Income (Rs.)	6753800	2966300	3787500

Rural Non-Farm activities

In the case of rural non-farm activities, wage labour for government works is the most important source of income. Almost all the households practise it. It also provides the maximum income. This is closely followed by government service, although only a few households have access to it. Selling of forest produce such as bamboo and broom sticks is also taken up by some households. Given the importance attached to literacy and the poor state of education imparted in the public schools, private tuitions are also expected to flourish. Almost all the rural non-farm activities are service based with complete absence of any cottage industry or home-based manufacturing. Even weaving does not figure in any of the major activities. Thanks to the active participation of households in the rural non-farm activities, the average income has gone up. Perhaps the predictability and the higher quantum of income from these might have spurred the growth of the other services.

Table 6.8: Distribution of Rural Non-Farm Activities

Activity	Share of HHs			Share of Income		
	Champhai	Hmunh-meltha	Khawbung	Champhai	Hmunh-meltha	Khawbung
Wage labour in govt. works	97.1	100.0	94.3	19.5	20.6	18.7
Govt. service	4.3	0.0	8.6	6.0	0.0	10.8
Fair price shops	5.7	2.9	8.6	4.6	2.0	6.6
Local transport	5.7	5.7	5.7	2.2	2.4	2.1
Driver	5.7	5.7	5.7	2.1	2.4	2.0
Retail/*kirana* shops	4.3	5.7	2.9	2.1	3.0	1.3
Paan shops	7.1	0.0	14.3	1.9	0.0	3.3
Private education service/tuition	8.6	8.6	8.6	1.8	1.2	2.2
Collection of forest produce for sale	8.6	14.3	2.9	1.8	3.4	0.5
Eateries/*dhabas*	2.9	2.9	2.9	1.6	1.0	2.1

Understanding the Bottlenecks

Irrigation is one of the major bottlenecks for expansion of either food crops or cash crops. However, given the higher production of paddy in Champhai, labour shortage is faced by some households. Significantly, the households face shortage of capital in expanding the production of fruits. However, none of the households either in Arunachal or in Mamit District of Mizoram have cited this as a bottleneck. This could possibly indicate that there is potential for increase in production. But it may also be due to the aggressive promotion of cultivation of fruits by the agriculture department by inducement of subsidy. But the farmers must be linked to a bank for the rest of the finance to flow in. Vegetables have a similar constraint - of very little production,and can be sold only in the local markets. Bottlenecks in other activities are similar and have been described in the earlier sections for other districts. The Figures 6.3 and 6.4 give a picture of the bottlenecks in food and cash crops cultivation and their severity.

