Governance of Forest Resources and Sustainable Livelihoods: Analysing the Implications of the Logging Ban on Rural Household Strategies in Meghalaya, India

Thesis submitted in partial fulfilment for the requirements of M.Phil. in Development Studies

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Abstract

There is a growing international concern about the depletion of forest resources and some states are using logging bans to control deforestation and promote conservation. But these bans are clumsy and often ineffective and are seen as top-down control by big states on small forest users. Moreover, some experts argue that these logging bans damage poor people's livelihoods in the remote areas.

In response, this research has contributed to debates about the governance of forest resources and sustainable livelihoods in general by examining a specific case study on how the Supreme Court of India's logging ban has impacted the household strategies of the indigenous Khasi people in the State of Meghalaya in North East India. The central research question is: How has the logging ban affected household behaviour and what does this change tell us about theories of adaptation and sustainable livelihoods? The analysis focused on two relevant concepts: Logging Bans and Sustainable Livelihoods (SL). Using the SL Framework, the research followed qualitative methods using focus group interviews and household surveys from six villages in two clusters located in the West Khasi Hills District to document land use change, identify dominant patterns of forest-use, examine variations in resource dependency among the local populace, and identify the link between livelihood strategies and adaptations.

The research found that the logging ban had a negative impact on the social life and structure of the households, on their access to environmental and economic resources, and on the combined purposes of protecting forests and livelihoods. Building on local people's adaptation to the logging ban which showed a clear link to their livelihood strategies, the research also concluded that strong institutions at community and state levels are required to generate practical actions that are required to safeguard local livelihoods and ensure environmental sustainability.

Acknowledgements

The research was accomplished with the support of friends and colleagues. Initially, I would like to thank all the people I met in the six villages that I visited in connection with this research who generously shared their time and hospitality with me during my fieldwork. I want to thank my family for supporting me all the way in completing my work.

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Abbreviations

ATMM	Association of Timber Merchants in Meghalaya
BDO	Block Development Office
CIFOR	Centre for International Forestry Research
CF	Community Forestry
CSD	Commission on Sustainable Development
ADC	Autonomous District Council
DFID	Department for International Development
FAO	Food and Agricultural Organisation of the UN
FDA	Forest Development Agency
FSI	Forest Service of India
GOI	Government of India
GOM	Government of Meghalaya
ICDP	Integrated Conservation and Development Projects
IFAD	International Fund for Agricultural Development
IGO	Inter Governmental Organisations
IIRS	Indian Institute of Remote Sensing
IUCN	World Conservation Union
JFM	Joint Forest Management
JFMC	Joint Forest Management Committee
MLA	Meghalaya Legislative Assembly
MoEF	Ministry of Environment and Forests
NaRM	Natural Resource Management Group
NEC	North Eastern Council
NEHU	North Easter Hill University
NER	North Eastern Region
NIPAS	National Integrated Protected Area System
NFCP	National Forest Conservation Programme
NCA	National Commission of Agriculture
NGO	Non Governmental Organisation
NTFP	Non Timber Forest Product
PHE	Public Health Engineering
PRA	Participatory Rural Appraisal
PWD	Public Works Department
PSC	Population Supporting Capacity
SCI	Supreme Court of India
SFA	State Forestry Administration
SFM	Sustainable Forest Management
SHG	Self Help Group
SLA	Sustainable Livelihood Approach
SME	Small and Medium Size Industries
SWOT	Strength Weakness Opportunities Threats
TLA	Timber Licensing Agreement
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNRISD	United Nations Research Institute for Social Development
WB	World Bank

Chapter I

Introduction

The governance and management of forests and other natural resources have become a dominant theme in development studies. For most people living in the world's rural areas especially the poor, forests and trees are the sources of food, fuel, fodder, medicines and building materials. According to the FAO about 1.6 billion of the world's population depend on forests resources for their livelihoods and 1.2 billion people in developing countries use trees to generate food and sustain their livelihoods.[1]

There have been many debates about the importance of involving local forest users whose livelihoods are derived from forest resources in forest management. However, there is still no clear agreement on how their participation can be effectively facilitated. The livelihood decisions of the poor even in the most remote parts of the world are increasingly being affected by policies, institutions and processes that are made by international and national and sub-national levels of governments in distant places.

Experts say that there are various problems relating to forest governance such as corruption by local enforcement authorities, illegal logging by different actors, discontentment among local forest users, lost of forest cover and others. Some solutions to the said problems have been proposed such as imposing logging bans, strict regulations and control of deforestation in state and publicly owned forestlands.

Logging is defined as the process required to bring all or a portion of a tree from the stump to the mill facilities. Logging (tree harvesting) process is clustered into tree

[1] See FAO community-based forest enterprises. http://www.fao.org/forestry/site/25491/en

conversion, woods transport (off-road transportation), landing operations (wood transfer), transport from landing to mill facility (truck, water, or rail), and unloading at the mill facility (wood transfer).[2]

In this case, the ones who are doing the logging are the poor people living in the remote areas of West Khasi Hills in Meghalaya, India, whose livelihoods depend on timber trade and its related businesses. The people who are suppose to inspect and control such logging activities are the forest rangers and officials working in the Forest and Environment Department of the Government of Meghalaya and the Ministry of Environment and Forest, Government of India, pursuant to the Supreme Court Order of 12 December 1996 banning timber trade and logging.

However, such solutions have resulted in dilemmas relating to top-down control by the big state on little forest users, lack of awareness among the public of forest regulations and lack of involvement of local forest users in decision making processes especially in places that have weak governance structures and institutions to implement forest policies.

In response, this thesis will answer the following question:
What kind of institutional arrangements exist or can be developed as solutions for better management of forest resources in a way that ensures a supportive environment for poor people to secure their livelihoods?

[2] See Logging at http://www.answers.com/topic/logging?cat=biz-fin

The thesis used qualitative methods such as interviews and household survey data from the selected villages to document land use change, identify dominant patterns of forest-use, examine variations in resource dependency among the local populace, and identify livelihood strategies and adaptations in relationship to the West Khasi Hills District in the State of Meghalaya in North East India.[3]

1.1 Theme and Objective of the Thesis

It is proposed that this thesis will contribute to debates about the governance of forest resources and Sustainable Livelihoods (SL) in general by examining a specific case study on how the 12 December 1996 logging ban imposed by the Supreme Court of India has impacted the household strategies of the rural people in Meghalaya. The analysis focuses on two relevant concepts: Governance and SL. Governance theory is used to explore issues of control over resources and access to decision-making. SL theory is used to explore issues of household strategies and their adaptations from outside interventions. SL is defined by Chambers and Conway (1992:7-8) as follows:

A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the long and short term.

[3] See West Khasi Hills District website at: http://westkhasihills.gov.in/

As summarized by McLeod (2001a), the five capital assets that are generally recognised within the SL theory are presented below.[4]

- **Natural (Environmental) Capital**: Natural resources (land, water, wildlife, biodiversity, environmental resources).
- **Physical Capital**: Basic infrastructure (water, sanitation, energy, transport, communications), housing and the means and equipment of production.
- **Human Capital**: Health, knowledge, skills, information, ability to work.
- **Social Capital**: Social resources (relationships of trust, membership of groups, networks, access to wider institutions).
- **Financial Capital**: Financial resources available (regular remittances, pensions, savings, supplies of credit).

The research seeks to expand the theoretical and empirical framework of governance of forest resources and SL in general using institutional theory defined by Scott (2004) as:

Institutional Theory attends to the deeper and more resilient aspects of social structure and considers the processes by which structures, including schemes, rules, norms, and routines become established as authoritative guidelines for social behavior. It inquires into how these elements are created, diffused, adopted and adapted over space and time; and how they fall into decline. Although the ostensible subject is stability and

[4] See Lowe and Schilderman (2001) for an elaboration of the "asset portfolio". And see Moser (1998) for an alternative categorization of the assets of the urban poor in terms of an "asset vulnerability framework".

order in social life, students of institutions must perforce attend not just to consensus and conformity but also to conflict and change in social structures.[5]

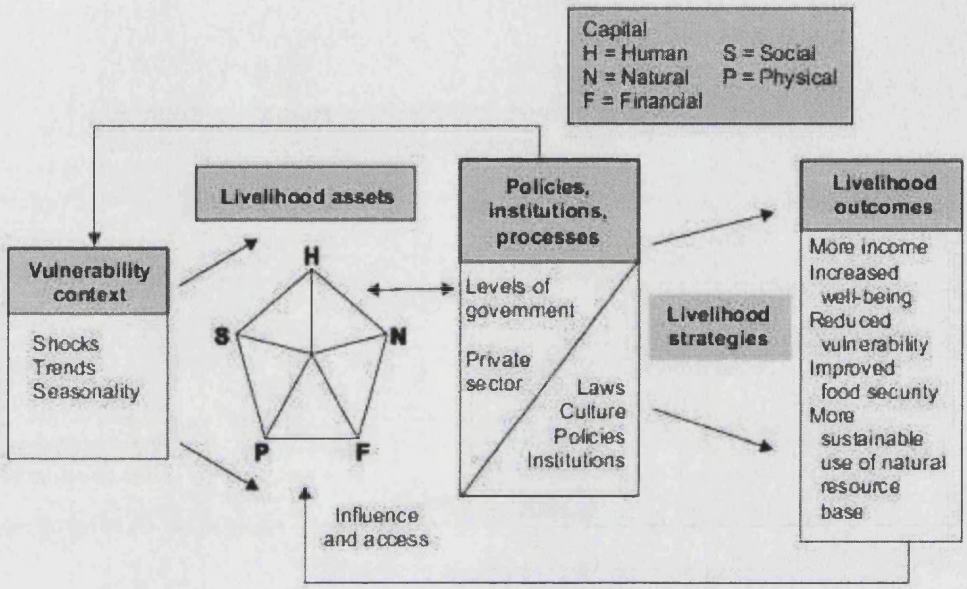


Figure 1: Showing the different components of a Sustainable Livelihoods Approach (DFID 1999)

This thesis examined the effects of institutional practices and decision-making on the five capital assets associated with SL with particular reference to the effects of the 12 December 1996 logging ban on the capital assets of the rural poor of Meghalaya. It focused on the conflicts between the Supreme Court logging ban and rural household strategies. Part of the SL approach has been to consider questions of how far gaining such institutional access can allow poor people to override common conceptions of environmental degradation by allowing people to define how and when ecosystems can and cannot assist with their needs.

[5] Scott, W. Richard 2004. "Institutional theory" P408-14 in Encyclopedia of Social Theory, George Ritzer, ed. Thousand Oaks, CA: Sage.

The SL approach recognises the importance of institutional structures and processes which determine access to assets and their value and to the attractiveness of different livelihood strategies (Figure 1). The thesis addressed the resulting livelihood adaptations, impacts on forest resources and protection measures in buffer zone communities. It also examined the overall aim by analysing the existing institutional arrangements that govern access to environmental resources for different groupings of people (possibly at a variety of spatial and temporal scales).

Building on governance theory and SL theory, this thesis presents a framework to examine forest-use in state managed regimes. It explores the concepts associated with governance and livelihoods, resource management institutions and sustainable livelihood approaches. These concepts are used to critically examine the impacts of state interventions on rural livelihood strategies and the governance of forest resources. While this thesis focuses mainly on the transition in livelihood strategies following the logging ban, it relates this matter to other policy debates such as Community Forestry. The research objectives discussed above will be placed in a stronger theoretical context in Chapter 2 in order to create more detailed discussions of the linkages between the field research conducted in Meghalaya with the wider literature on adaptation and sustainable livelihoods.

1.2 Central Research Question

1.How has the logging ban affected household strategies?

2.What does this change tell about theories of adaptation and sustainable livelihoods?

This thesis is the result of qualitative methods using interviews and household surveys data from selected villages to document land use change, identify dominant patterns of

forest-use, examine variations in resource dependency among the local populace and identify the link between sustainable livelihood strategies and adaptations.

In order to find out if the logging ban has a negative impact or a positive impact on the protection of forests and the livelihood strategies of the poor this research used:

- Inductive investigative analysis of one state-level case within one country.
- Multi-level analysis: tracing institutional arrangements and linkages between state, district and village levels.
- Qualitative approaches for state and district level analysis to examine the process of how the logging ban was implemented in Meghalaya.
- Qualitative techniques for village level analysis on the impact of the logging ban on rural livelihood strategies.

There is justification to address the issues of forest protection side by side with livelihood strategies because they are interlinked. The livelihoods of the poor people are dependent on forest resources. Some may argue that the logging ban is meant to protect forests alone or it is just a quick fix solution to a very complex problem that does not consider livelihood as part of the whole equation. However, it is assumed that the livelihood strategies of the forest users in the remote parts of the country have been considered in a 'working plan' scheme as the Government of India claims. In the Supreme Court Order of 12 December 1996, it states, *"all ongoing activity in any Forest, without prior approval of the Central Government, must cease forthwith."* (Paragraph 1).

The additional Order of January 1998 also speaks of the suspension of timber operations and other wood based industries until the concerned State Governments had developed working plans approved by the Central Government.[6]

1.3 Case Study Context and Research Methods

There are seven states in the North Eastern Region (NER) of India spread over an area of about 255,000 sq km comprising of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura. The NER shares international boundaries with China, Myanmar, Bangladesh and Bhutan. According to Saikia (2004) the NER is tenuously linked with the Indian mainland by a narrow stretch of land 21 km in width and has remained as a result of British colonial policy relatively isolated, physically and culturally, until 1950, a trend that allowed an internal homogeneity of sorts to develop. Forests cover about 54% of the total geographical area of the NER although there are inter-state variations. The NER accounts for barely 8% of India's total geographical area but it contains more than 25% of the country's forest area. Rich as they are, the forests of the NER are, however, among the most critically affected areas in India in terms of forest loss (FSI, 1995).

Saikia (2004) claims that timber and minor forest produce are the principal sources of livelihood for the tribal people of the 'Seven Sisters' of the NER and selling firewood for cooking purpose augments their meagre incomes from other sources. In his work he

[6] See article on India Together on 19 Jan 2007: http://www.indiatogether.org/2005/mar/env-apexcourt.htm

found that the ownership pattern of forests in the NER differs from state to state as in the hilly regions the ownership rests with the local communities.[7]

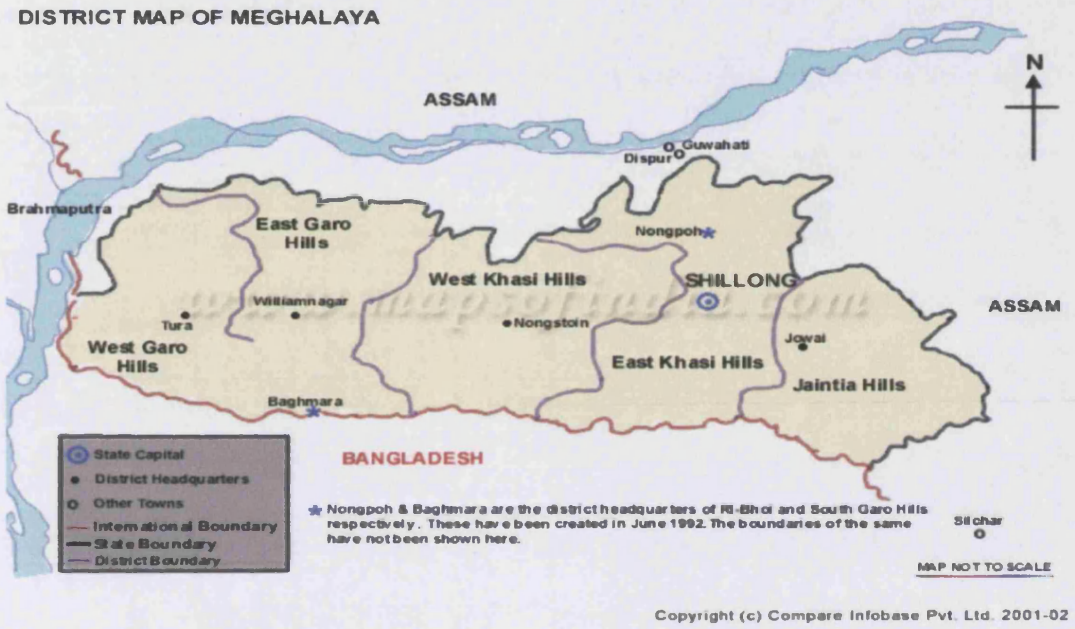


Figure 2: Map of Meghalaya showing the different districts in the state (FSI 2005)

In view of the alarming rate of extraction of timber and resulting deforestation in the forests in the NER, there has been a blanket ban on logging and non-forest activities in forest land that was imposed by the Supreme Court of India on 12 December 1996. Ten years have passed since the Supreme Court of India took a proactive role in forest conservation. However, many experts in the region claim that the Court's ruling has been most controversial in the north eastern states where its actions have been misread as reinforcing centralised top-down power over local communities.

Nathan (2005) argues that the Supreme Court reinterpreted the Forest Conservation Act, 1980, created new institutions and structures and conferred additional powers on the

[7] See also Saikia (2004) Indigenous control in NER: http://www.gdnet.org/fulltext/saikia.pdf

existing ones. According to him, the traditional supremacy of government forest departments has gradually been challenged and in some cases replaced by the continuous supervision of courts aided by concerned citizens and NGOs.

Using Meghalaya shown in the map above from the NER as a case study, this thesis examines the implications of the logging ban on rural livelihood strategies and how the households have adapted to this top-down policy. Livelihood strategies such as agricultural intensification, diversification of income within the indigenous communities, and migration patterns of the rural population were discussed. Other issues highlighted were loss of livelihoods and increase of poverty in rural areas arising from the logging ban.

The thesis also examines the causes of the degradation of forests and the factors that led to the logging ban. Some experts have argued that the Supreme Court Order imposing a ban on timber felling and on its movement outside Meghalaya may have contributed to the loss of livelihoods and the increase in poverty.

Nongbri (2001) argues whether the logging ban has improved or worsened forest cover in Meghalaya. Though professional foresters felt that it would improve vegetation as felling had come down, many others thought that apart from its impact on the livelihoods of the poorest labour who are engaged in felling, the ban has led to unsustainable use of forests.

Information

Information collected was based on both secondary and primary sources. Theoretical and empirical literature, archive documentation on policy processes in Meghalaya,

newspaper coverage of main events (e.g., The Shillong Times, The Guardian, The Sentinel) provided secondary sources. Primary sources were gathered through semi-structured interviews with key informants at the state level[8] and two selected clusters of villages.[9] The interviews focused on the role of different actors involved in the logging ban.

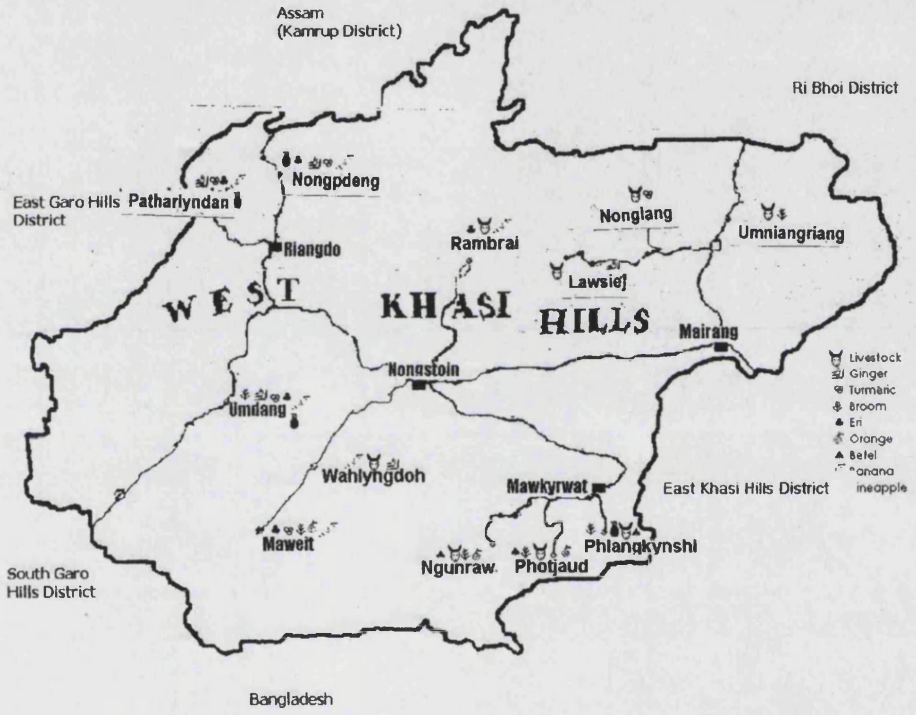


Figure 3: Map of West Khasi Hills District in Meghalaya (IFAD 2005)

Case Study Analysis

The analysis investigated the outcomes and effects of the Supreme Court logging ban on the rural livelihood strategies in the two-selected clusters of villages. It also

[8] Government officials, media, civil servants (ministry of forest), political activists, logging interests, academics, ATMM (Association of Timber Merchants in Meghalaya)

[9] The researcher interviewed 1 key informant per actor identified and a couple of state academics, in order to allow for triangulation

established the links between the ban and livelihoods and the role multilateral and state institutions play to help the poor adapt and cope in the forest dependent communities of the West Khasi Hills Districts of Meghalaya. Data collection included variables on involvement in timber trade, distance to markets, access to roads, levels of education and other relevant factors. This provided a snapshot analysis of the impact of the ban on rural livelihood strategies at the household level.

In this analysis, a comparison was made of the two clusters shown in the map above (Mairang and Riangdo) in order to find out if there are significant differences in the changes of livelihood strategies before and after the ban was implemented. These clusters were selected because they both demonstrated some level of changes in livelihood strategies after the logging ban and they both represent three villages each that received IFAD, JFM and zero interventions. All these villages had similar richness of forest resources in the past. However, the Mairang Cluster is further in distance to roads and markets while the Riangdo Cluster is closer in distance to roads and markets. But given the short period of study to measure changes over time, information from past IFAD studies were used as baseline data from 1996 (pre-ban) to 1999 (post-ban) to 2006 using household surveys, interviews and narratives.

The data collected came from secondary sources and the historical narratives collected from households documenting their past experiences before the ban may not be accurate. Hence, a total of 100 interviews (50 from each cluster) were gathered to get a bigger and more reliable picture of what happened before the ban in 1996 and the following years after the ban. A survey was conducted to assess and identify the assets and strategies, the property rights of different forest users in different sectors of forest

exploitation, ranging in different groups within each village - e.g., those involved in logging, those not and those with access to forests, those without. A questionnaire (Appendix 5) was designed for conducting interviews with representatives from the state and central governments, donor agencies, businesses, village chiefs and various NGOs to find if there are partnerships that are changing the face of natural resource management and rural livelihoods.

Critique of the various field methods used

The first limitation during the fieldwork was the collection of data for pre-ban livelihood activities of the households in the sample villages before 1996. There were no reliable statistical data or government records which could be used as benchmarks and as a consequence the results and analysis relied heavily on the qualitative analysis of narratives and stories collected in the form of questionnaire data and semi-structured interviews.

The data for post-ban livelihood activities of the households after 1996 was comparatively easier to collect from IFAD sources. The post-ban results were analysed with the aid of food calendars, wealth ranking information, diagrams and time lines, all of which have been carefully confirmed by triangulation. In the author's opinion, the reflexive nature of Participatory Rural Appraisal (PRA) and SWOT analysis used in the villages gives the research added depth. However, the research into operationalising the Sustainable Livelihood Approach (SLA) as a framework in the region was carried out for the first time by collecting data on the five capital assets using household surveys and in-depth interviews which demanded a lot of time and patience.

A second limitation referred to the study of the changes of livelihood strategies over a period of approximately 10 years from 1996 to 2006 which was easier said than done as the situation in the area studied had changed. The demographics of the villages under study since 1996 had changed as some household members died or migrated to other villages and towns in order to survive and as a consequence precise methods of comparison were seldom possible. Hence, it made more sense to present some analysis measuring the differences in household access to the five capital assets in the villages that received development interventions after the logging ban since it was easier to compare at an intra-village level with the benchmark data from IFAD studies.

A third limitation was the reluctance of the concerned government officials to collaborate and give information. It was almost impossible to get topo-sheets and maps of the region and the rep-tape and bureaucracy was too difficult to be understood even by local residents. The entire North East Region of India is considered as a volatile area will high security measures being deployed by the Central Government due to insurgents and militants that operate in the area. The author used maps from IFAD to pinpoint the approximate location and size of the villages under study.

A fourth limitation was the use of participatory methods in the non-project villages that were studied. The author encountered some difficulties when he attempted to use PRA with the poor households in the villages that had no interventions. In comparison to the IFAD and JFM project villages, the PRA conducted in the non-project villages required more determination and persistence because it was alien to them as it has never been done before. However, the author understood that participatory methods were considered preferable by researchers compared to other methods of data collection.

A fifth limitation related to health hazards. The author and his companion contracted malaria during the second phase of the fieldwork which was done during the monsoon season of June-July 2006. The situation became worst when his companion died in the hospital after four days after contracting cerebral strain of malaria. The author was also diagnosed with and treated for a different strain of malaria and had to take a break for about one month to recover. The emotional stress caused by the death of his companion and the author's illness delayed the fieldwork and lessened the opportunity for participant observation that could have provided more detailed information. Hence, a lot of the analysis on the second phase of fieldwork was based on the lengthy discussions and enthusiastic mapping and ranking sessions generated by PRA.

But in spite of the many limitations in the collection of data, the author is confident that if the fieldwork would be conducted all over again in all the six villages that were sampled the findings would have been the same. Hence, the author feels confident in presenting them in this thesis.

Examination of the author's positionality

The author was born and raised in the capital city of Shillong in the State of Meghalaya and left for New Delhi to pursue university level studies in the spring of 1993. In the fall of 1999 he moved to New York for further post-graduate studies and later worked there. The author had never visited the six villages that were studied for this research but he is familiar with the conditions of the people of West Khasi Hills from his earlier travels to the district capital of Nongstion during his high school days.

Therefore, this research reflected the author's positionality as an "insider-participant" who has brought about a different perspective on the ground realities of rural Meghalaya compared to the works done by out of state scholars and officials. On the whole, without "going native", the author was never treated as a "foreigner-outsider" looking into the lives of the poor in the villages that were studied during the entire fieldwork. But that positionality in itself had been a potential source of strength for the author as it was easier to do the fieldwork and communicate directly with the locals without a translator since there was no language or cultural barrier.

Since the author was not considered an outsider it was also easy for him to justify the purpose of the research and the methods that were used to collect the data. Despite some of the weaknesses mentioned in the critique of the fieldwork methods, foreign and out of state researchers interested in the region now have a new benchmark study to seriously consider.

Without being bias, the position of the author before going to Meghalaya for the fieldwork and at the time of doing the fieldwork and after returning to London to write this thesis remains the same. The author maintains that the Supreme Court logging ban was bad for the poor people who were living in the remote villages of the West Khasi Hills District of Meghalaya. This position was further strengthened and confirmed by the author's experience during his interactions with the households during the length of his stay in the villages while doing the research.

1.4 Case Study Design and Sampling

The sample covered villages located in the Mairang Cluster and in the Riangdo Cluster (three villages in each cluster with different interventions) in the West Khasi Hills District.

Village selection

Systematic work was carried out in the West Khasi Hills where the two clusters of forest dependent villages were purposely selected. The three villages in each of these clusters were selected because they had similar population sizes, land areas under their boundaries, richness of forest resources in the past and involvement in timber trade before the logging ban.

However, these villages within each cluster had different types of interventions since the ban in 1996: IFAD, a multilateral agency, in the case of Nonglang Village in the Mairang Cluster and Nongpdeng Village in the Riangdo Cluster; JFM, a Government agency, in the case of Umniangriang Village in the Mairang Cluster and Umdang Village in the Riangdo Cluster; and no intervention in the case of Lawsiej Village in the Mairang Cluster and Patharlyndan Village in the case of Riangdo Cluster. These villages in both clusters have been also selected to understand the different impacts of the outside interventions on the livelihood strategies of the households after the ban.

Household selection

For the household level surveys, the participating households were representative samples selected randomly from all households within these two clusters of villages. More than 25% of the total households of each village were included in the survey.

The selection of a simple random sample followed the definition which refers to a sampling method that has a population consisting of N objects, a sample consisting of n objects, and that all possible samples of n objects are equally likely to occur. In order to guarantee that the sample chosen is representative of the population, a lottery method was used in each of the six villages that were studied. Each of the N population members was assigned a unique number. The numbers were placed in a bowl and carefully mixed after which the author selects n numbers. The population members that have the selected numbers were included in the sample. The number of households that were included in the random sample was about 25% of the total number of households living in each of the six villages that were studied.

This thesis compared the levels of impact that the logging ban had on livelihood strategies between the three villages and measured how the IFAD and JFM villages differed or changed from those that had no help or intervention. The state aid agency and community interventions are important to determine and compare their impacts on helping rural people develop their livelihood strategies. Village level surveys, institutional questionnaires, interviews with key informants, household surveys and different tests and measurements are presented below.

IFAD Villages	JFM Villages	No Intervention Villages
Nonglang and Nongpdeng	**Umniangriang and Umpdang**	**Lawsiej and Patharlyndan**
Levels of impact of the logging ban	Levels of impact of the logging ban	Levels of impact of the logging ban
Changes in the livelihood strategies	Changes in the livelihood strategies	Changes in the livelihood strategies
Changes in the wealth ranking	Changes in the wealth ranking	Changes in the wealth ranking

Table 1: Analysing changes in the six villages of Mairang Cluster and Riangdo Cluster

Village level surveys

Village level data was gathered through available documentation and literature, Participatory Rural Appraisal (PRA), SWOT analysis, and semi-structured interviews with key informants (village head, state and local government officials, IGOs, NGOs).

Village characteristics

Total population and list of all households within the community; total village area and boundaries; proportion of forest land types and land uses; value of forest resources[10], and related subsistence and income generating activities; basic infrastructure (including financial sources).

Household Surveys

Surveys within the 3 types of villages covered a representative sample of households (hh) (e.g., 25 hh every 100 hh) who were surveyed in each village (about 100 interviews, 50 from each cluster). Information was gathered about:

- Household characteristics: age, no. of family members, education, ethnicity and religion, wealth, access to public services, income and income sources including related activities like agriculture, logging, non-timber forest product collection and others.
- Poverty index: state survey data, old studies, national census data.
- Wealth ranking of the villages: ownership of land, livestock, houses, trucks.
- Involvement in trade: access to markets, transport and roads.
- Livelihoods assets, strategies, income, entitlements.
- Institutional arrangements for enforcement of logging ban and local practices.

[10] Information on forest value is available for a number of communities through secondary sources as well.

Measuring the five capital assets

The nature and quantities of the 'five capital assets' that underpin households' livelihoods were explored for the survey. These capital assets (natural, physical, human, financial and social) were examined by looking at the differences in endowments between the households in the different villages that were studied. Most approaches to SLAs focus on the five capital assets as a way of analysing livelihood strategies hence this thesis also adopted this approach.

Natural Capital:

For people living in rural Meghalaya, their natural capital includes assets such as land, water, forest resources and livestock which are important for the production of food and income. The ways in which people have access to these resources whether it is ownership, rental and common pool will be considered as well as the condition of the resources themselves, their productivity and how they may be changing over time. (FAO, 2003)

This research will answer the following questions:

1. What land, water, livestock, and plant or forest resources do household members use inside and outside the village? What do they use them for?
2. What are the terms of access and exchange (ownership, rental, share arrangements, open-access, passage, leasing, milk for grazing)?

Physical Capital:

Physical capital includes tools and equipments and infrastructures such as homes, roads, bridges, culverts and market facilities. Access to these as well as other forms of infrastructures such as water supply and health care facilities will influence

people's ability to earn an adequate livelihood. (FAO, 2003)

This research will answer the following questions:

1. What infrastructures do household members have access to and use (transport facilities, marketing facilities, health services like hospitals and medical clinics, water supply such as water pipes and pumps and water tanks)? What infrastructures do they not have access to and why?
2. What are the terms of access to and maintenance of different types of infrastructures (payment, open access whether individual or pooled)?
3. What tools or equipments do household members use during different livelihood activities and what are the terms of access to them (ownership, hire, sharing.)? How and by who are they maintained?

Human Capital:

People's health and ability to work and the knowledge and skills they have acquired over years of experience and observation constitute their human capital. Education can help improve people's capacity to use existing assets better and create new assets and opportunities. (FAO, 2003)

This research will answer the following questions:

1. What is the educational status of resident and non-resident household members?
2. What skills, capacity, knowledge and experience do household members have?
3. How do education, skills and physical labour capacity vary by socio-economic status?

Financial Capital:

The financial capital available to rural households consists in the conversion of their production into cash in order to cover periods when production is less or in investing in other activities. They may make use of formal and informal credits to supplement their own financial resources. (FAO, 2003)

This research will answer the following questions:

1. What are the earnings of the households from different sources (crop and livestock sales, off-farm activities, business, forest products, fishing, remittances and gifts)?
2. What other sources of finance are available and how important are they (bank credits, moneylenders)?

Social Capital:

The way in which people work, both within their households and in the wider community, is important for household livelihoods. In many communities, different households are linked together by ties of social obligations, reciprocal help and assistance, trust and mutual support, all of which can play a vital role in times of crisis. These are some social capitals which form part of a household's livelihood capabilities. (FAO, 2003)

This research will answer the following questions:

1. What links do households have with other households or individuals in the community (kinship, social group, membership in social, economic and religious organisations, political contacts and patronage)?
2. In what situations do these links become important and how (mutual assistance, labour pool)?

Vulnerability context

It refers to unpredictable events that can undermine livelihoods and cause households to fall into poverty. Some of these factors are fast acting (earthquakes) and others are slow acting (soil erosion) but both can undermine livelihoods. (FAO, 2003)

This research will answer the following questions:

1. What are the seasonal patterns of activities indulged in by household members?
2. What are the seasonal patterns in food supply, income, expenditure, residence?
3. What crises have households faced in the past (health crises, natural disasters, crop failures, civil unrest, legal problems, indebtedness.) and how did they deal with them?
4. What long-term changes have taken place in the households' natural, economic and social environments and how have they dealt with these changes?

Policies, institutions and processes

They are an important set of man-made external factors that influence the range of livelihood options open to different categories of people. They also influence access to assets and vulnerability to shocks. (FAO, 2003)

This research will answer the following questions:

1. What organisations, institutions and associations (societies, cooperatives, political parties.) do household members participate in and what roles do they play in them?
2. How are decisions reached within these organisations, institutions and

associations?

3. Who makes decisions about the use of natural and physical resources in the communities and how are these decisions reached (what are the centres of decision-making)?
4. What laws, rules and regulations affect households?
5. Which organizations are most important for households and what benefits do they bring?

Measuring diversity in activities and incomes

The other elements of the SL framework: households' economic activities, the incomes and levels of well-being that households can attain based on their capital endowments and participation in economic activities were measured. The households' portfolio of economic activities was measured by using a wealth ranking system also used by IFAD. The rural household survey was used to measure food production and consumption by farming on their own plot (both crops and livestock) and non-agricultural self-employment.

Determining positive and negative attributes of livelihood strategies

A SWOT analysis offers helpful perspectives at any stage of an effort. The analysis was used to determine positive and negative attributes of different livelihood strategies at the household level in the sample villages. This analysis helped identify opportunities for success for the households in the context of threats to success and it will clarify directions and choices. SWOT analysis offers a simple way of communicating the different household strategies and is a good way to organize the information gathered from surveys.

Measuring food security

A Participatory Rural Appraisal (PRA) was conducted in all the selected villages with the assistance and participation of the households to determine the socio-economic conditions and changes in livelihood strategies. The PRA methodology was used: a) to investigate the community perception of logging ban and its effect on their food security; b) to explore with the help of the local people if institutions can be built within the community and outside the community; and c) to find out how local institutions can help the community overcome poverty through alternatives to the logging ban.

The PRA was conducted with the community using the local people's appraisal of their own livelihoods to see how the creation of local institutions can help the households recover from the implications of the logging ban. Discussions were held with the households to understand and learn from them about their perception of the logging ban and the need to build their local institutions to safeguard their own livelihood strategies.

1.5 Thesis Structure

The thesis continues as follows:

Chapter 2 presents the Theoretical Framework: It discusses the problems of achieving conservation and poverty alleviation, the state-led ban approach pros and cons, the alternative approaches of local poverty-led institutions as SLAs and the possibilities for merging the two.

Chapter 3 presents the History of Forestry in Meghalaya: It gives a profile of the State of Meghalaya, the history and role of the different institutions that are involved in governance and forest management at the state, district and village levels, the types of forest and their ownership. It also discusses the challenges of forest management, shifting cultivation, interstate issues, policies and the response taken by the Government.

Chapter 4 presents the Case study analysis of Mairang Cluster: It discusses the case study analysis of the three villages of Nonglang, Umniangriang and Lawsiej that were studied in the Mairang Cluster. It gives a profile of the three villages and a qualitative analysis of the socio-economic conditions and changes in livelihood strategies using Participatory Rural Appraisal (PRA), SWOT analysis, narratives, structured and semi-structured interviews.

Chapter 5 presents the Case study analysis of Riangdo Cluster: It discusses the case study analysis of the three other villages of Nongpdeng, Umdang and Patharlyndan that were studied in the Riangdo Cluster. It gives a profile of the three villages and a qualitative analysis of the socio-economic conditions and changes in livelihood strategies using Participatory Rural Appraisal (PRA), SWOT analysis, narratives, structured and semi-structured interviews.

Chapter 6 presents the Cross-cluster analysis: It discusses the analysis concerning the research question. It looks more analytically at Sustainable Livelihoods (SL) in the two clusters, which are about 100 kms from each other and try to relate them to the bigger questions about the SL debate. It presents different kinds of adaptations and recorded changes in livelihood strategies that were practiced by the households of these two clusters since the logging ban.

The key concerns that the thesis discusses are the debates about the governance of forest resources and Sustainable Livelihoods (SL) in general by examining a specific case study on how the logging ban has impacted the household strategies of rural people in Meghalaya.

The thesis concludes with arguments about alternatives to the logging ban and creation of institutional arrangements that can form solutions for better management of forest resources in a way that ensures a supportive environment for the poor to secure their livelihoods. Finally, the thesis answers the key research question and shows ways in which local institutional arrangements can mitigate poverty and conserve forests.

Chapter II

Theoretical Framework

Introduction

There is a growing international concern about governance of forest resources globally and how states are using different kinds of institutions to better manage their forest resources. Recently, the Governments of Asian, African and European countries held high-level regional conferences on Forest Law Enforcement and Governance (FLEG).[11] However, when the need arises to do something about forest conservation, states often use logging bans to control deforestation. But these are clumsy and often ineffective and are seen as top-down control by the big state on little forest users. Moreover, FAO experts argue that these logging bans damage poor people's livelihoods in the remote areas. To add to the problem, there is a lack of awareness among the public about these forest regulations and there is a lack of involvement of local forest users in decision making processes, especially in localities that have weak governance structures and institutions to implement these forest policies.

Since the United Nations Conference on Environment and Development (UNCED) held in Rio, Brazil in 1992, there have been many debates about the importance of involving these local forest users whose livelihoods depend upon these vital resources in the decision making processes. Agenda 21 has identified indigenous people as a major group but there is still no clear agreement on how their participation can be effectively facilitated, especially at the local and state level. In many situations the

[11] See also World Bank FLEG website: www.worldbank.org/fleg

livelihood decisions of the poor even in the most remote parts of the world are increasingly affected by the policies, institutions and processes that are made at international as well as national and sub-national levels of Government.

Most people living in the world's rural areas, like the indigenous people and other poor communities, use forests and trees as their main sources of food, fuel, fodder, medicines and building materials. The FAO report states that 1.6 billion people rely heavily on forests resources for their livelihoods, while 1.2 billion people in developing countries use trees on farms to generate food and sustain their livelihoods.[12]

In recent years the governance and management of forests and other natural resources have become a dominant theme in development studies. Yet the current state of research about logging bans and livelihood strategies overlooks how the objectives of each can be achieved at the same time. This thesis will try to bridge that gap. This chapter discusses this topic with a more detailed justification of the thesis approach and the problems it is trying to solve. It also discusses the theoretical themes such as the problems of achieving conservation and poverty alleviation, the state-led ban approach and its pros and cons, the alternative approaches of local poverty-led institutions such as SLAs and lastly the possibilities for merging the two, which this thesis will investigate. The research will later try to advance these theoretical themes mentioned above.

[12] See also FAO community-based forest enterprises: http://www.fao.org/forestry/site/25491/en

2.1 The Problems of Achieving Conservation and Poverty Alleviation

There are two overarching issues that emerge when analysing the literature that brings together the debates of poverty alleviation and conserving natural forests: The first is how and to what extent can the use of forest resources contribute to the alleviation of poverty and the second is how and to what extent can forest conservation and poverty alleviation be made convergent rather than divergent goals. The discussion that follows will try to elaborate on these interlinking themes and add to the debate.

The World Bank (2002) estimated that the livelihoods of 90% of the 1.2 billion people living in extreme poverty are directly dependent on their use of forest resources.[13] It is also these same vital forest resources that indirectly support the natural environment that nourishes agriculture and the food supplies of nearly half the population of the developing world. However, there is very little appreciation of linking the issues of poverty alleviation and conservation of forests. For this reason, the IUCN has been campaigning that there is a need to document projects that clearly demonstrate the links that exist between forest conservation and poverty reduction and bring it to the attention of key policy makers and economic planners, both within and outside the forest sector, so that forest conservation activities can be integrated into mainstream national-level poverty reduction processes.[14]

Over the past two decades there have been many international and regional processes and agreements that have officially recognised the link between poverty and forest conservation. However, there has been no real meaningful action on the ground to

[13] See also World Bank: http://siteresources.worldbank.org/INTFORESTS/214573-1113990657527/20632625/Forest_Strategy_Booklet.pdf

[14] See also IUCN: http://www.iucn.org/themes/fcp/experience_lessons/poverty.htm

position poverty alleviation at the centre of conservation. The main problem that emerged and blocked the pro-poor conservation strategies is perhaps the misrepresentation of the conservation-poverty link.

Fisher *et al.* (2005) suggest that one common myth is that poor people are forced into a downward spiral of forest and environmental degradation and human despair while another more complacent, outlook suggests that forest and environmental degradation may be an inevitable, short-term consequence of people moving from poverty to prosperity but that forest and environmental damage will eventually be ameliorated once people pass a certain threshold of wealth. However, according to the IUCN neither explanation holds as a general truth and suggests a third way of understanding the conservation-poverty link. According to them, poverty cannot be alleviated unless additional assets are made available to poor people. This is more in line with how poor people organise themselves to create new livelihood strategies using the assets that they have closely availed to themselves. With more institutional access to these assets, the poor people living in even the most remote parts of the world will be able to avoid poverty and continue to improve their livelihood strategies.