Figure 6.3: Bottlenecks in Food Crop Production

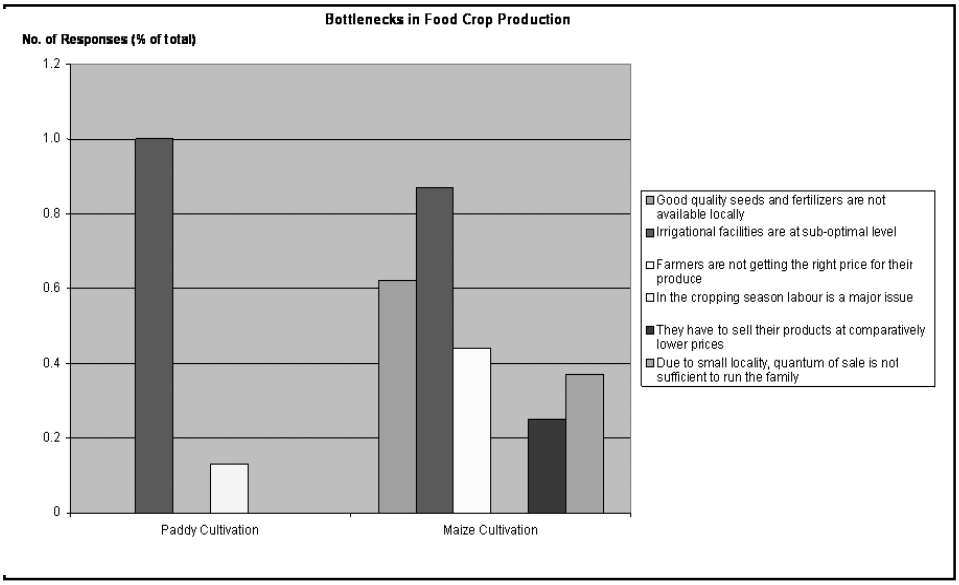
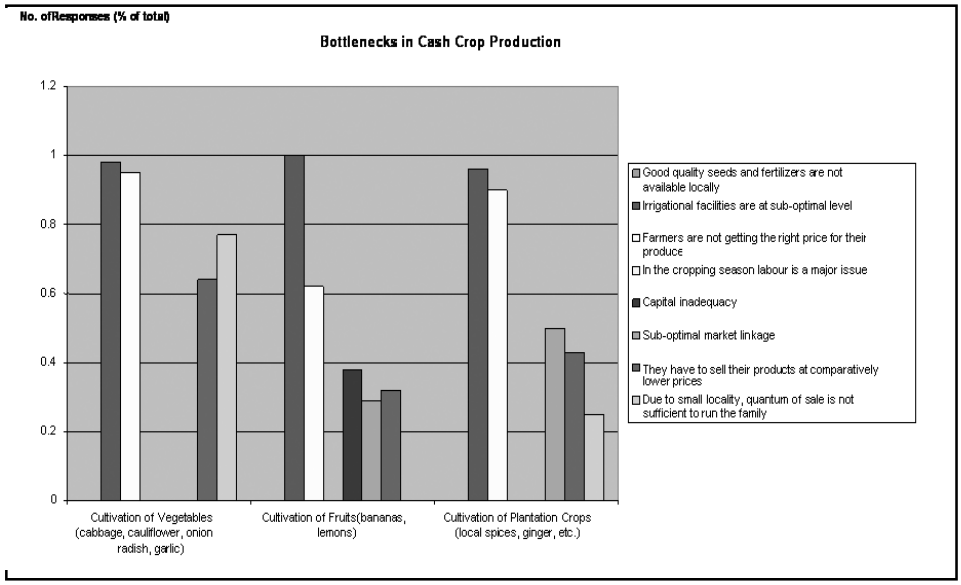


Figure 6.4 Bottlenecks in Cash Crop Production



CHAPTER - VII

Livelihood Profiles of the Forest Dwellers in the Upland Areas of Meghalaya

The livelihood profiles of the forest dwellers of Meghalaya have been presented in this section. An analysis of the primary data collected from the sample households and local markets revealed interesting features of livelihood patterns in the state. Since the fieldwork was conducted in sample households in the selected villages in one district, the data reflects the livelihood situation pertaining to that district only. An analysis of household-level endowments, followed by the analysis of the livelihood basket of the forest dwellers in the district was made. The major livelihood activities and their share in the basket have also been captured. This indicates the activities that support the highest number of livelihoods. Similarly, the data on scale for each activity has also been presented to give an idea about the possibilities and feasibility of promotion of certain activities on a larger scale. Bottlenecks that hinder production, productivity, and higher revenue realisation per unit have also been presented so that inferences are drawn on intervention points in that particular livelihood activity.

West Garo Hills District

The data on the basic profile of the sampled villages of West Garo Hills in Meghalaya reveals that the household size is fairly large with an average of seven members per family in both villages. The villages have a very favourable sex ratio, with around 1055 women per 1000 men. The work participation rate is significantly high at around 48 per cent for men and 58 per cent for women. Like the other two states, the female participation rate is much higher than that of the males. This high participation rate suggests that a cash economy has come to stay in these parts. It has already been mentioned in the Section 2.0 that a sizeable quantity of plantation corps like areca nut, pineapple, cashew nuts, rubber, etc., are cultivated in these parts, where both female and male can take part in equally. Minerals like coal also are being mined here to be carried to Assam and Bangladesh. Thus, the cash economy is more commonly placed here relative to the other sites covered in Arunachal Pradesh and Mizoram. The ratio of dependent population of children is also high in this district.