The key problem is creating or enhancing these assets for the poor to gain access to them. It would take time, planning and resources to build good road networks that can help link villages to the markets and to provide basic health services, primary education and clean drinking water. However, in many remote areas of the world certain natural assets are already in place, although the poor often face challenges to access them. Another additional problem that arises in this situation is that the poor are often constrained from being able to adopt better approaches and technologies or entering into new markets due to risk and uncertainty. (IUCN, 2005)

Again IUCN experts argue that while pro-poor conservation and sustainable use programmes will often not be enough to lift people out of poverty by themselves, they nevertheless can still make an important, immediate and cost effective contribution to national poverty alleviation strategies while other assets are being put in place. They go on saying that in the longer term, sustainable forms of resource management can continue to contribute to human well-being as people begin to escape the constraints of poverty (IUCN, 2005). Different agencies have proposed some solutions to this problem of achieving conservation and poverty alleviation. In its campaign for making conservation work for the poor, IUCN has laid down some specific recommendations for national governments to include in their decision-making processes. According to them giving poor people secure rights to, and responsibility for, natural resources is understood to be a powerful tool for poverty alleviation. The four key steps that are being considered by IUCN for governments to adopt are the following:

- ***Reform*** *policies that constrain, and enact new policies that enable responsible community stewardship of natural resources.*
- ***Improve*** *poor people's access to information and well-designed incentive schemes so that they are better equipped to manage risk and uncertainty.*
- ***Encourage and reward*** *stewardship of ecosystems essential for mitigating the adverse impacts of extreme weather events.*
- ***Strengthen*** *the capacity of environmental agencies to support the management and use of "publicly owned" natural resources by local communities*

According to IUCN (2002) poor people are actors for forest degradation as they rely more heavily upon natural resources for their livelihoods.[15] There are also those who

[15] See also IUCN website: http://www.iucn.org/themes/fcp/publications/files/gov_livelihoods.pdf

are concerned that handing over natural assets to poor people will inevitably lead to further degradation. However, in many situations where poor people are actually given real decision-making authority over natural resources, even badly degraded ones, they can help turn these into productive and biologically rich assets (Box 1). This shows that the poor people are far better placed to observe their mistakes and correct their management practices.[16]

Box 1: Reclaiming mangrove forests for livelihoods in Thailand

In the early 1980s the people of Pred Nai village in Thailand took action to halt charcoal production and shrimp farming that was destroying nearby mangrove forests. Having successfully reclaimed effective control over the mangroves, the villagers began to restore them through replanting and protection. Their motive was to raise village incomes by re-establishing a functioning mangrove ecosystem that would support crab harvesting. Pred Nai villagers undertook conservation activities because their livelihoods depended on biodiversity, not for the preservation objectives that conservationists might pursue. In doing so they saved a resource that Government authorities had previously been unable to protect.

Source: IUCN website: http://www.iucn.org/themes/fcp/publications/livelihoods.htm

Fisher *et al.* (2005) propose that high levels of rural poverty in many of the world's most biodiverse regions make it an ethical and practical imperative to find more equitable and realistic ways of achieving conservation. They claimed that livelihoods of the rural poor and options for the conservation and sustainable use of natural assets are so intimately entwined that they are better addressed through an integrated approach irrespective if the primary motivation is one of development or one of conservation. They argue that the question is not about advocating poverty reduction over conservation but about acknowledging that both poverty reduction and conservation are important objectives and that it is often necessary to address both in order to achieve either (IUCN, 2005).[17]

[16] See also IUCN website: http://www.iucn.org/themes/fcp/experience_lessons/poverty_poor.htm
[17] See also IUCN website: http://www.iucn.org/themes/fcp/publications/livelihoods.htm

In the literature, different views can be found that propose some solutions to dealing with the problem of achieving conservation and poverty alleviation. One view follows the economic development first approach and argues that the eradication of poverty should come first and that the conservation can be addressed later, but long-term implications of such an approach are likely to be very serious (Cole and Neumayer, 2005). Another view holds that even if the eradication of hunger and poverty is considered as an important priority goal, this cannot be achieved in isolation from achieving forest conservation and meeting the social development goals. In their book, Fisher *et al.* (2005) argues that the eradication of extreme poverty and, more broadly, achieving sustainable development is only possible if the interdependency of social development, economics and the environment is recognised and accounted for. They propose that more equitable approaches to conservation and development require that attention be paid to the poor, particularly the impacts of poverty reduction strategies, economic development and biodiversity conservation.

Box 2: Experience from Lao PDR

This case study focuses on sustainable harvesting regimes for bitter bamboo shoots and wild cardamom in one village in the northern mountainous province of Oudomxay in Lao PDR. Between 1996, when IUCN first initiated its Non-Timber Forest Product (NTFP) project in Nam Pheng village, and 2002, considerable advancement has been made in reducing poverty and improving livelihoods. Poverty rates have reduced by about 50 percent; food security has been attained; child mortality of children under 5 was eliminated; school enrolment doubled (over half of whom are girls); and domestic savings increased. The village acquired new infrastructure and new services, while villagers' range of expenditures widened, improving quality of life and productivity. Although there were many different factors at play that led to these achievements, improved NTFP management and marketing clearly played a key role, as illustrated by their predominant position in households' economies and the villagers' own testimonies. Currently, collection of bitter bamboo, cardamom and other NTFPs continues to be a main source of income for the majority of households in Nam Pheng. The case study showed that sustainable NTFP harvesting regimes can play a key role in reducing poverty and sustaining local livelihoods, while providing villagers with enduring incentives and adequate capacities to manage their forests.

Source IUCN website: http://www.iucn.org/themes/fcp/publications/files/3ic_cs_lao.pdf

There are some successful approaches that have addressed both conservation and poverty alleviation in order to achieve either. The case study in (Box 2) shows how conservation and sustainable use of NTFPs can enable a remote mountainous community in Lao PDR to step out of poverty and secure improved livelihoods.

From the example in Lao PDR presented above it is understood that some positive benefits on livelihoods, especially those of rural people, can be realised by conserving natural resources which are used for direct consumption and for generating income. It is also important to understand the economic value that wild resources bring to the poor in remote areas, which are often ignored in quantifying rural economy and livelihoods (Box 3).

Box 3: The value of wild resources

The economic value of wild resources in Senegal
An analysis of the value of wild foods and other wild resources in Senegal focused on non-timber forest products, game and freshwater fisheries. It found that, in the surveyed areas, these products were mostly used to generate income. Small amounts were used for home consumption.

Although the value of these products is not included in national accounts, the study concluded that the annual value is between USD 19 and 35 million. This does not include the value of plant resources such as "fuelwood, charcoal and building materials, which are equally significant but largely accounted for in national economic statistics." The study also noted that "natural resources appear to be more important as a share of total cash income for poorer households."

The study also presented some important findings on the impacts of gender and education:

" ... female-headed households report less cash income from hunting but more from other wild products and artisanal mining, although the latter differences are not statistically significant. Women also report less cash income in total.. Finally, household heads with little or no formal education reported more cash income from gathering wild resources (not hunting) on average, than those who had attended primary school or received [Quranic] instruction."

Source: UDRSS/VALEURS (2002)

The economic value of wildlife
The Department for International Development's study of wildlife and poverty linkages found that poor people are significantly dependent "on wildlife for livelihood and food security, particularly through bush meat and tourism." According to the study "of the estimated 1 ,2 billion people who live on less than the equivalent of a dollar a day .. , as many as 150 million people (one-eighth of the world's poorest) perceive wildlife to be an important livelihood asset."

Source: DFID (2002)

All people urban and rural, wealthy or poor need secure environmental services like clean air and drinking water in their daily lives. But in the remote areas of many developing countries the poor people are more dependent on diverse natural resources, which are vital for sustaining their livelihoods and for having food security, especially during seasonal shortages. Hence the conservation and maintenance of these resources is essential in times of crisis such as drought, crop failure or market failure (Box 4).

From the example in Lao PDR it is clear that in time of crises the species that are readily available for collection from the forest act as safety nets can provide support for the poor people to survive. However, some critics argue that poorer households generally have no other livelihood options open to them and that many would not chose to depend on forest resources for their survival if given a choice. They claim that linking livelihoods and poverty reduction objectives to natural resource conservation creates a "poverty-trap." According to Wunder (2001) the potential of tropical forests to lift people out of poverty is very limited. Furthermore, Dove (1993) argues that forest conservation is unlikely to lead to poverty reduction because the poor tend only to have the rights to low value forest products. Whenever products become valuable, the poor lose access.

Box 4: Food security and diversity from Laotian forests

In Salavan province, in Lao PDR, the rural diet is dominated by glutinous rice, which contributes 73 percent of total dietary intake during the rainy seasons. Forest foods are essential components of the diet, accounting for an average of 19 percent of total dietary intake in the rainy season. Excluding rice, forest foods amount to 70 percent of dietary intake. As forest foods provide year round diversity to otherwise bland and poorly balanced diets, they also ensure a regular source of nutrients. Approximately 44 percent of the total calcium and vitamin A and C intake, 25 percent of total iron intake and 27 percent of daily protein requirements come from the forest.

Source: Dechaineux (2001)

The counter argument by Fisher *et al.* (2005) proposes that in the absence of functioning social security systems and reliable market networks in rural areas, the sustainable use of biological resources will remain crucial to the secure livelihoods of the poor in the foreseeable future. Furthermore, they stress that poverty reduction involves empowerment in the form of altered access to valuable natural resources in order to allow benefits to flow to the poor. It is argued that poverty traps are not so much a result of dependence on natural resources as they are a result of lack of access to valuable natural resources (Fisher et al., 2005).

There are also problems concerning threats to the livelihoods of the poor people from conservation activities. This is due to the fact that some conservation practices can have serious negative effects on livelihoods by limiting access to the resources necessary for subsistence, livelihood security or income generation. Groups like the Chipko Movement[18] in the Uttarakhand region of India were opposed to commercial logging because of the government's decision to allot a plot of forest area in the Alaknanda valley to a sporting goods company. This angered the villagers because their earlier demand to use wood for making agricultural tools had been denied and they felt that their livelihoods were being threatened. Some experts from the FAO claim that the major way in which conservation has been detrimental to the poor is by excluding people from protected areas or limiting their access to resources within protected areas. Such exclusionary practices have serious and well-documented negative outcomes (McLean and Straede, 2003; Brockington, 2003) especially when resident people are resettled to other locations. The counter argument to this debate from Fisher *et al.* (2005) is that conservation itself is not the problem for people whose livelihoods

[18] See also Haripriya Rangan "*Of myths and movements: Rewriting Chipko into Himalayan history*", New York, VERSO, 2000.

depend on natural resources but rather conservation approaches that often do not adequately take into account the adverse impacts of conservation activities on the rural poor. It is also argued that conservation has often been narrowly interpreted as requiring exclusion of people from resource use.

When looking for approaches that both address poverty and conservation, the choice is limited. However, the discussions about the links between livelihoods, poverty and conservation has been going on for decades with no clear agreement on how to properly address this problem. It was back in the 1970s when the movements advocating Integrated Conservation and Development Projects (ICDPs) and community based conservation and resource management have reflected these concerns. McShane and Wells (2004) have criticised ICDPs work for a lack of a clear framework and for weak or piecemeal implementation. However, in recent years, with the development of the Sustainable Livelihoods framework by DFID and other agencies, terms such as "pro-poor wildlife conservation" and "pro-poor conservation" have appeared in conservation literature (DFID, 2002).

To conclude this conservation and poverty alleviation debate, one can agree with Fisher *et al.* (2005) that there is a need for better monitoring and evaluation of all conservation activities taking account of social impact assessment, particularly the impacts of activities on poor people. As proposed by Fisher *et al.* (2005), methodologies must directly assess impacts in terms of costs and benefits to the poor in cases where programs or projects aim to maintain or improve livelihoods, or to increase income directly. The issue is not preferring poverty reduction over conservation but

acknowledging that both poverty reduction and conservatn are important objectives (IUCN, 2005).

2.2 The State-led Logging Ban Approach and Its Pros and Cons

After discussing the problems of achieving conservation and poverty alleviation, this thesis will look at some of the approaches like the state-led logging bans that have been used by many countries to protect and conserve their natural forests. The logging ban as an approach for conservation and forest protection has caused both negative and positive implications on state forest policies of the concerned state and on its economic, environmental and social conditions. This will be exemplified from the literature review of the selected countries, namely, Thailand, China, Philippines, Vietnam, Sri Lanka and New Zealand which have used logging bans as an approach to conserve their forest resources.

During 1990 to 1995 the forests cover in the Asia-Pacific region declined by almost 3 million hectares per year (FAO, 2001). These FAO experts claim that as deforestation grows, biodiversity decreases, water quality deteriorates, soils erode and forests' ability to contribute to reducing the build-up of greenhouse gases diminishes and when such situations occur, logging bans are often established in response to natural disasters but unfortunately not as the result of a detailed analysis of the best way to conserve forests.

When forestry specialists from more than 20 countries met at the FAO Asia-Pacific Forestry Commission on May 2000 in Noosaville, Australia, they agreed that the logging bans had mixed success in conserving forests. [19] According to the FAO, though

[19] See also FAO website: http://www.fao.org/News/2000/000502-e.htm

a partial or total logging ban is a common first-step solution to halting the rapid decline in forest reserves, an analysis of such measures in the region has shown that the results are mixed. M. Hosny El-Lakany, Assistant Director-General of FAO's Forestry Department said, *"In some countries, this approach has been partially successful in curbing the destruction of natural forests, in others, the bans haven't had their desired effect and it has certainly made it much more challenging for countries to provide their citizens with wood products."*

Not all logging bans are the same. Restricting logging in one country simply displaces the problem to other countries (CIFOR, 2002). Since they restricted logging, China, the Philippines, Thailand, and Vietnam have all greatly increased their forest product imports which have fuelled illegal logging and destructive timber harvesting in neighbouring countries such as Cambodia, Indonesia, Laos, Myanmar, and Russia.[20]

The Asia-Pacific region is losing forests five times faster than the global net annual forest loss of 0.2 percent experienced between 1990 and 2000 (Singh, 2001). Currently, the world's forest cover is estimated at 3.90 billion hectares, of which the Asia-Pacific region contributes 699 million hectares, including South-east Asia's forest cover of 212 million hectares. However, there are many reasons that have contributed to the lost of forest in the Asia-Pacific region. Due to lack of political will and bureaucratic apathy, the forest policy of the Government of India to increase forest cover to a minimum of 33 percent of the total land area has failed.[21] With the exception of Nepal and the Philippines, no other country in the Asia-Pacific region has clearly enunciated a national policy or legislation directed at decentralizing forest management to the local

[20] See also CIFOR website:http://www.cifor.cgiar.org/Publications/Polex/polexdetail.htm?pid=187
[21] See also http://www.fao.org/docrep/003/x6898e/x6898e02c.htm

level and with the exception of the Pacific Island States where communal ownership of forests is common, there is a lot of confusion on the issue of tenure and customary rights of local people. For example, in Indonesia, the Basic Agrarian Law of 1960 recognizes customary law as the basis of national land law. (FAO, 2000)

There is also a severe lack of research on or the promotion of management methods to accelerate the regeneration of shrubs and bushes that are most used by the people as fuel (Banerjee, 1989). The failure to effectively stop illegal logging stems from ineffective government policy over the last 10 years (Durst, 2001). Most logging bans were introduced as forest conservation and often in reaction to natural disasters like floods. Durst (2001) argues that such knee-jerk reactions to implement logging bans ignore assessing which bans work since there are conditions necessary for logging bans to succeed.

Some critics have alleged that the logging bans in Asia have proved to be ineffective (Macan-Markar, 2001).[22] Despite strong measures to stall deforestation in Asia, trees in the region's forests continue to be felled at an alarming rate (FAO, 2001). According to the FAO report titled *"Forests out of Bounds: Impact and effectiveness of logging bans in natural forests in Asia-Pacific"* long-term forest management systems, including setting-aside reservations of natural forests for conservation, and government-enforced logging bans have not ended the steady pace of logging.

According to the report, deforestation and degradation have continued at an alarming rate. This presents a key challenge in finding the right kind of governance of forest

[22] http://www.earthisland.org/borneo/news/articles/011112article.html see Marwaan Macan-Markar, November 18th, 2001. From Malaysiakini <http://www.malaysiakini.com./>

resources that ensures a supportive environment for sustainable livelihoods, developed at all levels at which decision-making takes place. Of these six countries, China and Vietnam are still in their early stages of introducing loggings bans and the progress in these two countries is still being monitored and watched. The pros and cons of the logging bans in each country are discussed in detail below.

Thailand [23]

The Royal Thai Government imposed the logging ban on 17 January 1989 in the form of a Cabinet Resolution (Order number 32/2532) which revoked all logging licences in natural forests, effectively banning commercial logging particularly in the uplands (Jantakad and Gilmur, 1999).

The ban was in response to the heavy rains which caused massive landslides and flooding in several villages in Southern Thailand causing death to hundreds of people, rendering thousands homeless and costing several million baht. The floods were due to displaced logs that obstructed the water flow caused by heavy rains in the upland areas. Even prior to the disaster, NGOs and the media had pressured the Government to conserve the country's natural resources in the form of a logging ban. For example, the Project for Ecological Recovery (PER 1992) stressed that the anti-logging sentiment had started long before the catastrophic floods but gained momentum from two events. (FAO, 2001)

The impacts of the logging ban in Thailand are mixed. However, state forest policy and the environment appeared to be the ones more seriously affected by the ban and

[23] See also Thailand Logging Ban: http://www.fao.org/DOCREP/003/X6967E/x6967e09.htm

followed by the social and economic factors. From the economic sense, Thailand's forestry and the forest-product industry have reduced production and consequently the income of those in the industry. With the imposition of the logging ban, official records indicate that imports of wood have grown and Thailand has become a net importer of wood ever since.

On the social aspects, the logging ban has seriously affected employment due to the closure of many sawmills, wood-product factories, and provincial logging companies. Many employees lost their jobs and therefore their personal income. Many of them had to look for alternative employment. Some have turned to illegal logging either on their own or as employees for others (Dudley, 1991).[24] Others have returned to their rural full-time farmers. In some cases, villagers had to resort to illegal activities to sustain their livelihoods thereby further threatening the already denuded forests resources. The illegal logging even extended across the Thai border into neighbouring counties like Myanmar.

From a positive point of view, the logging ban has increased awareness regarding the need for effective forest conservation. The protection of scenic amenity and public recreation areas has received more attention in the form of Royal decrees enacted to declare permanent forest reserves, national parks, forest parks, wildlife sanctuaries and other designated areas. It should be noted that the Government imposed the logging ban with minimal preparations and lack of proper planning and strategy thereby causing confusion and difficulties in balancing wood production and consumption. There was no pre- or post-implementation law regarding the logging ban. Consistent with the

[24] See also The Logging Ban in Thailand, Nigel Dudley, Earth Resources Research, London, 1991. A report of a field investigation into the impacts of the Thai government's logging ban and the resulting sharp increase in illegal logging.

approach of SFM, Thailand has ratified some international conventions and followed the results of the UNCED held in Rio, Brazil in 1992.

China[25]

China considers environmental protection as a basic national policy and deforestation as one of its major problems. The Chinese Government and the State Forestry Administration (SFA) have enacted laws and regulations to protect the country's natural forests. In 1998, to prevent deterioration of the natural environment and safeguard sustainable development, the Government banned commercial logging in 13 provinces in the upper reaches of the Yangtze River and in the middle and upper reaches of the Yellow River. The ban was the result of the catastrophic flooding in 1998 and soil erosion in the Yangtze River. The logging ban and afforestation are deemed necessary to rehabilitate the Yangtze River and Yellow River watersheds and rehabilitate the forest resources and improve the ecological functions of the forest areas. However, analysis done by Chiang Mai University states that 12 years after the ban, illegal logging and upland encroachment remain barriers to forest conservation (Lakanavichian, 2003).

The upper reaches of the Yantze River and the middle and upper reaches of the Yellow River are vital sources of raw materials and energy for economic development and water for inhabitants in the valleys.

The implementation of the logging ban formally initiated the Natural Forest Conservation Program (NFCP) which supports the country's policy of environmental

[25] See also FAO: Impacts and effectiveness of logging bans in natural forests: Peoples' Republic of China – Yang Yuexian: http://www.fao.org/DOCREP/003/X6967E/x6967e06.htm#TopOfPage

protection and at the same time meets its international commitments relating to the environment. Some experts[26] argue that the logging ban in Southwest China has been given high priority and has been mandatory/top-down and rushed in implementation. Impacts on farmers relate to their income, lifestyle, and sustainability (i.e., the issue of sustenance of livelihoods after subsidies were stopped). Impacts on local governments include increased financial burdens and additional workload burdens on forest authorities, as well as decreased government income.

State-owned forests are important sources of income. To prevent their decline, the Government removed large areas of the natural forests from timber production. Tax revenues from timber production and sales derived from Agriculture and Forestry Special Production Taxes, value-added taxes, income taxes and other fees will decline because of the logging restrictions and the subsequent decline in timber production.

Protection of the natural forests conserves biodiversity since China's forests have some of the richest biodiversity in the world due to their large size and their extremely variable conditions. It ranks its provinces according to the measures adopted by the provinces for the protection of biodiversity. According to some experts,[27] the logging ban in Southwest China has had positive environmental impacts and negative economic and social impacts. The negative effects of the ban in the state sector include loss of fiscal revenues for local governments, rise of unemployment and difficulties for timber companies to survive. The negative effects of the ban in non-state sector include loss of

[26] See WWF case study in three counties on the impacts of and options for the pilot implementation of the steep cropland conversion policy. http://www.panda.org/downloads/forests/chinacasestudyfinal.pdf

[27] See newsletter of the CCICED Western China Forest Grasslands Task Force Issue 1: February 2001: http://www.harbour.sfu.ca/dlam/WorkingGroups/Forestry/newsletter1.html

farmer livelihoods, dysfunctional community economies, and lack of availability of timber for local use.

Employment statistics indicate that 1.1 million forest workers, including those involved in road construction, mechanical repair, transportation, log depots, log processing, wood processing and logging, will lose their jobs when the logging bans are implemented. These affected people have to be employed to ensure the success of the NFCP. The State and local governments and relevant private firms are developing strategies to minimize the effects of the logging ban on employment and on China's social welfare system. (FAO, 2001)

Under the NFCP soil losses are reduced substantially and the financial and social costs arising from natural disasters are decreased. Its implementation significantly reduced timber output in different regions particularly in the central and western regions, which used to be China's principal producing areas but it will provide a great opportunity for the eastern region to cultivate forest resources and develop timber production. It aims to reduce timber production from the natural forests thereby widening the gap between supply and demand. China would then have to find alternative sources for timber either by expanding its forest plantations or imports. However, the NFCP logging bans and the deteriorating conditions of the timberland's environment made the domestic timber supply unpredictable. Relying on imports to meet timber demands is not also attractive in view of the high foreign exchange rate.

Logging bans in the natural forest through the implementation of the NFCP are designed to improve the economic, social and ecological benefits that forests provide to the community.