Landholding and Changes in Landholding Patterns

The defining feature of landholding in Meghalaya is that the average holding is very high. The distribution of land is shown in Table 7.1. The average landholding under each household is 14.6 acres in Rengsangre, and 21.2 acres for Tapragre Village. In fact, the average landholding per household in Tapragre is the highest amongst all the villages studied in the three states. The percentage of HHs utilising forest land for crop raising purposes is also higher in Meghalaya at around 28 per cent. However, the difference between the maximum and the minimum holding continues to expand, indicating increasing inequity in possession of productive land.

Table 7.1: Distribution of Land amongst the Households

(in acres)

Particulars	Rengsangre	Tapragre
Average land per household (acres)	14.62	21.25
Minimum land of a household	2	4.5
Maximum land of a household	69	44
Households with no cultivable land	1.4%	0
Average forest land (acres)	1.58	3.7
Minimum (forest land)	0	0
Maximum (forest land)	30	22
Households with no forest land (in %)	64.3%	50.0%

7.1.2 Livestock Resources

Cows are the most preferred livestock assets in the studied households. Around 65 per cent of the HHs own cows, though barely 20 per cent have more than four units. Surprisingly, pigs are very less in number with an average of less than one per HH in both villages. Almost 50 per cent of the HHs do not own pigs. As far as poultry birds are concerned, the average stock size is around six per HH. Most of the livestock is for home consumption and very few are sold outside.

7.1.3 The Livelihood Portfolio Mix

The households pursue a number of economic activities for their livelihoods. Each household has at least 8 to 9 economic activities on an average. Plantation crops dominate the economic activities practised by the households -almost all households practise it. They cultivate a variety of plantation crops including local spices, areca nut, ginger, pineapples and also tea as there is a tea factory at Rongram. Vegetables are also cultivated widely although mostly for home consumption. Maize and paddy are the principal food crops. Paddy is cultivated in the plain areas while maize is cultivated mostly in the

jhum fields. Millet is another food crop cultivated by households in areas where there is less water. A large number of households also earn their livelihood as wage labourers from government works. Unlike in other sites, individual labour in agricultural farms, particularly in plantations, are also another source of livelihood for the households.

Forest is used for food, fodder and fuel. Fruits like pineapples are cultivated by many households. Around 20 per cent of the HHs have a member employed in government service. The average HH income is around Rs.54,000 per annum. The size of the activities is fairly small, as large numbers of these are taken up by females. The average annual income is also smaller than those in Arunachal Pradesh and Mizoram. The livelihood activities pursued by the HHs in the two villages and the percentage of HHs engaged in each such activity are shown in Table 7.2. Activities engaging at least 25% of the HHs are considered for the purpose.

Table 7.2: Share of Activities across Households (pursued by more than 25% HHs)

Activity	% of HHs pursuing the activity in West Garo Hills	Rengsangre	Tapragre
Cultivation of plantation crops (local spices, ginger, areca nut, tea, rubber, etc.)	97.0	97.1	96.7
Maize cultivation	91.0	94.3	83.3
Cultivation of vegetables (cabbage, cauliflower, onion, radish, garlic)	91.0	91.4	90.0
Wage labour in govt. works	82.0	84.3	76.7
Paddy cultivation	80.0	78.6	83.3
Collection of forest produce for home consumption	75.0	71.4	83.3
Poultry	57.0	58.6	53.3
Cultivation of fruits	52.0	54.3	46.7
Individual wage labour	39.0	35.7	46.7
Cultivation of other cereal crops	37.0	52.9	0.0
Piggery	36.0	42.9	20.0
Millet	25.0	12.9	53.3
Govt. service	20.0	18.6	23.3
Tea/coffee	13.0	14.3	10.0

Scale of Activity

Table 7.3 presents the share of various activities in the total income of the villages. Government service is seen to dominate the income that a household receives. Though members from 20 per cent of the HHs are in government service, it only accounts for 30 per cent of the total income. Individual labour in agricultural farms comes next, suggesting that plantation crops do bring in cash which could be paid to the labourers. Trading of agricultural produce particularly plantation crops provides income. Three out of the top six activities in terms of share are associated with plantation crops. The fact that vegetables and fruits give less income(3.8 per cent) suggests that production is meant only for local market consumption.