Since the logging ban in China started in 1998, many rural people have turned to the harvesting of medicinal plants used in traditional Chinese medicines, and hunting of wildlife as alternative means of to sustain their livelihoods. According to WWF,[28] the Chinese Government is working to reduce the negative impact of medicinal plant harvesting and poaching, by developing innovative approaches to conservation that provides local peoples with sustainable alternatives. The success of this initiative meant to support livelihoods strategies of the rural poor is yet to be seen.

Philippines[29]

Logging bans or harvesting moratoria in the Philippines are contained in administrative orders, letters of instruction from the Office of the President, radiogram orders or laws such as the National Integrated Protected Area System (NIPAS) law in 1992 and the Strategic Environmental Plan for Palawan (RA7611) which disallow and prohibit the extraction of timber from the natural forests. The bans are supported by the cancellation, suspension and non-renewal of TLAs (Timber Licensing Agreements) in concession areas thereby reducing the number of TLA holders from 159 in 1986, to 26 in 1997, and less than 20 in 1998 (FMB/DENR, 2000). More than 70 percent of the Philippines' 77 provinces have logging bans or moratoria for a number of reasons (FMB/DENR,1999; DENR, 1999).

[28] See also WWF website: http://www.panda.org/how_you_can_help/successes/pandasuccess/solutions/people_and_pandas/livelihods/index.cfm

[29] See also FAO: Impacts and effectiveness of logging bans in natural forests: Philippines – Ernesto S. Guiang http://www.fao.org/DOCREP/003/X6967E/x6967e07.htm#TopOfPage

Two bills are pending in the Philippine Congress relating to logging bans. The first bill prohibits all commercial logging operations in all types of forest (old-growth and residuals) for a period of 20 to 30 years and the second bill, which is a partial ban, allows logging in residual forests but not in old-growth forests, areas above 50 percent slope, mossy forests, national parks and protected area systems.

Commercial logging in the proposed bill is defined as the "cutting, felling, or destruction of trees from old-growth and residual forests for the purpose of selling or otherwise disposing of the cut or felled logs for profit."

The massive deforestation of the country's forests since the 1970s were attributed to inconsistent policies, resource allocation that favours the rich, political patronage, illegal cutting, centralised and ineffective bureaucracy and the Government's policy of "land for the landless."

The effects of the logging ban have been mixed.

Positive effects of logging bans:

- Prevent the continuing loss of biodiversity and the need to protect endangered and rare species habitat (Heany and Regalado, 1998; Bautista, 1994, de los Angeles and Oliva, 1996; UPLB Foundation, 1996; CPPAP, 1999; Alonzo, 1993).
- Protect dipterocarp forests which are the world's primary source of "Philippine mahogany."
- Prevent the degradation of watersheds that support major hydropower schemes and river systems. It is believed that logging increases soil erosion and siltation

of waterways and ultimately endangers or shortens the life span of major infrastructure (FMB/DENR, 1999).

- Lowland floodings are avoided because logging bans are believed to reduce catastrophic floods in low-lying areas.
- Prevent loss of seagrass beds and mangrove forests. A commercial timber harvest in the natural forests intensifies deforestation and degradation.
- Slow down upland migration since logging provides access roads to residual and logged-over areas.
- Prevent the displacement of indigenous people from their lands and allows them to continue their access to the natural environment. This is guaranteed by the People's Rights Act Law (RA, 8371) which mandates the recognition, protection and promotion of the rights of indigenous people.
- Allow degraded natural forests to regenerate over time thus natural forests can recover and ensure constant wood supply (Tagudar, 1997).

Negative results:

- Convert forestlands into open access areas inviting illegal cutters in response to the increasing demand for forest products (Fernandez et al., 1989; Bautista 1994; Lopez-Gonzaga 1995; Carandang et al., 1996; Ronquillo-Manila and Gallego, 1992).
- Damage the environment because illegal cutters extract forest products without long-term interests or accountability (de los Angeles and Oliva, 1996).
- Government has to provide additional protection efforts which are not as effective as those provided by land holders (Mickelwait et al., 1999).
- Deprive the Government of substantial revenues in the form of logging charges that it otherwise could collect.

- Encourage illegal logging instead of preventing the same causing market imperfections and imbalances in local prices of forest products;
- Encourage illicit alliances among financiers, illegal cutters, the military and DENR field personnel (Bautista, 1994).
- Increase foreign exchange outflow to pay for import of forest products (FMB/DENR, 2000).
- Displacement of forestry workers and loss of jobs resulting in the decline in the economies of areas dependent on commercial logging (de los Santos and Oliva, 1996; Ramirez and Laarman, 1993).
- Decline in rural economies since schools and clinics will have to close and road maintenance will be reduced.

Vietnam[30]

Due to the continued deforestation and degradation of its natural forests, the Vietnamese Government imposed a partial logging ban in the early 1990s in the country's natural forest. In the succeeding years, the wood harvest from the State-owned production forests, mostly from depleted secondary forests, have dropped. Hence, in June 1997, the Government imposed a logging ban in its natural forests by prohibiting harvesting in special-use forests and declaring a 30- moratorium on logging in critical watershed protection forests. Commercial logging was also banned in the remaining natural forests in the northern highlands and midlands, the southeast, and in the Mekong River and the Red River Delta provinces. The ban was accompanied by a development plan to regenerate millions of hectares of forestland, strengthen forest development and reforestation of barren hills.

[30] See also FAO: Impacts and effectiveness of logging bans in natural forests: Viet Nam – Vu Huu Tuynh and Pham Phuong: http://www.fao.org/DOCREP/003/X6967E/x6967e0a.htm#TopOfPage

Although the logging ban has produced important benefits to the country, it appears that the negative impacts outweigh the benefits particularly in the areas of employment, income generation, and availability of fuelwood and timber as indicated below:

- The logging ban reduced the volume of fuelwood from the natural forests while at the same time demand will continue to rise as Viet Nam's population and average annual income goes up.
- Roundwood production has declined hence some forest enterprises were forced to import timber.
- Forest product exports and revenues have decreased continuously since the ban.
- Reduced timber volumes due to the ban have caused a corresponding increase in prices because of the increase in demand.
- The number of unemployed in the logging sector and the number of jobs are declining.
- The shortage of timber has affected the performance and numbers of wood product companies.
- Slow regeneration rates in the natural forest, limited industrial capacity and rising demands have resulted in nation-wide paper shortage.
- The income of people involved in forest product processing has been affected. The same thing is true of companies involved in protecting and managing the natural forests.
- The wood processing industry has suffered because of the increasing lack of raw materials to supplement supplies through imports resulting in an imbalance in supply and demand.

Sri Lanka[31]

The State owns and manages the natural forests in Sri Lanka

Due to increased deforestation, a "temporary ban" on logging in natural forests was imposed on highly degraded areas in 1989 to allow recovery and development of sustainable management plans, particularly in the wet zone in the southwest of the island. A total ban was imposed in 1990 in all natural forests upon recommendation of the Conservation Review Committee, which is still in force except along the roadsides in the north where forests can be logged or cleared for security reasons. Permission to clear natural forests is granted for development projects subject to the National Environmental Regulations. The ban will continue until the natural stocks are fully recovered and the forests are again ready for harvesting.

In 1995, a huge part of the natural forest was given protected area status and residual natural forests outside the protected areas were set aside for sustainable multiple-use management.

The Forest Department is charged with enforcing the logging ban.

The logging ban has produced the following effects:

- Degradation and loss of natural forest cover are prevented.
- Forests that have been heavily degraded are rehabilitated.
- Biodiversity is protected and maintained.
- Environmental and hydrological functions of forests are also maintained; and
- Recreational, aesthetic and cultural values are preserved.

[31] See also FAO: Impacts and effectiveness of logging bans in natural forests: Sri Lanka – H.M. Bandaratillake: http://www.fao.org/DOCREP/003/X6967E/x6967e08.htm#TopOfPage

Despite the ban, cases of illegal cuttings have increased. Illegal harvesting was more rampant in forest plantations than in natural forests. The increase in illegal harvesting can be attributed to socio-economic issues such as poverty, unemployment and changes in the political climate that are not related to illegal logging.

The reduction in timber production resulted in the decline sales revenues and Government royalties. About 70 percent of Sri Lanka's 18.3 million people still live in the rural areas and 30 percent of the rural people live near the forests. The logging ban had impacted negatively on employment and income generation. Due to timber shortages, several sawmills and timber sales depot were forced to close down. Employment has also gone down because most of the lower-level workers are involved in sawmill operations, timber sales depots and logging.

Illegal felling does not occur in forest hermitage areas or "aranya", small blocks of the natural forests which are being used by Buddhist monks for meditation. Sri Lankans have a strong tradition of conservation that links religion, culture and the spirit to natural forests. Buddhist philosophy has a great influence on the conservation of forests and wildlife.

Sri Lanka has several national parks and conservation forests for recreation and conservation that are managed by the Forest Department. Local and foreign tourists visit many forests especially the protected areas for recreation. This is an additional revenue generating income for the Government. Some forests within the protected areas have great potential for nature-based tourism and management plans are being contemplated for this purpose.

New Zealand[32]

The logging ban in New Zealand started in the early1970s due to public interest and discontentment with natural forest management and continued until November 1999 when the Government phased out the last logging operations on State-owned natural forests in the West Coast region.

New Zealand's logging ban is premised on two things: a) it emphasizes the country's dependence on timber from planted forests and b) it wants to ensure the conservation of its remaining natural forests. The two propositions are also reflected in its position on international agreements that it has signed.

The logging ban and restrictions revolved during four distinct stages of the country's history:

- policies pre-dating the 1970s;
- policy changes in the 1970s;
- political changes in the 1980s, including the split of forestry functions in 1987; and
- post-1987 policy changes.

Two groups of measures specifically prohibited and restricted commercial logging, namely: a) the pre-1970 West Coast Accord and b) four policies and legislative measures from 1987 to the present, which restricts commercial logging as a conservation strategy. While each of these measures are separately identified, the restrictions are part of the complex policy history in New Zealand. Since the logging

[32] See also FAO: Impacts and effectiveness of logging bans in natural forests: New Zealand Alan Reid: http://www.fao.org/DOCREP/003/X6967E/x6967e05.htm#TopOfPage

ban and restrictions run through several stages relating to changes in the Government, it resulted in significant changes in policies. As mentioned above, the 1999 election resulted in the most recent decision of the Government to ban logging in State-owned forests.

The development and implementation of the logging bans have been beneficial and advantageous to New Zealand:

- New Zealand's largely unpopulated natural forests are different from other countries in the Asia-Pacific region where local communities exert pressures on the natural forests for timber and other produce.
- The extensive planted forests are well established and offer alternative resources by the time that the natural forest logging ban begins to diminish; and
- The privatization of planted forests put these forests on a totally independent commercial footing.

This section has discussed the state-led logging ban as an approach and presented some of the pros and cons from the experiences of countries in the Asia Pacific. It is clear from the literature that in most cases these bans have failed objectives and in the process created more harm to the environment and the livelihoods of the poor people.

2.3 The People-led Sustainable Livelihoods Approach

After analysing the pros and cons of the logging ban approach, this section will discuss the people-led institutions such as the Sustainable Livelihood Approach (SLA). The SLA is an alternative approach that could be compared with state-led logging ban

approach. While the logging ban has be seen as a top-down state control approach on small forest users, the SLA has been seen as a people-led grassroots approach where poor people organise themselves to develop their own livelihood strategies in order to survive in the rural areas. While there is enough evidence in the SL literature to show that forests are vital for sustaining the livelihoods of poor people in rural settings around the world, this thesis seeks to contribute to that body of literature by identifying the linkages between the logging bans and the livelihood strategies of the poor. Evidence from the fieldwork will later be provided as an ordered and critical exposition of this existing knowledge on SL to support the argument. This section will also put the research objectives in Chapter 1 in a stronger theoretical context to create more detailed discussions of the linkages between the field research in Meghalaya and the wider literature on adaptation and sustainable livelihoods.

It was in 1987 after the Brundtland Commission when the whole concept of sustainable livelihoods was introduced. Since then this concept had been applied to the analysis of resource ownership and access and basic needs and livelihood security for the poor living in rural areas of the world. Even the United Nations during its Conference on Environment and Development (UNCED) which was held in Rio, Brazil in 1992 recognised the SLA as a powerful integrating concept that offers a way to link socio-economic and ecological considerations in a cohesive policy-relevant structure in Agenda 21 (UNDP, 2000). The livelihood concept is used here to mean the activities, entitlements, and assets that people draw upon to make a living. In this regard, this thesis will interpret assets to include the physical, financial and natural resources and entitlements (institutions, participation, empowerment, social networks) that people own and utilise to pursue livelihoods.

Most of the SL literature has been adapted by Chambers and Conway (1992) who argued that one can reduce poverty and vulnerability by increasing livelihood options especially during times of economic or environmental stress. They wrote:

[a sustainable livelihood] can cope with and recover from stress and shocks, maintain and enhance its capabilities and assets and provide sustainable livelihood opportunities for the next generation; [it] contributes net benefits to other livelihoods at the local and global level and in the short and long term (Chambers and Conway, 1992:1).

This and later discussions of SLAs have also been influenced by Amartya Sen's concepts of endowments, entitlements and capabilities, which discuss how poor people can access resources and livelihood options (Scoones, 1998; Carney, 2003). Endowments (and the related term of assets) cover a variety of types of resources (tangible and intangible notably including institutional arrangements) that may allow individuals to achieve livelihoods and their chosen potential.

Capabilities are the range of valued life-options (including life-paths over time) that people can attain (Alkire, 2002). SLAs seek to make institutional arrangements that guarantee a range of livelihood options, which can reduce the vulnerability and poverty of individuals. The term, 'sustainable' refers to different aspects of longevity: economic, institutional, social and environmental (Carney, 2003, p. 27). SLAs may be also described in various forms, but some authors have argued that the essence of SLAs should be too flexible and avoids having specific institutional designs that may restrict

local determination of assets and capabilities (Ellis, 2000; Hinshelwood, 2003). Self-determination of livelihoods is a further key feature of SLA. Proponents hold that: poor people themselves must be key actors in identifying and addressing livelihood priorities. Outsiders need processes that enable them to listen and respond to the poor (Ashley and Carney, 1999, p. 7).

There are three levels of the SLA that are identified in the literature: as a developmental objective, as an analytical framework, or as a set of principles (Farrington, 2001).

DFID (2000a) characterised SLA as an improved way of thinking about the objectives, scope and priorities of development that will better meet the needs of the poor, both at project and policy level.

The SLAs call for constant questioning of common assumptions and repeated reference to the effects of policy and actions on the livelihoods of the poor (Carney, 2003, p. 32). These uses of SLAs have developed three themes that may assist in social and economic access to livelihoods. First, SLAs have focused upon furnishing different types of 'capital' as resources for livelihoods which are identified as: natural (natural resources), physical (infrastructure, technology); financial (loans); human (personnel and training); and social (social cohesiveness).

Second, livelihood strategies have been defined as agricultural intensification or extensification, livelihood diversification, and limited forms of migration. And thirdly, the ability to achieve or access these livelihoods has been seen as determined by a range of formal and informal organizational and institutional factors that influence sustainable

livelihood outcomes (Scoones, 1998; Bebbington, 1999). Indeed, these three themes have been used as part of a tentative institutional design of the SLA that is transferable between contexts.

Despite these advances, some critics have claimed SLAs are still insufficiently developed in political terms, or as tools of local governance. Some have suggested that SLAs should be reformulated as rights-based approaches in development, where participation is defined as the right to assert needs, rather than a 'sham participation' in policymaking by poor people (Baumann, 2000, p. 34; Carney, 2003).

Others have claimed that an emphasis on institutional design and diverse 'capitals' (such as natural and social.) has made SLA 'merely a confused diagram and a wordy manual' and that we should instead realize 'community work is not easily captured in a diagram' (Hinselwood, 2003, pp. 254, 243). This kind of argument underlies the desire to have flexibility in how SLAs are designed and described. Moreover, Arce (2003, p. 204) has argued that using words such as 'capitals' in uncritical, easily transferred, ways may reduce the ability for local people to assert their own values in framing development policy.

According to Scoones (1998, pp. 6-7) in environmental terms too, there are questions about how SLA is applied. On one hand, some analysts have agreed that SLA implies a more livelihoods-focused approach for defining resources. However, Kaushal and Kala (2003) give a specific consideration of forestry and livelihoods. They propose that the problem of regeneration of degraded forests on permanent basis and development of

indigenous communities can be better tackled through SL approach of which Community Forest Management has to be an integral part.[33]

Natural resource base sustainability refers to the ability of a system to maintain productivity when subjected to disturbing forces. This implies avoiding depleting stocks of natural resources to a level which results in an effectively permanent decline in the rate at which the natural resource base yields useful products or services for livelihoods. In addition, DFID (2002) has argued that SLA can challenge some key environmental narratives that poor people cause or cannot adapt to environmental degradation. This approach fully adopts the new problem closure offered under SLAs because it allows poor people to define both environmental problems and sustainable development because they are linked to activities that may reduce their vulnerability and secure sustainable livelihoods. This approach therefore gives precedence to poor people's definitions and uses of natural resources as a way to reduce vulnerability, rather than necessarily allow resources or environmental problems to be defined by other means.

A report from the United Nations' Food and Agriculture Organization has discussed SLA as a form of local institution that exists alongside methods of environmental protection rather than as a form of environmental protection itself.

SLAs therefore have been proposed as ways to build institutions around poor people's perceptions of resources and vulnerability. Critics have suggested that SLAs may still be dominated by outsiders' priorities for policy. Throughout the literature there is a

[33] See Joint Forest Management in India - Need for Sustainable Livelihood Approach: www.livelihoods.org/post/Docs/TAP_JFM.doc

presumption that households choose different combination of assets and activities which is often referred to as the household's livelihood strategy for diversification so as to achieve the best possible standard of living. A livelihood strategy encompasses not only activities that generate income, but any other kinds of choices, including culture and social choices, that come together to make up the primary occupation of a household (Ellis, 1998).

According to Brown *et al.* (2006) the ability to operationalise the concept of a livelihood strategy becomes especially important when one speaks of improving livelihoods and implicit in the concept of improvement is the suggestion that certain strategies offer households a higher return on their assets. In their study of livelihood strategies in the rural Kenyan highlands, they found that households with more land and more individuals working off-farm in skilled employment are able to achieve higher average per capita incomes than their neighbours.

To operationalise the SLA, this thesis will use it in the fieldwork as a framework for analysis. It follows Scoones (2003) who outlines a framework for analysing sustainable livelihoods which is defined in relation to five key indicators. The framework shows how, in different contexts, sustainable livelihoods are achieved through access to a range of livelihood resources (natural, physical, financial, human and social capitals), which are combined in the pursuit of different livelihood strategies (agricultural intensification or extensification, livelihood diversification and migration). Scoones (2003) noted that central to the framework is the analysis of the range of formal and

informal organisational and institutional factors which influence sustainable livelihood outcomes.[34]

The details of the DFID framework are discussed in the literature (Carney 1998, Ashley and Carney 1999, Goldman 1999, Hobley 2001, Shankland 2000, Pasteur 2001e). This framework uses the concept of capital assets as a central feature and considers how these are affected by the 'vulnerability context' in which they are derived and by 'transforming structures and processes' (alternatively labelled 'policies, institutions and processes') to constitute 'livelihoods strategies' which lead to various 'livelihoods outcomes' which are discussed in further details below.

There is an alternative method of analysing livelihood strategies involving direct examination of the individual household asset endowment. The amount of income earned and even the type of activity undertaken by a household is a function of the assets it controls. Certain activities may be beyond the reach of households without access to the required financial, natural, physical, human or social capital (Carter and Barrett, 2006).

There are many other livelihood frameworks that have also been developed by different aid agencies that are working in developing countries. The NGO CARE-International uses a livelihood framework based on the concept of 'household livelihood security'. The 'household' being used, in this case, as the main unit of analysis. (Frankenberger et al., 2000) Oxfam uses the concept of sustainable livelihoods but Neefjes (2000) explains that a framework is only employed at a strategic level and has been found less

[34] See also IDS Working Paper 72: Sustainable Rural Livelihoods: A Framework for Analysis, Ian Scoones, 1998: http://www.ntd.co.uk/idsbookshop/details.asp?id=419

useful at the field level. He also stresses that such a framework should only be employed as a tool and does not constitute an approach in itself. Carney *et al.* (2003). Compare and contrast the livelihoods approaches taken by DFID, CARE, Oxfam and UNDP.

Even though there are different types of livelihood frameworks that have been developed by different development agencies, there are still many debates on how these frameworks can actually be put to practice on the ground. Some experts have expressed concern that methodological frameworks are becoming over codified and institutionalised and specifically that the DFID framework is insufficiently dynamic because it fails to capture 'change' both external and internal to households. (Beall, 2001; DFID/FAO, 2000; Ellis, 2000). Other critics of the framework claim that people are invisible, that it is unclear on how to analyse and measure capital assets, that it requires more recognition of socio-economic, historical and cultural factors, that it is insufficiently flexible, that the overall concept is ethnocentric and not easily translatable, that it is not sufficiently directed at alleviating poverty and that it offers no guidance on linking micro-macro levels or policy analysis (DFID/FAO, 2000).

Some experts claim that using the framework as a tool has some problems because of the difficulties in measuring and comparing capital assets. The five types of capital assets that comprise a livelihood are financial, physical, natural, social, and human as viewed by the DFID framework (Carney, 1998; DFID, 1999). Some alternatives can be found in the literature. According to Moser (1996) in a study for the World Bank, access to certain assets reduced the vulnerability of poor households by identifying labour, social, economic, infrastructure, housing, and household relations. Furthermore,

Baumann and Subir (2001) suggested that political capital should be given equal status with other capital assets since this would provide a basis for a more structured and rigorous analysis of power than the 'policies, institutions and processes' box of the SL framework. But other experts argued that a sound definition of social capital would necessarily include a consideration of power and political relationships.