Table 7.3: Scale of Activities across Households (% of total)

Activity	West Garo Hills	Rengsangre	Tapragre
Govt. service	29.8	26.5	36.2
Individual wage labour	10.0	6.9	16.0
Cultivation of plantation crops (local spices, ginger, areca nut, etc.)	9.7	9.6	10.0
Paddy cultivation	7.0	4.1	12.8
Wage labour in govt. works	4.7	5.1	3.9
Trade – plantation crops	4.6	7.0	0.0
Piggery	4.2	5.4	1.7
Maize cultivation	3.9	4.5	2.6
Cultivation of vegetables (cabbage, cauliflower, onion, radish, garlic)	3.8	4.1	3.3
Tea/coffee	3.1	4.6	0.1
Cattle for milk	2.5	3.8	0.0
Retail/*kirana* shops	2.5	3.5	0.5
Cultivation of fruits	2.1	2.7	1.1
Collection of forest produce for home consumption	2.1	2.2	1.8
Private education service/tuition	2.1	0.0	6.1
Traditional medicine	1.9	2.9	0.0
Poultry	1.3	1.4	1.0
Driver	1.0	0.9	1.4
Total Income (Rs.)	5247696	3474856	1772840

Cash Crops

In case of cash crops, it is found that the major portion of the income comes from plantation crops. In the case of Rengsangre, tea cultivation is taken up primarily as there is a tea factory nearby at Rongram. In addition, areca nut is produced by almost all the households. Traders from the plain areas come up to collect the produce from the local markets called "*haats*". Areca nut is in high demand for the production of "*supari*" and "*gutka*". Final processing centres are usually located in Northern India, while intermediate processing such as drying is done in the foothills alongside the plains of Assam, in places like Krishnai, Kharupetia, etc.

Food Crops

Paddy is the major food crop under cultivation, closely followed by maize. Paddy is cultivated in the plains with most of the production meeting only the home consumption needs.

Rural Non-Farm Activities

In the case of rural non-farm activities, government service is the most important source of income. However, only 20 per cent of the households have access to it. Wage labour in farms and wage labour in government works provide substantial livelihood opportunities for a large segment of the HHs, and trading in plantation crops also provide livelihoods to many households. Unlike in the other sites, very few non-farm activities are associated with pure service like retail shops, tuitions, etc. Most of them are directly related to the farm; for e.g., wage labour and trading in plantation crops. However, as already discussed, the incomes are small and hence the total average income is fairly small in comparison to some other sites. The contribution of non-farm activities to employment and income is presented in Table 7.4.

Table 7.4: Distribution of Rural Non-Farm Activities

Activity	Share of HHs			Share of Income		
	West Garo Hills	Rengsangre	Tapra Adla	West Garo Hills	Rengsangre	Tapragre
Govt. service	20.0	18.6	23.3	29.8	26.5	36.2
Individual wage labour	39.0	35.7	46.7	10.0	6.9	16.0
Wage labour in govt. works	82.0	84.3	76.7	4.7	5.1	3.9
Trade – plantation crops	8.0	11.4	0.0	4.6	7.0	0.0
Tea/coffee	13.0	14.3	10.0	3.1	4.6	0.1
Retail/*kirana* shops	5.0	4.3	6.7	2.5	3.5	0.5
Private education service/tuition	1.0	0.0	3.3	2.1	0.0	6.1
Driver	2.0	1.4	3.3	1.0	0.9	1.4

Understanding the Bottlenecks

Pest attacks and destruction of crops by animals are the major bottlenecks for raising crops in here. Destruction of crops by animals is more pronounced in case of cash crops as most of them are cultivated in the *jhum* fields after clearing the forest lands -these are usually far away from the village. Wild animals therefore create havoc especially when the crops are ready for harvest. Pest attack is another important constraint to production. Unavailability of professionals in the agricultural department, who can offer advice on the treatment against various pests, is a major constraint.. The villagers therefore rely mostly on indigenous pest treatment, which sometimes does not give the desired outcome, leading to low returns. Besides traders from the valley usually form a cartel and control the prices. The usual practice of providing cash at the beginning of season on a predetermined price also is practised widely causing distress to farmers. Further, loss of soil fertility due to dwindling *jhum* cycle is also perceived as a bottleneck. The introduction of plantation crops in *jhum* lands, replacing the practice of mixed cropping has added to the fertility dimension. Mixed cropping method was both a giver and a taker, replenishing a part of the soil nutrients in the crop cycle itself. Figures 7.1 and 7.2 give a picture of various bottlenecks encountered and their relative influence in farmers' decision making and choice.