There is also evidence in the literature showing difficulties in actually defining these capital assets. Some experts have argued that social capital may mediate access to other assets and is not neutral, while others have suggested that the potentially 'dark side' of social capital, such as the hijacking of participatory exercises by elites, is also often overlooked (Beall, 1997; 2001; Fox, 1997; Thin, 2000). Pretty (1999) argues that it is necessary to understand the linkages and trade-offs between them because sustainable systems would increase the capital base over time. After specifically examining the relationship between natural capital and social capital, he concluded that both can be easily run down but can be regenerated, although it is clear from his findings that social capital is a pre-requisite for sustainable, productive and long-term management of natural resources. Some other experts dispute the use of 'assets' as a unit of analysis. According to Beall (2001) conceptualising assets in this way reduces them to neo-classical economic concepts. She argues that the breaking down of people's livelihoods in terms of assets may have only a superficial value since it tells us nothing of the relationships between assets, of how assets may change over a lifetime, or whether having high levels of one particular asset may compensate for low levels of another.

Analysis of the DFID SL framework shows that the capital assets are mediated through transforming structures and processes (policies, institutions and practices), sometimes

referred to as the PIP box (Hobley, 2001). This PIP box refers to the organisational structures and institutions of states, NGOs and the private sector and the processes through which they transact with individuals. According to Scoones (1998) sustainable livelihoods are about getting institutional and organisational settings correct and the framework should guide the questions to be asked towards achieving this end. However, Shankland (2000) argues that the vertical dimension of social capital needs to be recognised in order to connect livelihoods analysis with policy making. He identifies three types of policies that would influence livelihoods: macroeconomic, regulatory and rights-based policies; governance reform; and organisational change. The impact of each of these on livelihoods would depend to an extent to the vertical relationships with the state and other organisations that people have. However, again this relationship is reduced to a mechanical definition: 'policy operates through specific institutions and organisations to influence people's choice of livelihoods strategies...' (Shankland, 2000:13).

It is evident from the literature that livelihoods are seen to be the product of rational choice. Some experts claim that it is this underlying assumption that oversimplifies and renders harmless the idea of 'sustainable livelihoods'. The literature contains suggestions that the framework also needs to broaden institutional analysis beyond the governance to include community and familial structures (Bingen, 2000). After examining how institutional arrangements can either discourage or encourage the pursuit of sustainable livelihoods, Johnson (1997) raises the consideration of informal rules and norms and the importance of considering how policies are interpreted on the ground. According to Cleaver (2001) people can create new institutions using elements

of existing social and cultural arrangements, demonstrating the potential complexity of institutional reforms through a process of 'institutional bricolage'.

The literature discussed above is fairly critical of the DFID SL framework. It may not be the perfect tool that can capture all the detailed interactions that occur in the lives of the poor but it can sill be an effective tool for organizing and analysing ideas. While analysing the impact of the UK community energy scheme, Hinshelwood (2003) used the framework to demonstrate how, by stirring in an individual project's needs, a little creativity and staunch lack of respect for rigid diagrams she can cook up an excellent stock for a community development tool kit.

This thesis will also adopt the Sustainable Livelihoods Framework as a tool for understanding how the household livelihood strategies interact with the outside environment - both the changes in the natural environment and the policy and institutional context before and after the logging ban was implemented in Meghalaya. The research will apply the five concepts in the fieldwork that are crucial for understanding the linkages within the framework. These five concepts are defined by the *FAO Rapid Guide for Missions* as follows:[35]

Box 5: Overview of the Sustainable Livelihoods Framework

As shown in (Figure 1) in Chapter 1 the left hand section of the figure shows how the vulnerability context impacts on the livelihood assets of rural people - denoted by a pentagon. Livelihood assets are also influenced by outside policies, institutions and processes. Livelihood strategies of different categories of households are shaped by their asset base and by the policy institutional context in which they live. Livelihood outcomes of different types of households are influenced by the vulnerability context – people's exposure to unexpected shocks - and their ability to withstand the shocks, which depends on their asset base.

Source: FAO Rapid guide for missions, Rome 2005

[35] The definitions above of the five concepts is taken for the FAO Rapid Guide for Missions used for analysing local institutions and livelihoods, Rome 2005.

Vulnerability Context

It refers to unpredictable events that can undermine livelihoods and cause households to fall into poverty. Some of these factors are fast acting (such as earthquakes) and others are slow acting (such as soil erosion) but both can undermine livelihoods. This research will distinguish between shocks originating from outside the community which affect all people in the same locality and idiosyncratic shocks that principally affect only individual households.

Livelihood Assets

They refer to the resource base of the community and to different categories of households. In Figure 1 in Chapter 1 the centre left of the diagram has a pentagon that stands for different types of assets available to local people – human, natural, financial, physical and social. These assets are interlinked. Each type of asset is denoted in the figure with a capital letter (H,N,F,P,S). The size and shape of the asset pentagon that is, the amount and relative importance of each type of capital – varies between communities and between wealthy and poor households within the same community. This research will analyse if rich communities control more and better land and natural resources than poor communities and it will also find out if within any given community the rich households control more land, livestock, and physical and financial capital than the poor households.

Community and household assets are influenced by two sets of outside factors: first, the policy and institutional context and secondly, the vulnerability context.

Policies and Institutions

They are an important set of man-made external factors that influence the range of livelihood options open to different categories of people. They also influence access to assets and vulnerability to shocks. This research will identify an enabling policy and institutional environment that makes it easier for people - poor and less poor to gain access to assets they need for their livelihoods. It will also identify if there is a disabling policy and institutional environment that discriminates against the poor which makes it difficult for them to get access to land, livestock, capital and information.

According to the FAO (2005), asset ownership influences the range of livelihood options open to different categories of people. This research will find out if the households with plenty of assets such as land, water, livestock, equipment and money, as well as higher education and skills and better socio-political networks have a wider range of livelihood options than households with fewer assets. As there is double causality between the vulnerability context and asset ownership, the research will find out if shocks cause people to lose their assets and if assets help protect people's livelihoods against shocks. Human capital is less vulnerable to shocks because it cannot be stolen, lost or taken away easily. (FAO, 2005)

Livelihood Strategies

They are *"the range and combination of activities and choices that people make in order to achieve their livelihood goals."* According to the FAO (2005) their resource base and their understanding of the options available, different categories of households - poor and less poor - develop and pursue different livelihood strategies on the basis of their personal goals. This research will find out if strategies include short term

considerations such as ways of earning a living, coping with shocks and managing risk, as well as long-term aspirations for children's future and old age.

Local institutions influence household livelihood strategies directly by determining which activities are legal/illegal and appropriate/inappropriate for women and men, by creating incentives to pursue certain activities and choices over others, and by influencing perceptions of the effectiveness of particular strategies for achieving desired outcomes. Local institutions also affect household livelihood strategies indirectly through their influence on access and control of household assets. (FAO, 2005)

Hussein & Nelson (1998) proposed that rural livelihood strategies are constructed in three main ways: agricultural intensification, diversification and migration, and the key to understanding how the three intersect is through an understanding of how institutional arrangements determine people's entitlements.

According to Scoones (2003) these strategies represent the array of choices open for the rural people to pursue where they benefit from agriculture like livestock rearing, aquaculture and forestry through processes of intensification by creating more output per unit area through capital investment or increases in labour inputs. It is claimed that they can also gain from agricultural extensification by having more land under cultivation or by diversifying into an array of non-farm income earning activities, or relocate temporarily or permanently to another place for livelihood opportunities. As examples of the three way livelihood strategies in SL literature, the following IDS Working Papers will be used for analysis and in the fieldwork.

Sustainable Livelihoods and Agricultural Intensification

In her paper, Carswell (2003) examined agricultural intensification as a strategy for achieving sustainable livelihoods, comparing evidence from a number of areas that have undergone such a process - in particular, the introduction of Green Revolution methods. Noting the variable impact the Green Revolution has on different regions, crops and individuals, she reviews the explanations for these differences provided in the literature. She outlined the key conceptual questions surrounding intensification, setting them within the context of the broader environment and population debate. Carswell (2003) cited evidence from Africa and Asia that challenges the simplistic assumption that population growth and environmental degradation necessarily go hand in hand. She demonstrates the complexity of the processes at work and discusses the importance of institutional factors such as land tenure in determining whether intensification is sustainable in the long term.[36]

Sustainable Livelihoods and Livelihood Diversification

Hussein and Nelson (1998) reviewed some of the broad theoretical literature and case study based literature on various forms of livelihood diversification in the rural areas of developing countries. The case study material referred to throughout their paper is drawn largely from studies of Sub-Saharan Africa with some reference to work on Asia.[37] Taking diversification to mean the adaptation or transformation of household or rural economy into new, mainly non-agricultural sectors, the literature offers two contrasting perspectives. On one hand, theories of growth and structural transformation

[36] See also IDC Working Paper 64: Agricultural Intensification and Rural Sustainable Livelihoods: A 'Think Piece' Grace Carswell, 1997: http://www.ntd.co.uk/idsbookshop/details.asp?id=397

[37] See also IDS Working Paper 69: Sustainable Livelihoods and Livelihood Diversification Karim Hussein and John Nelson, 1998: http://www.ntd.co.uk/idsbookshop/details.asp?id=414

suggest that a diversifying economy is a growing economy that will create new jobs and avert downward pressure on rural wages.[38]

Sustainable Livelihoods and Migration

McDowell and de Haan (2004) established the links between migration and sustainable livelihoods by looking in particular at the institutional factors that connect the two. They claimed that much of the development literature makes the false assumption that sedentary patterns in society are the norms instead of making the case that migration is often the rule rather than the exception. McDowell and de Haan (2004) concluded that migration should be seen as one of the livelihood strategies open to households, that it is often combined with other strategies and that it is frequently a two-way process in which migrants maintain close links with their areas of origin over a much longer period than is frequently assumed. Pointing out the range of different types of migration, ranging from voluntary to forced, they highlight the complex institutional factors involved in determining who is able to migrate and who benefits most from it.[39]

Livelihood Outcomes

They are what household members achieve through their livelihood strategies such as levels of food security, income security, health, well-being, asset accumulation and high status in the community. Unsuccessful outcomes include food and income insecurity, high vulnerability to shocks, loss of assets and impoverishment.

[38] One set of literature, for instance, tends to equate the term diversification with economic transformation, synonymous with the growth and development process as a whole (e.g. Kuznets 1966, 1971, Chenery, Robinson and Syrquin 1986, yrquin and Chenery 1989, Syrquin 1988).
[39] See also IDS Working Paper 65: Migration and Sustainable Livelihoods: A Critical Review of the Literature, Christopher McDowell and Arjan de Haan – 1997: http://www.ntd.co.uk/idsbookshop/details.asp?id=398

According to the FAO (2005) the asset base of poor households is much more limited than that of non-poor households because of disabling policies, institutions and processes. This research will study if restricted access to land, water, natural resources and other assets will limit the poor households' livelihood options. It will also determine if lack of assets to fall back on in an emergency makes them vulnerable to shocks and if shocks contribute to their negative livelihood outcomes that further depletes their household assets leading to a downward spiral of deepening poverty.

Because of enabling policies, institutions and processes, non-poor households enjoy a broader livelihood asset base which widens their livelihood options and reduces their vulnerability to shocks. This enables the non-poor to pursue winning livelihood strategies and to achieve positive livelihood options. (FAO, 2005)

Livelihood Adaptation

Davies and Hossain (1997) define livelihood adaptations as dynamic processes of constant changes to livelihoods which either enhance existing security and wealth or try to reduce vulnerability and poverty. There are two types of adaptation. Positive adaptation is by choice and can be reversed if fortunes change and usually leads to increased security and sometimes wealth. It is concerned with risk reduction and is likely to involve an intensification of existing livelihood strategies or a diversification into neighbouring livelihood systems. Negative adaptation which when necessary tends to be irreversible and frequently fails to contribute to a lasting reduction in vulnerability. It occurs when the poor are forced to adapt their livelihoods because they can no longer

cope with short-term shocks and need to alter fundamentally the ways in which they subsist.[40]

To conclude, the above mentioned components of the SLA will be adopted for the case study analyses of this research. It is evident from the literature that many more questions remain unanswered about the practical complexities and contradictions of the SLA. The SLAs are more than just the five capital assets that this research investigated. Some have criticised the analysis of the five capital assets as being too reductionist and neo-liberal but this research had its own approach of looking at SLAs. Most approaches to SLAs focus on the five capital assets as a way of doing case study analyses, hence this thesis will also adopt this approach.

2.4 The Possibilities for Merging the Two Approaches

When reviewing the literature and comparing between the objectives of state-led logging ban approach and the people-led sustainable livelihoods approach, a direct clash between these sets of institutional arrangements is obvious. One which is occurring at the grassroots where poor people try to secure their basic needs through different livelihood strategies and the other enforced by the state from the top to protect and conserve forests. Are there possibilities for merging the two approaches? This section will discuss some of the approaches in the literature that have tried to address the combine problems of dealing with forest conservation and poverty alleviation.

It must be noted that any conservation strategy that does not give a central place to livelihood improvement for the poor is bound to fail anywhere it is implemented.

[40] See also IDS Working Paper 57: Livelihood adaptation, public action and civil society, Susanna Davies and Naomi Hossain, 1997: http://www.ids.ac.uk/ids/bookshop/wp/Wp57.pdf

However, the challenge is how to try and achieve both objectives without hurting the poor and depleting the forest resources from which their livelihoods depend. Many changes in access to and use of resources, investment patterns and organization and composition of public services would be required for this task. But for these changes to occur there needs to be political and economic empowerment of the marginalized groups as part of a strategy linking resource conservation with poverty alleviation. This calls for an approach that targets the necessity of locally based conservation strategies. There is compelling logic and impressive evidence in support of conservation strategies that are centred on people's participation (Ghai and Vivian, 1992).

According to Ghai (1992), indigenous peoples around the world have a deep understanding and intimate knowledge of their local environment and natural resources, which he argues have been handed down from generations. However, the fact is that in many situations there have been breakdowns of these customary and traditional systems of resource management and the consequent loss of local autonomy and responsibility in this domain. If these local institutions are not strengthened and revitalised, interventions from national and international agencies can often end up doing more harm than good. The key is to first address the real needs of the local people, build their local capacities and get them involved in the decision-making processes that will affect their livelihoods strategies and access to resources. The local communities are also in a very good position to assess the relevance and validity of the solutions to environmental problems devised by outsiders (Ghai, 1992).

The case for reliance on local communities and grassroots initiatives in resource management and conservation is strengthened by the evidence Ghai (1992) provided on

indigenous inventiveness and creativity in devising environmentally harmonious adaptations in production systems to changes in social and material conditions. There is also abundant evidence of the success of environmental projects which combine external resources with community initiatives and participation (Conroy and Litvinoff, 1988; Egger and Majeres, 1992; Harrison, 1987; Ledea Ouedraogo, 1990; Pradervand, 1990; Reid et al., 1988; World Bank, 1989).

The success of people-led local level initiatives includes meaningful democratic participation by the local people; adequate preparatory period; emphasis on livelihood concerns; existence or creation of community organizations; reliance on locally available tools, materials and skills; low-risk activities with very attractive pay-offs; an effective system of marketing and extension and government and donor support and commitment (Cruz, 1991; Harrison, 1987). The strengthening of local institutions and organizations can simultaneously empower local communities, foster grassroots democracy and promote a broad-based development effort focused on livelihood improvement through resource regeneration (Ghai, 1992).

Apart from the one discussed above, there are other approaches that target the strengthening of community resource management capabilities. One example of such an approach is illustrated by the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) in Zimbabwe which is a programme designed to smooth the transition from communal ownership of land to more formal structures. According to UNRISD this programme was meant to set up an institutional structure to enable local co-operatives to develop management schemes for land use, wildlife, forestry, grazing and water in specific areas, and to maximize returns from them. The

income from these operations would go to subsidized loans for villagers and community investment and for shareholder dividends (Reid et al., 1988; FAO, undated).

Gaidzanwa *et al.* (1987) noted that there are cases where the institutional base for a broad-based effort at improvement of livelihood through resource conservation is provided by village councils or elected local authorities and this is illustrated by the Mwenezi experience in Zimbabwe where the newly elected district, ward and village authorities pioneered an innovative approach to resource conservation and livelihood improvement comprising land reform, village resettlement, separation between grazing and arable land, creation of fish ponds and protection of wildlife.

Mutiso (1991) noted another interesting example provided by the experience of Utooni in the Machakos district in Kenya where the local people themselves created new organisations which combined traditional knowledge with modern science to take on responsibility for local development like controlling soil erosion and declining yields through terracing, planting of trees and construction of sub-surface dams, water tanks and river barrages.

According to Ghai (1992) there is a need to strengthen the technical, organisational and managerial capabilities of rural communities and their organizations because they cannot undertake the vast task of resource rehabilitation and conservation without support from sympathetic individuals, organisations, the national authorities and the international community. The positive role played by such external support has been crucial in the successes achieved by many grassroots initiatives for environmental

improvement (Ghai and Vivian, 1992).

Hence, it is important to consider that any outside intervention or assistance for the local communities should be designed to reinforce their local efforts, enhance local capabilities, build upon indigenous knowledge and skills and respect community priorities. Technical problems to elaborate programmes for raising labour and resource productivity, to conduct field research and experimentation and to furnish food, materials and cash should be solved by external assistance (Ghai, 1992).

Ghai and Vivian (1992) argue that there is growing evidence that a holistic approach sensitive to people's problems and priorities can successfully combine resource conservation with livelihood improvement. However, the debate continues on how to deal with the key element of this approach, which is the progressive transfer of responsibility to local communities and organisations for the management of natural resources. It is clear from the literature that the national authorities and the international community can play a vital role in this process through assistance designed to reinforce local efforts, enhance local managerial and organizational capabilities and build upon indigenous skills, knowledge and inventiveness (UNRISD, 1992).

Other approaches to integrate poverty and conservation objectives are being implemented by IUCN using the existing Poverty Reduction Strategy Papers (PRSPs), which according to the World Bank are at the heart of a new anti-poverty framework.

IUCN's Forest Conservation Programme proposes to build an economic case as to how forest conservation and sustainable management can make tangible contributions to the

needs and livelihood strategies of the rural poor and bridge the gap that currently exists between poverty reduction strategies and national forest programmes.

It is argued that at present the role of national forests in poverty reduction strategies tends to be superficial due to disconnections between the analytical approaches of natural resource use and poverty assessments. Furthermore, national forest conservation programmes seldom establish strong links with poverty reduction strategy processes. In this regard, IUCN proposes that addressing poverty and forests leads into a suite of governance issues, including access and tenure rights. It claims that if forests are to fulfill their potential in making tangible contributions towards poor people's livelihoods then poor people must be able to access, use and control the resource.

To further this approach, IUCN claims that it is mainstreaming environment into PRSPs in Africa by working with Ugandan and Kenyan authorities on mainstreaming the environment into national economic and development planning as well as greening the next versions of the PRSPs.[41]

Other scholars have tried to link conservation and SL approaches in their work. Khan (1996) analysed the conflict between sustaining rural livelihoods and establishing Protected Areas (PAs) in the mountain areas of Northern Pakistan by assessing the implications of the PA system on common resource use with particular emphasis on the rights and access of the local communities.

[41] See also IUCN website: http://www.iucn.org/themes/fcp/experience_lessons/poverty_prsp.htm

Ashley (2000) applied the livelihood approach to Natural Resource Management (NRM) initiatives in Kenya and Namibia. All four examples explored how rural livelihoods affect and are affected by NRM initiatives. Findings on the fit between NRM initiatives and rural livelihoods varied from context to context although some common themes emerged such as the importance of impacts on assets and other activities. Findings on methods include the need for a combination of methodologies, the importance of integrating stakeholder analysis and participatory assessment, and the value of the sustainable livelihoods (SL) framework as an analytical structure.[42]

Lam *et al.* (2004) analysed forest conservation programmes and recent changes in livelihoods strategies in the Ca River Basin in Vietnam. While analysing the consequences of the programmes aimed at the local farmers, they found several recent changes in the livelihood strategy of the local people. The most notable of these changes are an increased emphasis on livestock raising, a concurrent increase in the number of livestock, and a shortening of the swidden/fallow cycle of the local farming systems. The results of their research suggest that more efforts and redirected efforts, from both the central Vietnamese government and from the provincial government and the local people, are needed in order to successfully conserve the remaining forested areas of the Ca River Basin.[43]

This section has attempted to discuss the different possibilities of integrating the objectives of forest conservation and poverty alleviation which the logging bans and the SLAs sought to achieve. It has presented the different debates, alternative approaches and research work relevant to the topic being discussed.

[42] See also ODI Working Paper 134: http://www.odi.org.uk/publications/wp134.pdf
[43] See also CARES website: http://www.cares.org.vn/webplus/viewer.asp?pgid=3&aid=147

The primary goal of this thesis is to fill the gap on the current state of research on how the objectives of the logging bans and the SLAs can be achieved. In keeping with that goal, this chapter has attempted to provide the theoretical framework by discussing in detail the four important relating themes that this research seeks to advance.

This chapter has discussed the various problems associated with achieving conservation and poverty alleviation. It has analysed the state-led logging ban approach and identified its pros and cons, it has presented alternative approaches of local poverty-led institutions such as SLAs and lastly, it has explored the possibilities for merging the two approaches, which this thesis will later investigate in the case study analyses that follows.

As the thesis proceeds, it will attempt to find the answer to the question:
What kind of institutional arrangements exist or can be developed as solutions for better management of forest resources in a way that ensures a supportive environment for the poor to secure their livelihoods?

The theoretical foundation that this chapter has attempted to provide will be used later to answer the key research questions on:
How has the logging ban affected household behaviour and what does this change tell about theories of adaptation and sustainable livelihoods?

To proceed, the following chapter will discuss the history of forestry in the State of Meghalaya in North East India and the research area in the West Khasi Hills District.

Chapter III

History of Forestry in Meghalaya

Introduction

This chapter presents a profile of the State of Meghalaya, the history and role of the different institutions that are involved in governance and forest management at the state, district and village levels, the types of forest and their ownership. It also discusses the challenges of forest management, shifting cultivation, interstate issues, policies and the response taken by the Government so far. The chapter ends with a description of the area of study in the West Khasi Hills District and explains the different types of outside interventions that have arrived in the district since the logging ban on 12 December 1996.

3.1 Profile of Meghalaya

Meghalaya was carved out of Assam as an autonomous state on 2 April 1970 and declared a full-fledged state of the Indian Union on 21 January 1972. The State of Meghalaya comprises Khasi, Garo and Jaintia Hills. It has a geographical area of 22,429 sq. km and is situated in northeast India. It lies between 25°02' and 26° 07N and 89°49 and 92°50' E. The elevation ranges from 60m to 1950m. Cherrapunjee and Mawsynram, located in the southern part, are the highest rainfall spots of the world.

Figure 4: Forest Map of Meghalaya showing density in the different districts (FSI 2005)

According to 2001 census, the population of the state is 2,306,069 with a density of 103 persons per square km. Schedule tribes (Khasi, Jaintia and Garo) constitute 85.53% of the total population. The Garos inhabit the western Meghalaya, the Khasis the central Meghalaya and the Jaintias the eastern Meghalaya. The literacy rate is 63.31 %.

Meghalaya is rich in natural forest resources. Besides timber, a number of non-timber forest produce including cane, bamboo, broom-grass and other commercially important grass species, mushroom, orchids, oil-yielding trees, honey and wax are extracted from the forests in large quantities every year. Based on legal status the forest areas are is 9,496 sq. km.

According to satellite data, the forest cover of Meghalaya in 1980 was 69.06% and in 15 years time the forest area has been reduced to 63.09%.[44] According to this data, the trend of forest cover shows that during 1980-89 maximum deforestation has taken place. There is a general consensus that shifting cultivation, which is widely practiced in the state; mining for coal and limestone; urbanization and industrialisation, are the major factors contributing to the depletion of forest cover in the state.

Some experts in the state claim that due to the rising human population, the pressure on forestland for cultivation has increased and consequently, the Jhum cycle is now reduced to 2-3 years from 10-15 years in earlier days. According to the Soil Conservation Department, the area affected by shifting cultivation during the last 10 years (1987-1997) was about 0.18 million hectares. The Jhumia population dependent on Jhum is 217,640 and the annual area under Jhum is 364.13 sq. km. The district-wise Jhumia families of Meghalaya are shown in (Table 2).

Scientists from the Centre of Environmental Studies at the North Eastern Hill University (NEHU) in Shillong have stated that during the past few decades there has been a considerable deterioration in the quality of environment in the state.[45] They believe that life support systems viz., air, land, water and vegetation are under threat due to major environmental problems resulting from the population pressure, conversion of forestland into agricultural fields, deforestation, urbanization, mining and industrialisation.

[44] http://www.meghalaya.nic.in/naturalres/forest.htm
[45] See article about Meghalaya's nemesis: Jhum and mines by Peeyush Agnihotri on The Tribune on November 16, 2003 http://www.tribuneindia.com/2003/20031116/spectrum/main3.htm

Studies conducted by experts from NEHU show that coal mining has damaged the environment to a large extent through forest clearing and increase in acidity of soil and water. The rural areas are badly affected by unscientific mining activities being carried out in different parts of the state by migrant workers from Bangladesh on the payroll of rich coal mine owners living in the towns.

Meghalaya is rich in plant diversity with 3,128 species of flowering plants including 1,237 endemic species and several valuable medicinal plant species. There are some highly exploited and endangered species and most of the (endemic and threatened) species are confined to protected forests/sacred groves managed by traditional institutions and the village level. Experts from the Botany Department of NEHU claim that the species that were common 20 to 30 years back have become rare due to overexploitation, deforestation and habitat destruction.

Name of District	Total Population (Rural)	Jhumia Families dependent on jhum	Jhumia Population dependent on jhum	Percentage of the jhumia population from the total rural population	Annual Area under Jhum in Sq. Km.	Percentage of Annual Jhum Area from the total geographical area.
East Khasi Hills	383027	721	3605	0.94	6.20	0.23
Ri-Bhoi	179630	4351	21755	12.11	27.40	1.53
West Khasi Hills	260595	5374	26870	10.31	46.19	0.88
Jaintia Hills	270669	1366	6830	2.52	11.74	0.31
East Garo Hills	211652	13630	68150	32.20	117.15	4.50
West Garo Hills	457422	18086	90430	19.77	155.45	4.19
South Garo	90462	7900	39500	43.66	67.87	3.67
TOTAL	**1853457**	**51428**	**257140**	**13.87**	**442.00**	**1.97**

Table 2: District-wise Jhumia families of Meghalaya (Soil Conservation Department 2001)

The consensus among state soil officials is that if the shifting cultivation and mining in their present form and magnitude are allowed to continue, land degradation and the impoverished living conditions of the poor people of rural Meghalaya are bound to worsen. After considering the adverse impacts of deforestation, shifting cultivation, mining, over-exploitation of plant and animal species, some experts believe that suitable policies, strategies and action plans need to be formulated for conserving the natural resources of the state and for protecting the environment for the welfare of the present and future generations.

3.1.1 Profile of West Khasi Hills District

The area of study is the West Khasi Hills District in Meghalaya. It is presently the largest district of the state and was carved out of the erstwhile Khasi Hills District on 28th October 1976. On 10 November of the same year, the Mairang Civil Subdivision was inaugurated and the Mawkyrwat Block was converted into an Administrative unit. With the up gradation of Mawkyrwat into a full-fledged Sub-Division on 26 June 1982, the District now comprises of three Sub-Divisions (including the Sadar Sub-Division), one Administrative Unit, Mawshynrut, which came into being on the 9th February 1996 and 6 Blocks which includes Nongstoin, Mairang, Mawkyrwat, Mawshynrut, Ranikor and Mawthadraishan.

The district lies in the central part of Meghalaya and is situated between approximately 25 degrees 10' and 25 degrees 51' N latitude and between 90 degrees 44' and 91 degrees 49' E longitude. It is bounded on the northwest by Kamrup district of Assam, on the northeast by Ri Bhoi district, on the east by East Khasi Hills district, on the south by Bangladesh, on the west by East Garo and South Garo Hills districts.

The district comprises an area of about 5,247 sq. km, which is 23 percent of the total area of the state.[46] Nongstoin, covering an area of about 76 sq. km, is the Headquarters of the District. The District comprises of eight Syiemships (Kingdoms), which includes Nongstoin, Nongkhlaw, Maharam, Myriaw, Rambrai, Mawiang, Langrin Nobosophoh, together with the three Sirdarships of Jyrngam, Riangsih and Nonglang. The people of the District have their distinct dialects of about 23 in number. Majority of these dialectical groups understand Khasi, which is a common or link language of the people. A detailed description of the Khasis by Singh (1997) follows:

The Khasis are predominant inhabitants of West Khasi Hills District. Khasi is a generic term for various tribes and sub-tribes who inhabit the Khasi and Jaintia hills of Meghalaya and its northern slope up to the Brahmaputra valley and the southern slope rolling to the Surma valley. Included in this broad term of Khasi are the Jaintia, the Pnar in the east and the Lyngam in the west. It also includes the Bhoi, War and Khynriam. The names are primarily territorial. According to the Khasi myth, all these people are descendants of seven families with divine origin, who are known as ki selves Ri Lum. The term Khasi was probably given to this community by the people of the plains. Another opinion is that that the term Khasi was derived from a word khyriem of the same language, which literally means people from the West. Their history before the advent of the British into the hills is uncertain, yet the Khasis have an old and rich oral tradition from which the past may be reconstructed. The Khasis are divided into a number of exogamous clans like Lyngdoh, Kharkongor, Diengdoh, Sohkhlet, Marbaninag, and Syiemlieh, who trace their descent from respective ancestries. Clans are bound together by strict ties of religion, ancestor worship and funeral rites. Even Christian converts adhere to descent, which passes down the female line. Marriage is

[46] See West Khais Hills District website http://westkhasihills.gov.in/

by choice and not arranged and residence after marriage may be matrilocal or neolocal. Divorce is frequent and its procedure simple. Remarriage of both partners, after divorce, is possible. While the youngest daughter inherits ancestral property and they have a preference to the division of property, males can own only self-acquired property. Natural resources are under the control of the clans. The Khasi economy is a market-oriented one in which women play an important role. The vast majority of the Khasis are Christians with its various denominations. There are a small group of Hindu and Muslim Khasis. Music plays an important role in Khasi culture and a number of percussion, wind and string instruments are played during the many festivals they celebrate. In the past years there has been a new awareness of clan consciousness. With the achievement of independence, nationalism became a focus for cultural innovation. Hence the movement for the preservation of tribal identity matured.[47]

The West Khasi Hills District represents a unique socio-cultural framework and faces a unique set of problems. The District may be divided into four broad geographical units. There is the Western sector with dense jungles with an elevation of 600 to 900 meters, bordering the Garo Hills. In the Southern sector, especially the southeastern part, the hills slope rather abruptly to an elevation of about 150 meters, close to the plains of Bangladesh. In the Northern sector, there are a series of hills and ranges, which gradually slope down to an altitude of about 150 meters till they reach the plains of Assam. In the central sector, the hill ranges run parallel from East to West forming the highest part of the district with an average altitude of about 1400 meters. Since the logging ban in December 1996 different development intervention projects have come about in the District starting with the International Fund for Agricultural Development (IFAD) back in November 1999 as a multilateral interventional and then followed by

[47] Source: The Scheduled Tribes, Edited by K.S. Singh, 1997, Oxford University Press.

the Joint Forest Management (JFM) in August 2005 as a state intervention. These interventions have been differentiated from each other to identify the different approaches in implementation and the level of impact they had on the households. The goal is to find out how these interventions may have changed or improved the livelihood strategies of the households in the project villages since they were implemented. It is important to understand how people have responded to these outside interventions and to compare the different approaches.

3.1.2 Types of Development Interventions in the District

Multilateral Intervention: International Fund for Agricultural Development

The Khawkylla Community Resource Management Society (KCRMS), Nongstoin, West Khasi Hills District, has been working since May 1999 under the project North Eastern Region Community Resource Management Project (NERCRMP) for Upland Area Sponsored by International Fund for Agricultural Development (IFAD) and Ministry of Home Affairs, (now under Ministry of Development of North East Region), Government of India through North Eastern Council (NEC).

The district society has been implementing the project activities through the Development Support Team, which is led by the Project Manager along with 8 partner NGOs who were interviewed in connection with this research. At present, the KCRMS is working in 162 villages covering approximately 6900 households in 18 clusters falling under 6 Community and Rural Development blocks Nongstoin, Mairang, Mawkyrwat, Mawshynrut, Mawthadraishen and Ranikor. During the time of the fieldwork between September – December 2005 and April – July 2006, 52 new villages were covered comprising of 2835 Households. IFAD claims that the overall objective

of the project will be to improve the livelihood of vulnerable groups in a sustainable manner through improved management of their resource base in a way that contributes to protecting and restoring the environment.

IFAD works in these villages by providing training and micro-credit through Self-Help Groups (SHG), which are small, economically homogeneous and affinity groups of rural/urban poor, voluntarily formed to save and to contribute to a common fund to be lent to its members as per group decision. Financial discipline inculcated through internal rotation of savings and introduction of best practices, like double-entry book-keeping, helped in building capacity of the SHG members. Training in SHG management and skill development also played a very important role in empowering poor women in these villages. IFAD also works through their Natural Resource Management (NaRM) groups in each of their project villages. Two members from each household, i.e. the husband and wife, can be part of NaRM group which makes important decisions for the welfare of the entire village and also implement schemes for village development funded through the IFAD project.

State Intervention: Government of Meghalaya Joint Forest Management

Meghalaya joined the rest of the country when it notified the constitution of Forest Development Agency (FDA) and application of the Joint Forest Management principles on 9th September 2003. The Forest & Environment Department registered 7 FDAs constituted in 7 (seven) Social Forestry Divisions covering all the districts of the State. The Joint Forest Management Committees formed by respective FDAs have been registered by the concerned Conservator of Forests (Social Forestry).

The Government stated that Joint Forest Management is a concept of developing partnership between Forest Department and fringe forest user groups on the basis of jointly defined roles and responsibilities for afforestation of degraded community forests. Government officials that were interviewed claim that JFM will provide a visible role to the local communities in planning, management and protection of community forests and will give them a share in the benefits from these forests.

The National Afforestation and Eco-Development Board have approved the proposal worth US$ 270,000 submitted by the seven FDAs for implementation of National Afforestation Programme in Meghalaya for an area of 7400 hectares during the 10^{th} five-year plan (2002 - 2007) through 73 Joint Forest Management Committees.

Forest officials claim that the effective implementation of the programme by the JFMCs will go a long way towards generating gainful employment opportunities for rural people, reducing the incidence of poverty, and subsequently leading to higher level of income and employment. Forest officers interviewed argue that people's participation combined with empowerment is a key to sustainable management of natural resources, which is one of the strongest means of development for the masses.

3.2 Political and Governance Structure

Districts and Headquarters

The State of Meghalaya has been divided into 7 districts. These are: East Khasi Hills, West Khasi Hills, East Garo Hills, West Garo Hills, South Garo Hills, Ri Bhoi, and Jaintia Hills. There are 8 subdivisions (other than the district headquarters) and the districts are divided into a total of 39 CD blocks. The total number of villages in Meghalaya is 5,780. The geographical area and headquarters of districts and CD blocks

are shown in (Table 3). Other functional units of the State Government administration are given in (Table 4).

Geographic Area	22,429 sq. km
Capital	Shillong
Number of Districts	7
Tribes	Khasi, Jaintia and Garo
Languages	Khasi, Jaintia, Garo, English, Hindi
Population (Census of India, 2001)	2,306,069
Males	1,167,840
Females	1,138,229
Decadal Growth Rate (%)	29.94
Density (person per sq. km)	103
Rural Population	1,853,457
Urban Population	452,612
Sex ratio (females per thousand ma	975
Literacy (%)	63.31
Males	66.14
Females	60.41

Table 3: Statistical Profile of the state (Directorate of Economics & Statistics 2002)

Units	West Khasi Hills	East Khasi Hills	Janitia Hills	Ri Bhio	West Garo Hills	East Garo Hills	South Garo Hills	Meghalaya
Sub Divisions (othe district HQ)	2	1	2	-	2	1	-	8
Police Stations	3	10	3	2	4	3	1	26
Police Outpost	3	4	5	6	7	5	2	32
Community Development Block	6	8	5	3	8	5	4	39
Towns	3	8	1	1	1	2	1	17
No. of Villages	914	899	465	570	1481	856	595	5780

Table 4: Administrative units of Meghalaya (Directorate of Economics & Statistics 2002)

Autonomous District Councils

The District Councils are constituted by the members (Member of District Council) representing the District Council constituencies who are elected to office through a regular election like the members of the Legislative Assembly. The leader of the party, which gets maximum representation in the District Council, is appointed by the Governor of Meghalaya as the Chief Executive Member (C.E.M.) of the District

Council. On the advice of the C.E.M., some members are appointed by the Governor as the Executive Member who along with the C.E.M. constitute the Executive Committee of the District Council and exercise their executive powers. The Autonomous District Councils (ADCs) have executive, legislative as well as judiciary powers in relation to land disputes and social conflicts.

Village Administration

Since time immemorial the villages of Meghalaya were governed democratically through the village Dorbars headed by village headmen. Presently, these village level institutions manage all the resources under the jurisdiction of the village particularly the Common Property Resources (CPR). The village Dorbars command respect by all the villagers and have considerable control over the community.

Traditional System of Administration

While village Dorbars represent the village level administration unit, Syiemships, Dolloiships, Nokmaships and Sirdarships represent the next tier of traditional institutions responsible for the governance at Elaka or Subelaka level under the traditional system of administration. These second tier organizations are also democratically elected institutions although the heads of these institutions are either elected or hereditarily decided. Although the ADCs are not traditional bodies, nevertheless they represent the third tier of administration in this system.

Economic Base

Agriculture is the main occupation of the rural people of Meghalaya. Important fruits grown are oranges, pineapple, lemon, guava, jackfruit and bananas, while potato, jute,

mesta, cotton, areca-nut, ginger, turmeric, betel leaf black pepper and broom grass are the chief commercial crops.

The Garos practice the 'Jhum' cultivation although lately "Jhum" or the shifting system of cultivation is being replaced with more scientific cultivation methods bringing land under permanent cultivation. They are also good fishermen but indifferent hunters. The Hajongs, however, do not practice 'shifting' cultivation. The Khasis in the rural areas have four main types of land uses:

(1) the forest land for Jhum cultivation

(2) wet paddy land

(3) high grass land and

(4) homestead land which is situated close to their courtyard

Some of the Khasis in the villages are engaged in bee-keeping, working on roads and building constructions, and carrying potatoes. The educated individuals have moved to towns and taken teaching and government jobs or engaged in private businesses of varying nature. Meghalaya has abundant but untapped natural resources, including coal, limestone, kaolin, feldspar, quartz, mica, gypsum, bauxite, and other minerals. Its sillimanite deposits (a source of high-grade ceramic clay) are reputedly the best in the world and account for almost all of India's sillimanite output. It has no heavy industries but has small-scale industries which include cement, plywood and beverage factories.

3.3 An Overview of Forestry in Meghalaya

Status of forest cover

The forests of Meghalaya can be grouped into tropical and subtropical or temperate types. The Indian Institute of Remote Sensing (IIRS) has classified the vegetation of Meghalaya into tropical evergreen, tropical semi-evergreen, subtropical broad leaved hill forest, tropical moist deciduous, grasslands and savannas, temperate and sub tropical pine forest types.[48]

Tropical forests: These forests occur up to an elevation of 1200m where average annual rainfall ranges between 100 and 250cm. They may be evergreen, semi-evergreen, and moist deciduous depending on the annual rainfall. Tropical evergreen forests occur in high rainfall areas and near catchments and they are rich in species diversity. The tropical semi-evergreen forests occupy the north-eastern and northern slopes of the state, typically up to an elevation of 1200m, where annual rainfall is relatively less.

The number of species in the tropical forests is more than the evergreen ones (Tripathi 2002). The tropical moist deciduous forests occur at lower elevations where annual rainfall is below 150cm. Typical natural deciduous forests do not occur in Meghalaya. These are sub- climax or man-made forests, characterized by seasonal leaf shedding and profuse flowering of the trees. Fires are common in these forests. The trees of the deciduous canopy are lofty with straight bole and spreading crown.

Subtropical and Temperate Forests: The temperate forests occur up to an elevation of 1500m and above, mostly along the southern slope of Khasi and Jaintia Hills. The

[48] See also more information about forest: http://www.meghalaya.nic.in/naturalres/forest.htm

annual rainfall in these areas ranges 200-500cm with a severe winter during November to March. Ground frost is common during December and January. Subtropical Pine forests have developed as a stable secondary community on the disturbed evergreen and semi-evergreen subtropical broad-leaved forest sites, which are seasonally dry and nutrient-poor.

Grasslands and Savannas: Typical grasslands are not found in the state. The rolling grasslands covering large areas in Khasi and Jaintia Hills and in major parts of West Garo Hills are found on degraded land developed either due to biotic pressure or due to interactive influence of topography, climate, fire and grazing.

Sacred Groves: The sacred groves of Meghalaya largely fall under the temperate type and are the relic type evolved through millions of years. They are rich storehouse of vegetation wealth incomparable to any other type of forests in the state. These isolated pockets are untouched due to the religious beliefs and myths attributed to them. Many of the endangered species of the state are presently confined to these pockets only. Fagacaea members dominate over others in these sacred forests. Epiphytic flora is quite abundant and again dominated over by ferns and orchids.

Forest area and forest cover

The total recorded forest area is 9496 sq. km. The area of reserved and protected forests under the control of the State Government is only 1,124 sq. km. The unclassed forest, managed by the ADCs and private owners, has an area of 8,372 sq. km (FSI, 2001).

According to the State of Forest Report (FSI, 2001), the actual forest cover of the state is 15,584 sq. km. This accounts for around 69.5% of the state's geographic area. Per capita forest area in the state is 0.88 hectares compared to the national average of 0.11 hectare (Table 5). The total area covered by forest in different districts is shown in (Table 6).

Population	Geographical '000 ha	Total forest (x10 ha)		Dense forest (x10 ha)	Open forest (x10 ha)	Per Capita forest cover in ha
		Recorded	Cover			
17,74,778	2243	9.4.6 (42.5%)	1563 (69.5%)	592	971	0.88

Table 5: Forest-man ratio in Meghalaya (Forest Department 2001)

The figures in parentheses represent the forest area as percentage of the total geographical area. Dense Forest (40% Canopy cover), Open Forest (10-40% Canopy cover).

District	Area	Forest
West Khasi Hills	5247 sq. km	53.52%
East Khasi Hills	2748 sq. km	35.34%
Jaintia Hills	3819 sq. km	46.13%
West Garo Hills	3714 sq. km	54.45%
South Garo Hills	1850 sq. km	64.11%
East Garo Hills	2603 sq. km	58.38%
Ri Bhoi	2448 sq. km	50.24%

Table 6: Forest cover in different districts of Meghalaya (Forest Department 2001)[49]

Temporal changes in forest cover

Temporal changes in forest covers of Meghalaya show a maximum decrease in the cover during 1980 to 1990. However, the decrease in the forest cover was minimal during 1990-1995 (FSI, 2001).

[49] See also Meghalaya National Informatics Centre: http://meghalaya.nic.in/naturalres/forest.htm

The forest cover of Meghalaya decreased from 1981 to 1999; it was highest during 1980-1989. During 1985-1987, 73.41% (16,466 sq. km) of the total geographical area of the state was under forest cover. It decreased to 69.75% (15,645 sq. km) by the year 1987-1989 and then decreased to 69.48% (15,584 sq. km) in 1999-2001 (FSI 2001). The changes in forest cover in Meghalaya from 1991 – 2001 is shown on (Table 7).

Trend in reserved forest area

There has been no change in the reserved forest areas since 1981-1982. However, there has been a marginal increase in protected areas due to purchase of forestlands by the Forest Department for the purpose of declaring them as National Parks. According to Roy and Tomar (2001) degradational activities, namely, shifting cultivation, clear felling of forests for timber, and mining have changed the forest cover and altered the natural landscape of Meghalaya to a great extent.