Figure 7.1: Bottlenecks in Food Crop Production

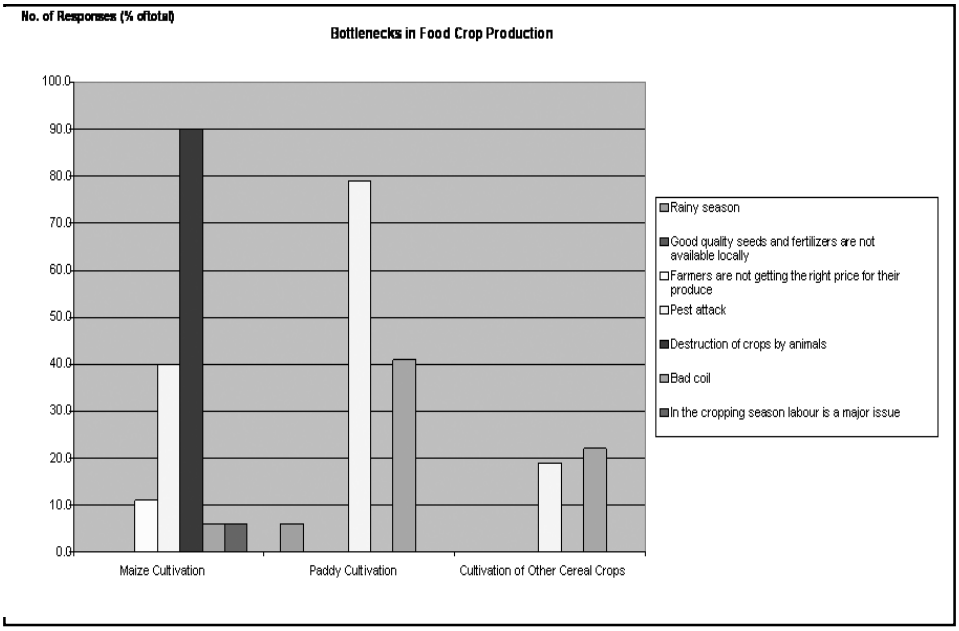
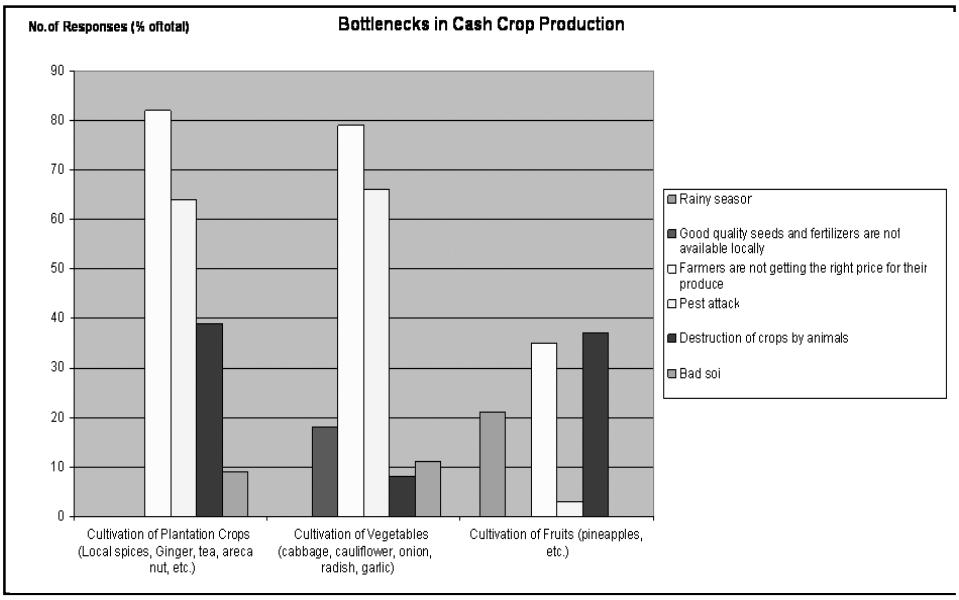