Year	1991	1993	1995	1997	1999	2001
Area(sq. km)	15,875	15,769	15,714	15,657	15,633	15,584

Table 7: Changes in forest cover (sq. km) in the state since 1999 (FSI report, 2001)

Important Forest Resources

Besides timber, a number of non-timber forest produce including cane, bamboos, broom grass, mushrooms, orchids, commercially important grass species, and oil yielding trees, honey and wax are extracted from the forests every year in large quantities. Important medicinal plants such as *Taxus baccata, Tinospora cordifolia, Vinca rosea, Stlychnos max-vomica, Dichora febrifuga and Hodgsonia hiteroclita.* are

found in the forests. Gums, resins, edible wild fruits and tubers, large cardamom are other important non-timber forest resources of the state.

Forest Ownership

Unlike the rest of the country where forests are mostly owned by the state and managed by the State Forest Department, substantial forest areas in Meghalaya are under the unclassed category and are owned by individuals, clans, village councils, district councils and other traditional community institutions. The ADCs control the unclassed forests to the extent of 88% (8,372 sq. km).

Forest Administration

Private individuals, communities and clans own most of the forests in Meghalaya. The ownership rights over land and resources are further protected by the Sixth Schedule of Indian Constitution. The acts and rules framed by the state and national governments are therefore not applicable to such forests. The District Council acts are not strictly enforced as there are no adequate forest personnel to enforce them, Hence, most community forests are virtually under no management since they do not come under the effective enforcement of any of the forest laws.

Unregulated shifting cultivation by the local tribal populations has been seen as a major threat by state officials to forests particularly in unclassed and community forests. In spite of the efforts by many states and national agencies, a viable land-use option to shifting cultivation is yet to be found. There is general consensus growing in Meghalaya for a need to work out a regulatory mechanism to control over exploitation

of forests where the landowners themselves will be legally bound to ensure sustainable harvest and to effectively manage their own forests.

Forest Fragmentation

Roy and Tomar (2001) argue that shifting agriculture, logging, mining and other human activities have been responsible for fragmentation, destruction and degradation of the forests in Meghalaya. High rainfall and hilly terrain have further accentuated the impact of human activities on the forest. As a result, the forests are getting fragmented into small patches. The pine forests are most disturbed and highly fragmented. The degraded forest lands support a variety of successional communities ranging from weed-dominated communities on recently abandoned Jhum fields to pine forest and grassland on frequently burnt and nutrient-deficient sites. (Roy and Toman, 2001)

Seismic activities, frequent landslides and resultant soil erosion destroy the primary vegetation in some places. Experts from NEHU maintain that these natural causes have contributed only marginally to the change in vegetation type and it is human activities that have resulted in loss of biodiversity in the northeast region including Meghalaya.

It is often said that Meghalaya which has about 69% of its total geographical area under forest cover is a forest-surplus state. However, forest officials claim that the quality of the forest has deteriorated and the dense forests with canopy closure of 40% or more is becoming degraded into open forest or scrub.

Since the state is predominantly mountainous, deforestation and the resultant loss of soil especially in the hill areas are leading to increased siltation of rivers and streams.

The deep pools that are the favoured habitats of many species are rapidly becoming shallow and choked with silt leading to a loss of their habitat. At the same time, swamps, marshes, and other wetlands are increasingly being reclaimed for urban and agricultural expansion, which is further contributing to habitat loss.

Shifting Cultivation

Meghalaya is basically an agricultural state with about 80% of its total population dependent entirely on agriculture for their livelihood. During the last twenty-five years the total cropped area in the state has increased by about 42%. The major food crops are rice and maize. The state is known for its horticultural crops like orange, lemon pine-apple, guava, litchi, banana, jack fruit and some temperate fruits such as plum, pear and peach and potato, ginger, turmeric, black pepper, areca-nut, tezpatta, betel vine, short-staple cotton, jute, mesta, mustard and rape-seed.. These are some of the important cash crops of the state. At present people are also growing non-traditional crops like tea, cashew nut, oilseeds, tomato, mushroom, wheat, and pulses.

Almost the entire state is influenced by age-old practice of slash and burns agriculture except in some pockets of valley bottomlands and reserve forests. While research on shifting cultivation elsewhere is highly contested, experts in Meghalaya argue that this practice destroys the protective and productive vegetation in preference to a very brief period of immediate crop production. Commonly known as "Jhum", it was good on days when human population was sparse and pressure on land was negligible.

During that time, the Jhum cycle, the intervening fallow period between two cropping periods, was long ranging from 50 to 60 years. Now it has been reduced to 3 to 5 years

in the western Meghalaya and 1 to 3 years in the central and Eastern parts of the state. According to soil conservation officials, this is alarmingly short for the recovery of the soil fertility level, leading to progressive fertility loss and extensive land degradation and imbalance in the socio-economic setup of the village communities.

Because of the hilly terrain, settled cultivation is practiced only in a small portion of the total cultivated land mostly confined to the valleys. In view of the high labour cost and energy input involved in terrace cultivation and in absence of other viable alternatives to shifting cultivation, the majority of the population of the state continues to depend on shifting cultivation for their subsistence livelihood. Shifting cultivation is the main form of agriculture in the state.

As per the data given by the Task Force on Shifting Cultivation, Ministry of Agriculture, 1983, 52,290 families in the state were practicing shifting cultivation on 530 sq. km land area annually (Table 8). So about 10% of the total Meghalaya state population still practice shifting cultivation (Table 2).

According to the Forest Service of India (FSI, 1997), the cumulative shifting cultivation area during the period 1987 to 1997 was 0.18 million hectares. Thus, as of 1997, the average annual area under shifting cultivation works out to 180 sq. km thereby indicating a declining trend in shifting cultivation area.

Annual area under shifting cultivation (sq. km)	Fallow period (in years)	Minimum area under shifting cultivation one time or other (sq. km)	No. of families involved shifting cultivation
530	5-7	2,650	52,290

Table 8: Shifting Cultivation in Meghalaya (Report of the Task Force on Shifting Cultivation, Ministry of Agriculture, 1983). Source: www.meghalaya.nic.in

Forest Area	Area under agricultural uses	Barren uncultivable land	Cultivable wasteland	Others	Current fallows	Abandoned fallow land	Net area Sown
938	84	142	484	160	66	166	201

Table 9: Land Use Classification (area in sq. km) of Meghalaya (1994-95)
Source: Modified from North-Eastern Council Statistics, 2000

Soil conservation officials claim that clandestinely, shifting cultivation is being practiced on the revenue, reserve forests and protected forests. Although shifting cultivation is a non-viable resource utilization practice, indigenous tribal people are still clinging to this primitive practice to sustain themselves and their families mainly due to non-availability of other livelihood opportunities. As per the Ministry of Agriculture Report, 0.26 million hectare area is under shifting cultivation.

Frequent shifting from one land to the other for practicing Jhum has adversely affected the basic life support systems like vegetation and soil according to some forest experts. They claim that the decline of areas under natural forest, the fragmentation of habitat, local disappearance of native species and invasion by exotic weeds plants are some of the ecological consequences of shifting agriculture. They also believe that shifting cultivation on steep slopes has led to down-stream siltation of the water bodies in many districts in Meghalaya. However, some people claim that the representation of shifting cultivation in other states like West Bengal is a justification of scientific forestry like plantations (Sivaramakrishnan, 1999).

Response

Various attempts have been made by the Government to settle those who practice Jhum. These schemes have, however, not yielded the desired results. Failure of the schemes led the National Commission of Agriculture (NCA) to reformulate the schemes in 1999 only after assessing their impact on forest. NCA recommended reducing Jhum practice by:

(i) Providing livelihood opportunities and income generation on a regular basis through proper utilization of the land resources.

(ii) Encouraging cooperative efforts to carry out forest-based activities, i.e., basket making, rope making, cane furniture making, processing of minor forest produce and honey collection. to be made commercially viable by providing proper marketing facilities. According to the NCA, these activities will not only discourage people from practicing shifting cultivation but will also improve their economic condition.

(iii) Forming Village Forest Committees for the protection and development of the degraded forests. These committees may provide suitable incentives to the tribes by generating employment opportunities during the lean season.

(iv) Determining the Population Supporting Capacity (PSC) of the area as one of the major aspects for checking the degradation of environment and depletion of resources. There is agreement among policy makers that this should include not only the food production and land availability but other factors which may increase the carrying capacity.

3.4 Forest Policies and Responses

According to the Government of Meghalaya there are several issues which need to be resolved for effective control of deforestation, shifting cultivation and biodiversity loss. Some of these need to be addressed at policy level and many of them need action-level remedial measures.

Inter-state Issues

Officials believe that the most important inter-state issue concerning the above green issues is the border dispute with the neighbouring State of Assam and areas adjoining the international border with Bangladesh. The issues covered in government debates are:

- Encroachment of forest areas for settlement purpose by the villagers of the neighbouring state/country thereby destroying forest areas and biodiversity.
- In order to earn their livelihood people practice shifting cultivation and overexploit forest resources causing serious damage to the forest and biodiversity.
- Inter-state disputed lands are often treated as 'no-man's land' and therefore, there are no management activities on such lands.
- Illegal export of forest produces including timber across the international border.

Policies

State Government and National Government

National Forest Policy 1988 is the guiding policy of the forest management in the state. The Forest (Conservation) Act, 1980, The Wildlife Protection Act, 1972 and JFM Guidelines, 1990 are some of the national legislations/policies that guide the

management of state forest. Other Acts and Rules impacting the extraction of forest produce in Meghalaya are:

- Meghalaya Forest Regulation, 1980 (Adapted from Assam Forest Regulation, 1890)
- The Garo Hills Regulation, 1882 (Regulation 1 of 1882)
- Meghalaya Forest Regulation (Application and Amendment) Act, 1973
- Meghalaya Forest (Removal of Timber) Regulation Act, 1981
- Meghalaya Tree Preservation Act, 1976
- Meghalaya Protection of Catchments Areas Act, 1988
- Joint Forest Management Guidelines of 2003 and Guidelines for Forest Development Agencies, 2003 have also direct impact on the sharing of usufructs and benefits out of plantation forestry.

Although no formal forest policy has been adopted yet in the state (a draft policy paper was prepared in 1980 but not yet approved), the policy of the State Forest Department has been to increase the forest cover of the state by discouraging and regulating the felling in all categories of forests and greening the barren areas which are under the constitutional jurisdiction of the District Councils. Attempts are also being made to streamline the administration of the forest and forestland under a single umbrella called the 'unified control and management of the forests' of District Councils and the State Forest Department. The District Council Forest Officer, Mr. B. Saiborne,[50] said *"many discussions have taken place between the authorities of the District Councils and the State Government but no tangible result has come out so far."*

[50] From fieldwork: Mr. B. Saiborne from Shillong who was Respondent No. 1 on 10/09/2005.

Besides, it is also the intention of the State Forest Department to create village reserve forests all over the state in the same manner as the erstwhile village forests established by the people themselves during the pre-British period, The policy, *inter alia*, also lays stress on the regulation of shifting cultivation, which is one of the major factors causing deforestation in the state.

The existing Assam Forest Regulation adopted by the state as the Meghalaya Forests Regulation is far from adequate to achieve the aims and objectives of the policy. Therefore, a few other acts have been legislated like the Meghalaya Removal of Timber Regulation Act, the Meghalaya Tree Preservation Act, among others. The Meghalaya Tree Preservation Act was enacted with the prima facie objective of preventing the felling of trees within a radius of 10 km from the center of Shillong. There is also an enabling provision to extend the same to other district headquarters. However, the enforcement of the provisions of most of the Acts has been far from satisfactory.

Normally, as per provision of the Sixth Schedule of the Constitution of India, it is not possible for the State Government to interfere with the administration of forests in the Sixth Scheduled areas. But through separate legislation, the State Government Acts and rules can supersede the existing District Councils Acts also. Therefore, to discourage the felling of small trees in the District Council areas, the Acts are intended to regulate the marketing of the forest produce outside the state. This has been done based upon the logic that about 80 per cent of the timbers extracted from these forests are destined outside the state and the people of the state utilize a mere 20 per cent. Likewise, to conserve and preserve the forests in the critical catchments areas of the important rivers of the state there is a plan to legislate an Act which will ban tree felling in these forests.

District Council Forest Acts

The District Councils have legislated separate forest acts and rules more or less in line with and in the same pattern as that of the State Forest Regulation, Three Autonomous District Council Forest Acts (viz, The United Khasi and Jaintia Hills Autonomous District (Management and Control of Forests) Act, 1958, Jaintia Hills Autonomous District Council Forest Act and Garo Hills Autonomous District Council Forest Act, 1958 are applicable in their respective jurisdictions.

According to the preamble of one of such acts (the United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Act, 1958), *"it is expedient to make laws relating to the management and control of forests in the areas of the Autonomous United Khasi Jaintia Hills District within the jurisdiction of the District Council as specified in the Sixth Schedule of the constitution of India".* Unfortunately, this provision of the Act could not be enforced and implemented in the true sense of the word. The Acts are self-contained with all the relevant desirable provisions, but the enforcement is not satisfactory. As a result, forests have been subjected to indiscriminate felling during the last four decades. (Syiemlieh, 2003)

Traditional Community Forest Laws

Most of the acts and laws passed by the Government of India, the Government of Meghalaya and the Autonomous District Councils remain ineffective in managing the forests of the state. On the other hand, traditional institutions such as Syiemships, Doloiships, Sirdarships and Nokmaships have been forceful and effective in managing the forests under their jurisdictions following customary laws. For instance, for

Tangmang community forests, the following restrictions for forest management have been imposed under the customary law by the village Dorbar:

- No entry to the forests without permission from the Dorbar
- Tree felling allowed only for construction of community halls and other community works
- Fuelwood collection only by hand for bonafide domestic use
- Extraction of NTFPs is allowed only for personal consumption
- Hunting inside the community forest is not allowed
- Violators of the above restrictions and miscreants are fined

Supreme Court Orders

In addition to the above policies, rules and acts, the Supreme Court orders (dated 12 December, 1996, 15 January, 1998 and 12 May, 2001) have direct or indirect relevance to the forests, shifting cultivation and biodiversity conservation in Meghalaya.

The Supreme Court's involvement in forest conservation largely centres on the Public Interest Litigation viz *T. N Godavarman Thirumulpad Vs Union of India (W.P 202 of 1995)*. The Godavarman case attracted the limelight when on 12-12-1996 the court in its order 'suspended' the felling of trees in all forests except in accordance with the working plans of the state governments which were approved by the central government.[51]

[51] See article on India Together on Jan 13, 2007 http://www.indiatogether.org/2005/mar/env-apexcourt.htm

An article in the magazine *Grassroots' Options*[52] described how the Supreme Court timber ban had devastated the rural economy of West Khasi Hills. Families had to go hungry and parents could not afford to send their children to school as their income from timber trade had dry up after the ban.[53] Sociologist Tiplut Nongbri of Shillong argues about the severe consequences the ban had on women's lives and she further questioned the legal basis of the Supreme Court Order saying that it violated the autonomy given to tribal communities under the Sixth Schedule.[54]

Dev Nathan, a political scientist working for the Centre for International Forestry Research in Indonesia, argues about the serious environmental consequences of the ban: that people had started making charcoal of valuable timber, selling bark of standing trees or converting woodlands into jhum fields as trees no longer have any market value. According to him the ban was not only "anti-people", but also "anti-environment". Nathan questions the very rationale of the Supreme Court's intervention. Quoting the forest departments' latest forest assessment, Meghalaya has a forest cover of as much as 69.80 per cent of the total geographical area based on data derived from satellite images. The National Forest Policy recommendation for hill areas is a 66 per cent forest cover, which is less than what Meghalaya has at the present. Nathan argues rhetorically, *"Why then should the people of Meghalaya be penalized or banned in this way."*[55]

[52] Grassroots Options' is a quarterly magazine based in Shillong that mainly covers environmental and developmental issues in the Northeastern region.
[53] "Fighting for survival", in Grassroots' Options, March/April, 1999.
[54] Nongbri develops, her critique of the Supreme Court Order in the article "Timber Ban in North-East India: Effects on Livelihood and Gender", in Economic and Political Weekly, May 26, 2001.
[55] The paper Nathan presented, "Timber in Meghalaya", is also published in Economic and Political Weekly, January 22, 2000.

The history of the Supreme Court intervention arose from a lawsuit filed in 1991 by a private person against the Indian Union for its alleged failure to halt deforestation during the 1980s.[56] The case concerned initially the two states of Tamil Nadu and Jammu-Kashmir and was later extended to include the northeastern region in view of the extensive destruction that had taken place there. The Supreme Court Order of December 1996 states that "all ongoing activity in any Forest, without prior approval of the Central Government, must cease forthwith." (Paragraph 1) The additional Order of January 1998 likewise provides for the suspension of timber operations and other wood-based industries until the concerned State Governments had developed working plans approved by the Central Government. The Supreme Court Orders contain formulations that are anything but transparent.

In her in-depth scrutiny of the Order, Nongbri (2001) particularly draws attention to two things. First, she argues that the Supreme Court Order bypasses the Sixth Schedule in which the autonomous district councils are given full jurisdiction over all forests except those declared as reserved forest or protected areas. Secondly, she considers that in the name of forest conservation, the Supreme Court has entrusted the power over all forests – as stated in the order, "irrespective of ownership and classification thereof" – to the forest department or the state through the requirement of approved working plans. Thirdly, she claims that the usage of the term "forest" in the Supreme Court Order fails to take into account the particular situation of the northeastern region where shifting cultivation still is a major form of agriculture.

[56] "Writ Petition (Civil) No. 202 of 1991, T.N. Godavarman Thirumulkpad versus Union of India", the Supreme Court of India.

Responses to Deforestation

Some government responses to deforestation are as follows:

- Large-scale plantation programmes by both state and national governments through community participation on community areas by implementing effective schemes such as Forest Development Agency (FDA).
- Externally funded projects for the management of upland agriculture including the livelihood issues and forest development, e.g., IFAD project.
- Biodiversity conservation projects of NEC and Ministry of Environment and Forests, Government of India.
- JFM policies involving communities.
- Preparation of working schemes for community forests for initiating scientific management.
- People's innovations in shifting cultivation by introducing tree crops and switching to horticultural crops.
- Community initiatives for sustainable management and harvest of Non Timber Forest Products (NTFPs).
- Initiatives by communities, government and external agencies to regenerate the degraded sacred forests.
- Increase in awareness level among the people and officials.

3.5 Challenges of Forest Management

The community forests in Meghalaya are owned by clans, village dorbars, syiems, Sirdars, Dolois and Nokmas and are supposed to be managed according to the provisions of the respective District Council Forests Act. However, the District Councils have no control over these forests and no scientific management system is

followed. Although selection felling is practised in certain community forests, most of these forests are harvested when the need arises and are quite often over-exploited under the influence of some dominant/influential landowners.

According to Syiemlieh (2003) the weakening of traditional and customary laws, gradual conversion of community lands into private lands and diminishing influence of the traditional institutions over the society have resulted into either very little control or no control regime for the community forests and these have contributed to unregulated tree felling in these forests. In addition, he argues that because of the low productivity and long gestation period, many of these community forests are being converted to cash crop plantation areas such as broom grass, rubber and areca nut. Substantial areas of community forests are also being diverted for growing horticultural crops such as pineapple, ginger, orange orchards and often lichi and bay leaf mixed with forestry tree species. All these activities though commercially beneficial have a direct impact on the biodiversity and ecosystem functioning at a landscape level.

Even sacred forests, a type of community forests, are fast disappearing. A study conducted by Tiwari *et al.* (1998) reveals that barring only 1 % of the total sacred forest area of the state, all other sacred forest areas are moderate to highly degraded.

Dacawi (1982) argues that the indigenous forest management systems are time-tested and are adequate for the sustainability of the community/privately-owned forests. As a testimony to this statement, there still exists certain patches of well-conserved/preserved community forests throughout Meghalaya. This has been primarily possible because of strong regulatory mechanism that is still in force at village Dorbar

level. However, the number of such patches is depleting every year indicating the inadequacy of self-governed traditional institutions to sustain the community forests. This is also apparent from the overall scenario of the condition of forests in the state, which have become considerably degraded both quantitatively and qualitatively over the years.

In the absence of long-term data on forest cover and forest health (growing stock), empirically, it may not be possible to prove this point. However, when discussed with elderly persons having exposure to the forestry issues or if a common man is asked, and from the author's own field experience in West Khasi Hills District, the above conclusion is found to be correct. Although the FSI data over a decade shows more or less constant forest cover in the state, it does not indicate the dynamics of growing stock thereby remaining silent on the conditions of forest health. The decline in dense forest cover over the years, as reported by FSI, though does prove this point.

State officials put the blame for such a decline in quantity and quality of the forests on the communities which include the land owning clans/communities, the private forest owners and the management systems in place for the management of these forests, as Government itself does not have any interference in the management of community forests. In fact, in Meghalaya, before the intervention of the Supreme Court, there was absolutely no regulatory and controlling power of the state in relation to the land ownership, use and disposal of forest produce pertaining to the forests, which are in the hands of communities and private individuals. Therefore, it is clear that there is some inadequacy in the regulatory mechanism of the traditional management systems resulting in the large-scale degradation of forests in the state. It could be due to the

growing need of the land/forest owning communities, operating market forces, sheer greed of forest contractors leading to the degradation of the forests. Even wherever the traditional forest management system is still strong, the forests have not been able to withstand the pressure arising from these factors because of inherent weaknesses in the traditional systems, which are based mostly on the principle of 'preservation' and 'low production forestry'.

All these facts bring home one point, and that is, there is a need to strengthen the traditional forest management mechanism through peripheral intervention. The Supreme Court verdict in this context is a welcome measure according to many Government officials. There is general agreement among policy makers that in its series of verdicts/judgments, the Supreme Court has tried to regulate the indiscriminate tree felling and attempted to introduce scientific management in the community forests by introducing the concept of working schemes for achieving sustained yield.

Mr. P. J. Bazley,[57] the Chief Secretary of the Government of Meghalaya, said *"the Supreme Court verdict should not be seen as a setback to the greater autonomy of the forest management by the institutions of self-governance."*

However, Mr. H. S. Lyngdoh,[58] the state's former Forest Minister in Meghalaya, said *"more than 200,000 people (about 11 per cent of the state's population) are affected by the Supreme Court logging ban, either directly or indirectly."*[59]

[57] From fieldwork: Mr. P. J. Bazley from Shillong who was Respondent No. 2 on 15/09/2005.

[58] From fieldwork: Mr. H. S. Lyngdoh from Shillong who was Respondent No. 3 on 17/09/2005.

Authorities claim that preparations of working schemes for such a huge forest track is not an easy task to be accomplished within the given time framework. It seems that the State Forest Department at present does not have the man power to accomplish the task neither do the village communities have the capacity to undertake such task. Therefore, there is a need to work out a well-planned policy outlining the strategies to be adopted for achieving the broader objective of Sustainable Forest Management (SFM) in community/private owned forest areas. The goal is to get the best of both worlds by protecting forest and livelihoods at the same time through SFM.

This chapter has introduced the history of forestry and forest management in Meghalaya. It has given a profile of the West Khasi Hills District in Meghalaya which is the region under study and also described the different kinds of development intervention that have been implemented since the logging ban was introduced in December 1996. Now we move on to the empirical section of the thesis where the theories discussed in the previous chapters will be tested by analysing the implications of the logging ban on the households' strategies in the two clusters of villages on two locations in the West Khasi Hills District of Meghalaya.

[59] See article in Down to Earth on January 13, 2007 http://www.downtoearth.org.in/cover.asp?foldername=20020315&filename=Anal&sid=1&sec_id=7

Chapter IV

Case Study Analysis of Mairang Cluster

Introduction

This chapter will discuss the case study analysis of the three villages of Nonglang,Umniangriang and Lawsiej that were studied in the Mairang Cluster to understand the different impacts of outside interventions on the livelihood strategies of the households in said villages after the logging ban of 1996. These villages were selected because of their similarity in population sizes, land area, richness of forest resources and trade in timber before the logging ban and they are all inhabited by an indigenous group called the Khasi Tribe. However, they had different forms of interventions since the ban: from IFAD, a multilateral agency in the case of Nonglang Village; from JFM, a Government agency in the case of Umniangriang Village; and no intervention in the case of Lawsiej Village.

The chapter covers a brief profile of the three villages and a qualitative analysis of the socio-economic conditions and changes in livelihood strategies using Participatory Rural Appraisal (PRA), SWOT analysis, narratives, structured and semi-structured interviews. The research into operationalising the Sustainable Livelihood Approach (SLA) as a framework was carried out by collecting data on the five capital assets using household surveys. The chapter also presents some quantitative analysis measuring the difference in household access to the capital assets in the three villages that received different types of development interventions since the logging ban. These methods

were discussed in Chapter 1. It concludes with a discussion of the results from the different analysis that were conducted.

4.1 Profile of the Villages in the Mairang Cluster

The villages of Nonglang, Umniangriang and Lawsiej, located on the West Khasi Hills District of the State of Meghalaya, had a total population of 907 inhabitants in an area of about 1365 ha and 187 households of which 50 were randomly selected and interviewed. The average distance of these villages from the main town market in Mairang was about 45 kms and they are not easy to access by car particularly during the rainy season. The closest town of Mairang was about two hours drive by jeep. The field study of the three villages was conducted from September to December 2005 and briefly in the summer months of 2006.

Table 10 below presents the three villages with different types of intervention based on data collected from household surveys that were conducted in each of them. It shows the distance in kilometres of each village from the main town market in Mairang which is relevant for the purpose of determining if the distance and time needed to reach the main town market have any impact on the livelihood strategies of the households in these villages. The table also contains the estimated size of the villages in hectares and includes everything within the village boundary consisting of forested land, cultivated land, residential land, privately owned land, community land and unused land which information were obtained from the respective headmen of each village and the Block Development Office (BDO) in Mairang.

Name of Village	Type of intervention in village	Total population in village	Total households in village	Households interviewed in village	Distance from market in kms	Size of village in hectares
Nonglang	IFAD	310	65	20	45	300
Umniangriang	JFM	286	62	15	47	610
Lawsiej	None	311	60	15	49	455
		907	187	50		1365

Table 10: Profile of the three villages from the Mairang Cluster (Fieldwork 2005)

Nonglang Village had a population of 310 people living in an area of 300 ha and 65 households of which 20 were randomly interviewed. The distance of the village from the main town market in Mairang was about 45 km. Since the logging ban in 1996 the village has received the IFAD intervention through the Central Government in May 1999 and has a Natural Resource Management Group (NaRM Group) with 46 members and two female Self Help Groups (SHGs). The households have access to drinking water in the village and some have toilet facilities and electricity in their homes while others have none. The village has a fair price shop and one Presbyterian Church but there is no community hall. There is a lower primary school until Class 4 with 3 teachers for 46 students and an upper primary school until Class 7 with 3 teachers for 56 students. A metalled road to access the village was being constructed at the time of the field study. Public health workers rarely visit the village to provide medicines to the poor households.

Umniangriang Village had a population of 286 people living in an area of 610 ha and 62 households of which 15 were randomly interviewed. The distance of the village from the main town market in Mairang was about 47 km. Since the logging ban in 1996 the village has received the JFM intervention from the State Government in August 2005 and has a NaRM Group with 90 members and one male and four female SHGs. The households have access to drinking water in the village and some households have toilet facilities and electricity. There is no fair price shop. The closest one is about 2 kms away. The village has a lower primary school up to Class 4 with 3 teachers for 112 students. It has a community hall that was initially funded by the JFM project and one Presbyterian Church and one Catholic Church. It has a metalled road that links the village to Mairang. Public health workers rarely visit the village to provide medicines to the poor households. The public health centre stands as an empty building about 4 kms from the village with no doctors, nurses and medicines.

Lawsiej Village had a population of 311 people living in an area of 455 ha and 60 households of which 15 were randomly interviewed. The distance of the village from the main town market in Mairang was about 49 km. Since the logging ban in 1996 the village has received no development intervention and has no organised NaRM Group or SHGs. The Public Health Engineering (PHE) Department visited 15 years ago and brought pipes and tanks but there was no sign of access to drinking water in the village. The closest fair price shop was about 5 kms away. There is a lower primary school until Class 4 with 2 teachers for 35 students. There are no metalled roads to access the village except mud trails which the local people used to get to the main road. There is no community hall but there is one Presbyterian Church. There are no toilet facilities

and no electricity in the village. Public health workers rarely visit the village to provide medicines to the poor households.

4.2 Analysis of Socio-economic Conditions of Villages in the Mairang Cluster

To determine the socio-economic conditions and changes in livelihood strategies in Nonglang, Umniangriang and Lawsiej villages, the Participatory Rural Appraisal (PRA) methodology was used: (a) to investigate the community perception of logging ban; b) to explore with the help of the local people if institutions can be built within and outside the community; and c) to find out how local institutions can help the community overcome poverty through alternatives to the logging ban.

To achieve the above objectives, discussions were held with the IFAD, key leaders and officials of the State of Meghalaya and officials of the Government of India. IFAD's idea of building a local and State Alliance Against Hunger was enthusiastically accepted by the communities, by the State and Central Government and other stakeholders. The principal recommendations agreed during the discussions included the establishment of a pilot State Alliance Against Hunger in Meghalaya with representatives of the Self Help Groups Federation, Natural Resource Management Group, District Administration and State Government, churches, banks and private land owners. The District Administration and the State Government have committed in principle to implement policies for community participation in order to gain the trust of the poor people in the communities.

Picture 1: Conducting a PRA with the households of Nonglang Village (Fieldwork 2005)

There were meetings with the households of Nonglang, Umniangriang and Lawsiej concerning the learning processes from and within the households about their livelihood options, perceptions of the logging ban and proposed solutions in the context of building local institutions to improve their livelihood strategies. When asked about the health of existing institutions, they expressed comfort that IFAD has been able to support and strengthen their local village councils, local schools and local churches. All these existing institutions are consulted and involved in the current IFAD project.

The households of Nonglang Village perceive the logging ban as very much like the 'Big State' working against them. They alleged that their problem is the lack of agricultural lands to move from being forest dependents to agricultural based communities. "If we had more agricultural land we could reduce our food insecurity over the year", they said.

The following livelihood strategies to overcome the land problem were suggested:

- SHGs to raise money through their activities to purchase land.
- Increase the production and quality of their handicrafts.
- Access to the weekly market in nearby towns to sell their agricultural products.

There are no community and clan lands in Nonglang Village since most of the lands are privately owned. The households, particularly those who are part of the SHGs, solve their land problem by buying a piece of land as a group but they have problems saving money as a group and obtaining credit from the local bank. They are also discouraged by the local bank's bureaucracy and the length of time it takes to process the loan. By the time the bank is ready to release the loan the landowner had already sold the land to someone who had available cash money.

The Parscovie SHG in Nonglang Village got a bank loan and bought a land the size of three football fields situated within an hour walk from the village. Though the land is far from the village, they purchased it because: a) the price was cheap and b) it is a very fertile land. Their plan was to cultivate rice first in order to be able to repay the loan of Rs.170, 000 in 10 years time at an interest rate of 9% per year although they hope to pay in five years based on an estimated production of 100 sacks of rice per year at a rate of Rs. 480 per sack. Besides rice production, they are also anticipating to earn income as a group from the following activities:

a. Rice millstone (grinding machine)

b. Hog farming

c. SHGs members and husbands work as wage labourers to save money for the group

The husbands provide full support to their wives who are members of the SHGs. They helped their wives' SHGs built the Parscovie school; contributed to repay the loan; assisted in cultivating the purchased land; and worked as wage labourers.

Leasing land from landowners was considered as an option but the villagers explained that leasing was not worth the cost as the yearly rent they had to pay was too high. A paddy field that would produce 10-15 sacks of rice at a rate of Rs.480 per sack gives a total yearly income of Rs. 4,800-7,200. The lease payment for this is Rs.1, 500-2,400, which is one third of the total harvest. They also alleged that once they leased land they have to spend most of their time in the field without being able to do other activities hence leasing is not a viable alternative. Two other problems with respect to leasing land are: a) the landowners require 2 years' advanced payment which the households or SHGs cannot afford to pay and b) landowners usually lease the land for a short period of time, usually a maximum of two years, which does not allow the households to plan long-term cultivations. Hence, the need for an alliance with landowners became important.

The households believe that owning land is necessary to overcome food insecurity and poverty. They insisted that they should have some land; Iadamon Nongsiej[60] from Parscovie SHG said, *"we are farmers and this is our main activity. If we had agricultural land, we could increase the production of rice and vegetables to be sold at the local market."*

[60] From fieldwork: Ms. I. Nongsiej from Nonglang Village who was Respondent No. 25 on 07/10/2005.

They indicated making handicrafts as one of the livelihood strategies that could supplement their regular income but alleged that it is time consuming; its production is very limited and that they could only dedicate one month a year to said activity when there is no agricultural work. They suggested modern equipments to refine raw material would greatly help them.

Increase in livestock production has also been mentioned for the purpose of generating income. However, the problem is the lack of veterinary services in their village.

Picture 2: Dry fish stall in the main town market in Mairang (Fieldwork 2005)

The weekly town market of Mairang is the centre of economic and social life for the rural people. For the poorest, the market represents on one hand as the hope to improve their livelihoods, if given access, and on the other hand, a mirage, due to its

inaccessibility because it is considered a major stumbling block for agricultural goods to reach the market due to lack of proper roads and transportation systems.

Discussions in Nonglang Village focused on the daily problems the households face after the logging ban and how they struggle to overcome its impact.

Creating a seasonal food calendar in Nonglang Village

Following a PRA session to discuss food security and hunger in the Nonglang Village, the community drew a seasonal food calendar which shows the availability of food stocks in different months and how they supplement it with other kinds of food. The food calendar begins in the month of November when the harvest starts and represents the peak month in the food security throughout the year. Here food security refers not just to supplies of food but the Senian access to the means of getting food, i.e. entitlements and endowments. In drawing it, the households actually drew the plants rather than the products, which reveal their strong and close attachment to the land.

The basic food of the households in Nonglang Village consists of rice, maize and vegetables. The households eat meat at Christmas time only or on special occasions like weddings. Livestock (poultry, pigs, cows, goats) and eggs are reserved for the market because all the money earned is used to buy rice when it is no longer available from their harvest.

The food calendar shows that most of the households have sufficient food (rice) from their crops for 3-4 months and for the other months they have to buy rice and reduce

their consumption and only 7 out of 20 households have food security for the whole year.

Picture 3: Households dinning in their kitchen in Nonglang Village (Fieldwork 2005)

It also shows that from the months of November to January all households have food security consisting of rice and vegetables like pumpkins, beans and mustard leaves, while vegetables such as dhal and potatoes are purchased from the nearby market. In November they also eat dry fish which they buy from the market and in December they harvest sweet potatoes, sesame and yam. The approximate quantity of rice consumed every day is about 1,000 gr. for men and 750 gr. for women and children above 10 years old who are considered adults, while children below 5 years old eat around 250 gr. per day. They explained that men eat more food because they are stronger and work more than women in the field.

	Mid/Nov	Dec	Jan	Feb	Mar	Apr	May Jun	Jul Aug Sep	Oct
No. of food secure households	All	All	All	12	10	10	10	8	7
No. of food insecure households				8	10	10	10	12	13
Rice (kg)	I kg men 750 g women - 250 g children	I kg men 750 g women - 250 g children	I kg men 750 g women - 250 g children	750 g men 700 g women 250 children	750 g men 700 g women 250 children	750 g men 700 g women 250 children	750 g men 700 g women 250 children	750 g men 700 g women 250 children	750 g men 700 g women 250 children
Harvested Products	Pumpkins Beans Mustard Leaves	Pumpkins Beans Mustard leaves Sesame Sweet potatoes Yam (Meat on Christmas)	Pumpkins Beans Mustard leaves Sesame Sweet potatoes Yam	Junklow	Junklow	Junklow		Maize Pumpkin leaves Cucumbers Squash Beans	Pumpkins Beans Mustard Leaves
Purchased Products	Dhal Potatoes Dry fish	Dhal Potatoes Dry fish	Dhal Potatoes Dry fish	Dhal Potatoes Dry fish	Dhal Potatoes Dry fish				

Table 11: Results of the Seasonal Food Calendar in Nonglang Village (Fieldwork 2005)[61]

Starting the month of February, the food calendar (Table 11) indicates that the quantity of food available for each member of the family has been reduced except for children below 10 years old whose amount of food remains stable for the rest of the year. However, in case of severe food shortage the youngest members of the family are given preferential attention.

[61] The villagers based the seasonal calendar on the 20 ranked households out of the total of 67 households in the village. Individual household interviews were conducted with the poorest families not included in the wealth-ranking and results were cross-checked.

Using the wealth ranking chart that the community had prepared with the assistance of an implementing NGO, it is possible to identify families whose food sufficiency decreases from the months of February to May and again drastically changes from the months of July to October.

A detailed analysis of the food calendar shows that from February to May only those households in the first category and a few in the second category of the wealth ranking chart still have food available from their harvest and are still able to purchase vegetables from the market. From June onwards, a few households belonging to the first category dropped to second category while the second category households have drastically decreased. The number of meals is not reduced (3 meals/day) but the portion per meal was. Starting June, most of the households cannot afford to purchase vegetables from the market hence in October they survive mainly on rice and salt.

In the month of July, the food calendar shows that two families from the first category lose food security from their crops and are forced to buy rice from the market. However, some vegetables like pumpkin leaves, cucumbers, squash and beans are available from their kitchen gardens. But in the month of August, food security slightly increases due to the harvest of maize and availability of some vegetables from the kitchen gardens. Maize is grown either in the kitchen gardens or in the jhum areas (shifting cultivation).

The households alleged that October is the most difficult month. They only eat rice and salt and most of the poor households are forced to borrow from the first category households which they promise to repay the following month when they harvest their crops. They have to send members of their families to work in nearby towns.

Daughters are sent to work as maids for rich families while others find jobs in the coal and limestone mines. This is also the month when they do most of the handicrafts that they sell at the market during hard times.

Households sell their livestock, particularly poultry, all throughout the year but starting June they are forced to sell whatever they have to be able to buy rice.

December is the best month of the year for all the households. It is the time when they enjoy their food from the harvest. However, some households claim that they still have to look for wage labour to be able to buy new clothes for Christmas for their children.

Individual interviews with the poorest households in Nonglang village

After discussions with members of the SHG in Nonglang, a request was made to the head of the village to introduce the author to those households who were not part of the IFAD project activities and who were not present during the PRA sessions. The head of the village mentioned that the households who have not joined the IFAD-funded project were either very rich or very poor. The author visited a few of the poorest households accompanied by the head of the village. Below is a summary of the semi-structured interviews with the poorest households in Nonglang Village.

Diesitalin

The household interviewed is extremely poor and is composed of the parents and one child. It does not have any agricultural land except a very small plot of uncultivated land at the back of their little house. Land is leased from the land-owner and produces 7 kg rice seeds a year. The amount of rice harvested is sufficient for at least 3 months.

Household members have 3 meals a day (2 kg per day for the 3 of them) but during times of food scarcity it diminishes the quantity of rice per person. In order to provide food for the family, the husband works as a wage labourer and earns about 50 Rupees a day. Food consists mainly of rice and wild vegetables but during difficult months like July, August, September and October, omly plain rice and salt are eaten. This household is not part of the IFAD project and when the author asked the woman for her views on the project and the work that the groups are doing in the village, Diesitalin Nongbri [62]said *"the groups were doing well and the lives of the people have been changing with the project since 1999."*

She could not join the SHG as she does not have time to attend the 4 meetings a month that the groups usually hold. Mr. Kraw Walahng, who knows each and every family in the village, later told me *"Deisitalin felt too shy to say that she could not join the SHG as she cannot afford to save money." During the interview*, Diesitalin raised the issue of health and showed her frustration of not being able to provide medicines to her child when he was sick. The child she was breast feeding, she said, had a rash, a skin disease but she could not provide adequate cure since all the money earned by her husband had to be used for buying rice. When asked whether she was cultivating a kitchen garden she replied, *"I did not know how to grow a kitchen garden because I was not part of any SHG and so I have not been trained to cultivate vegetables or maize like the other women of the village do."*

From the observation, it is clear that a possible network within the community could be built between the SHGs and households who are not part of the project. The SHGs

[62] From fieldwork: Ms. D. Nongbri from Nonglang Village who was Respondent No. 33 on 10/10/2005.

could collaborate with the poorest families. They could train them on activities such as the cultivation of the small plot of land surrounding their houses and maintaining a kitchen garden that could slightly increase their food security by producing vegetables and maize.

Spilnoris

The household consists of the parents and three children. They have a small wooden house and they lease a piece of land from the land owner to cultivate rice that provides food security for about 4-5 months of the year. They pay a rent of about 400 Rupees a year. They have a small kitchen garden in front of their house where maize is grown. The husband works as a wage labourer and showed the author his tools as he was then about to go to work in the forest to earn his 50 Rupees that would secure that day's meal. The wife is a member of the SHG and the NaRM group and it is with the group that she learnt how to cultivate vegetables and maize in the land surrounding her house. Spilnoris Wanswet [63]said *"I was happy to have joined the project's activities and the best thing I have learnt from the group was the art of saving, which I did not know before."* Her husband is fully supportive of her participation in the SHG.

Piotiolin

The household is made up of a young couple with two children. The husband and wife are very vocal in expressing their views and happy about the author's visit to their home. The wife had been sick for the past four years due to a stomach disease. She had to be hospitalized in Shillong, the capital of the State of Meghalaya. In order to meet all the medical expenses, they were forced to sell all their belongings including their land.

[63] From fieldwork: Mr. S. Wanswet from Nonglang Village who was Respondent No. 34 on 10/10/2005.

Left with nothing, the village allowed them to build their little house on the only small plot of community land available in the village. They have a small kitchen garden in front of their house. They also lease a small plot of land from the landowners that they cultivate to secure food but this is only for 3 months. The husband works as a wage labourer and during difficult times he is forced to leave his family and look for a job in Shillong.

They showed great enthusiasm for the project activities and they are willing to be part of the groups formed under the project. But, as they explained, the admission fee to enter one of the SHGs was fixed at 500 Rupees which they cannot afford. The wife Piotiolin said *"if they were given a chance to join the group they are confident that they would be able to save the amount of money required per month."* She claims to have been enlightened by the training on the SHG that she attended where the concept of saving was introduced. They were so eager to be part of the SHG that they were also willing to provide free labour for group activities in order to meet the amount required for admission. While discussing their perception of the logging ban and its impact of their household strategies, the husband said *"the ban is bad because after the ban I had sleepless nights in thinking and finding solutions on how to provide food for my family the next day and where to go and work as a wage labourer".*

Bialdaris

The family had just moved to the village (one month ago at the time of the interview) from another village where they had previously migrated but due to economic problems they were forced to return. The wife, who is an only child, is taking care of her father. They own a land in Nonglang Village and they are hoping to improve their conditions.

They are very good in handicraft work. The wife is making a mura (small sitting stool made of cane and bamboo) while her father is making a knife. Bialdaris Sohtun[64] said *"it takes a long time to make a mura and this is not very remunerative as an activity."*

Bassire

Bassire is a widow. Her husband passed away a year and half ago due to cerebral malaria. She is living with her two daughters and her elderly mother. The eldest daughter, who is 12 years old, works as a maid in Shillong to help the family. The only land she owns is a small plot surrounding her house where she is growing a kitchen garden. To secure food for her family she has to work every single day as a wage labourer. She is aware of the IFAD project and she thinks that the people who joined it are doing well but she could not afford to attend all the meetings or save any money to join one of the SHGs. All her time is dedicated to working as a wage labourer to secure the daily food for her daughters and her mother. There are days, she said, when the quantity of food in her house is very limited hence she could only eat a handful of rice. When asked what support she gets from the community, Bassire Mawroh[65] answered, *"after her husband's death, the community could only console me, but could not provide a concrete support, as everybody in the village had their own problems to face."* When asked about the ban she said *"the logging ban is a bad process which made her family's condition worst and her family survived on a