Figure 7.2: Bottlenecks in Cash Crop Production



CHAPTER - VIII
Summary of Findings

The livelihood portfolio of the forest dwellers residing in the upland areas of the three states studied has been presented in the previous chapters. There are some interesting similarities across states; yet there are obvious differences as expected in a diverse region. The economy in all the three states is transiting from a subsistence-based to a more market-determined one, though the pace and path travelled is significantly different from one state to another. The changing face of poverty and its causative factors offer interesting lessons. The management of natural resources, especially land, as determined in a subsistence food producing economy format needs revisiting since more and more cash-yielding crops are introduced in the region.

The Portfolio

Collection of forest produce for food, fuel and fodder remains an important portfolio in the livelihood basket of forest dwellers. This is most prominent in Arunachal Pradesh and least prominent in Meghalaya; this also favourably correlates with the extent and quality of forests in the states. Forests in Arunachal are rich and varied and hence more productive. In Mizoram, the dependency is more on cash and less on subsistence. Hence, dependency on forests for cash-yielding bamboo and broom grass is more in this state, than on meeting subsistence needs. In Meghalaya, the dependency on forests is more for cultivating forest lands. In fact, more than 84 per cent of this state's land is officially forest land. Hence, every piece of land cultivated is forest land.

Cultivation of plantation crops and vegetables are the two common portfolios in the livelihood basket of forest dwellers across the three states. These two invariably find place in the top five portfolios of forest-dwelling households in the region. In terms of share of income, cultivation of plantation crops contributes to 10-14 per cent of the household income. The related activity namely "trade in plantation crops" accounts for 4.6 per cent of the income in Meghalaya. Vegetables cultivation as a livelihood is almost similar in the three states indicating the market-driven nature of this activity. It also indicates that there is a demand for seeds. This is corroborated by the market and bottlenecks data. Availability of quality seeds locally emerged as the most referred bottleneck in cultivation of crops.

Wage labour in government works has emerged as a major livelihood portfolio accounting for 20 per cent of household income in Mizoram. About 91 per cent of the households are engaged in this; in Meghalaya, wage labour has a share of 4.7 per cent, while in Arunachal, it is not a major livelihood activity. The increasing share of wage labour in government works especially in Mizoram indicates higher level of rural unemployment. It also refers to the reducing capacity of agriculture to absorb locally available labour. In Arunachal this productive labour force is engaged in forest produce collection whereas the same labour force in Meghalaya is to some extent absorbed in plantations. Government service is in the portfolio of 20 per cent of households and accounts for 30 per cent of the income. An important feature of this is that it cuts across states and villages.

It is observed that in none of the three states, rearing of livestock has emerged as one of the top five portfolios. The reared livestock include *mithun* and yak in Arunachal; pigs in Mizoram; and pigs and cattle in Meghalaya. But what is of relevance is the unit size of the stock. In none of the studied villages, pig is reared commercially. In Mizoram, the unit size is less than one whereas the same for Meghalaya is less than two.

The economy

The economy in the three states is reasonably diversified around land. Though land based, it is not a subsistence economy. There is a reasonable degree of cash orientation. Geography, terrain and poor infrastructure have not deterred the farmers from producing crops essentially meant for the market. Partially, this can be attributed to state sponsored and supported programmes having a subsidy component. Agriculture and horticulture departments and externally driven projects have promoted certain crops in a big way. But the farmers' audacity and adaptation needs to be respected. Moreover, there is hardly any state intervention of scale on the marketing side. At least this is something that was never mentioned by the studied households in spite of specific probing. Hence, this transition from food producing subsistence production system to cash economy has been the contribution of the alliance between farmers and traders.

Another redeeming feature of the economy is that livestock is reared for meeting subsistence requirements and not for commercial purposes. This finding of the study is in sharp contrast to common belief about the North East and the forest dwellers. Manufacturing is almost absent in the livelihood portfolio of studied households. This points to the difficulties in aggregation of produce due to the difficult geography and poor physical infrastructure. It is a case of thousand niches moving in diverging directions. Hence the scale required for manufacturing is not happening. Closed plywood and wood-based units are the only symbols of manufacturing in the study areas.

The service sector though present is not diversified. Even transport and repair do not come anywhere near viability and visibility. However, trading of plantation crops and vegetables is coming up and the forest dweller farmer has started taking interest and a share in this segment. But the transition in Mizoram seems to be a little sharp. Farmers turning into wage labourers in government works at such scale, points to the state of agrarian economy in the state. This also indicates that the forest dwellers are fast becoming non-forest dwellers in this particular state.

The Changing Poverty Scenario

Wealth and affluence of forest dwellers in a land-based economy such as the North East are directly related to the quantity and quality of land one gets for productive purposes. In all the studied states, land ownership and management is in the hands of traditional institutions. The introduction of plantation crops in a big way has created a dilemma for these traditional institutions. Plantation crops due to longer gestation period and repetitive yields require the land to be with the farmer over long periods. This has reduced the availability of land to be distributed for productive purposes especially for food production. This has seriously impinged on the food economy and security of the households. Hence, the dependency on public distribution system has increased manifold in recent years. Interestingly, Arunachal villages considered least developed are least food deficient. But there has not been a commensurate increase in cash income which would enhance the ability to purchase food especially for Mizoram. Though the BPL data presented in the methodology section reveals almost equal percentage of BPL households in all the three studied states, the study insights bring in a different dimension of poverty: the resource-poor forest dwellers of Mizoram. The same forest dwellers in Arunachal import labour for paddy and vegetable cultivation. Forest dwellers of Meghalaya because of its relative accessibility to Assam plains have been able to fetch a better price for select plantation crops. Hence it is not surprising to have higher household income and lesser number of poor where the average landholding is higher.About91 per cent of the forest-dwelling households seeking wage labour in government works as a primary occupation is the biggest indicator of the nature of poverty in Mizoram.

The Opportunities

The inferences that can be drawn from the data are as follows:

- Plantation sector is most developed in Meghalaya with its well-established value chain. The product basket is there; cultivation practices are nurtured, and trade channels are visible. The major bottleneck in production is pest management.

- Vegetable cultivation is widespread amongst the forest dwellers given the small

pieces of land available for earning a livelihood. Yet the support system is non-existent for reasonable expansion of this in the local area. Quality seeds, fertilisers, and extension services are the critical factors for making this a large livelihood option.

- Wage labour is finally finding its way into the North East with largely urbanised Mizoram creating opportunities. However, unless the local production system is revived, the dependency on the government for menial jobs and wages can create a serious livelihood crisis in the long run. This is more so in an economy bereft of manufacturing as well.

- Forest dwellers in Arunachal Pradesh are still largely dependent on land for food and cash whereas the forest dwellers in Mizoram has moved farthest from forest dependency.

- Livestock is not reared commercially by the forest dwellers. Non-availability of pasture land is the principal bottleneck; In Mizoram, availability of large land near the home is also another problem. Absence of veterinary services is another constraint.

Hence, we see that the opportunities for forest dwellers lie in both farm and off farm sectors. A diversified local economy model with different bundles of products would have to be designed. A combination of food, vegetable and plantation crops need to be worked out. Any promotion of livestock would require further probing. Non-farm opportunities though not achieved to scale by the standard of other parts of the country are growing consistently. Repair and education services are beginning to make marks in states like Mizoram and Meghalaya. Detailed recommendations are mentioned in RULNR- CESS Policy Brief No. 3 June 2011.

CHAPTER - IX
Conclusions

It is quite evident from the study that each of the areas studied is unique in terms of physiographic, social, cultural and economic factors. The response of the people to the environment has also been different in terms of the livelihood mix based on the opportunities and the risks to be exploited and managed. Given the major constraint in terms of physical resource, the activities are mostly honey-bee type, which meet their consumption needs, while some of it goes out to be sold in the market.

One of the major bottlenecks is the lack of water to irrigate the agricultural fields. Given the terrain this would continue to be so, although innovative farming techniques such as terrace cultivation have the potential to augment production. However, it would also mean reduction of the forests which in all the cases have been the most important source for food, fodder and fuel of the household. Reduction in forest cover without a providing alternative sustainable means of livelihoods could be disastrous for these communities particularly the poor and the vulnerable.

One of the important strategies pursued by most of the state governments has to be to induce the households to move to high value exotic crops or horticultural crops. While introduction of the exotic crops can have disastrous effects on the environment and is definitely not sustainable even in the medium term, it is the problem of serious labour shortage which would not make it feasible to have these commercial crops expanded on a large scale. Almost in all the cases, agricultural labour shortages were cited as a major bottleneck for expanding production. This problem is more acute in Mizoram and Arunachal Pradesh because the inner-line restrictions do not allow free movement of people. The identity politics promoted by most political parties also acts as a deterrent for movement of labour.

Physical infrastructure such as roads does serve as a connector to markets and has facilitated the commercialization of agriculture to some extent. However, wage labour in public projects continues to serve as a means of livelihood to many households. Given such diversity, the households have evolved unique mechanisms of livelihood mix which also take care of their risks. This has led them to have numerous activities

but with very little quantity from each of them. This small agricultural production units dispersed over a large area makes it very difficult for aggregation and further trading to markets outside.

Given such a scenario, the strategy to be adopted for livelihood intervention should naturally follow the development of the "local economy". This strategy would ensure that it reinforces the traditional systems and also builds upon people's initiative. It would be highly people-centred and also participative in nature. This could be dovetailed with the sub-sector approach in areas wherever commercialization has started occurring. As a result, building up the value chain would be more feasible and also more people friendly, rather than implanting systems and products which are alien to the community.

*****

Annexure

HOUSEHOLD PORTFOLIO MAPPING FORMAT

1. Name of the village/habitation:

2. Names of the Male and Female Heads of the Household:

3. Family size and composition: M F C

4. Name of the tribe/sub-tribe:

5. Endowments of the household:

   i. Land in acres: Homestead Cultivated
   Fallow

   ii. Water bodies(personal ponds)

   iii. Livestock (stock, quantity, breed)

Sl. No.	Name of the livelihood activity	Who within the family is engaged	Average days of involvement	Seasonality	Approx annual income from the activity in INR	Major bottlenecks

Person collecting the data:

Date of data collection:

FORMAT FOR MARKET DATA COLLECTION

1. Name of the market
2. Frequency and duration
3. Villages/habitations serviced by the market
4. Distance of the farthest habitation
5. Total population serviced by the market (approx.)
6. Who owns/manages the market
7. Date of visit
8. Time spent in the market: From To

Format 1: Size and Players

Sl. No.	Name of the goods/ service traded	Space for tally mark (one for every shop)	Total no. of shops	Comes in	Goes out
1	Maize				
2	Potato				
3	Onion				
4	Ginger				
5	Turmeric				
6	Pineapple				
7	Bamboo shoots/fern shoots				
8	Yams and tubers				
9	Wild fruits				
10	Seeds				
11	Agriculture implements				
12	Piglets				
13	Grocery items				
14	Clothes				
15	Utensils(wooden, metal ware)				

Format 2: Local Markets: What Comes In?

Sl. No.	Goods/services used but not produced locally	Annual consumption in the area			Local production
		Quantity	Price/ Unit	Total Value	
1	Potato				
2	Fish				Seasonal small fishes
3	Biscuits				One bakery in the District HQ produces small quantities

Format 3: Local Markets: What Can Go Out?

Sl. No.	Goods/services produced locally and are surplus	Annual production in the area			Where demanded?
		Quantity	Price/ Unit	Total Value	
1	Turmeric				
2					
3	Dry fish				

Person collecting the data:

Date of data collection: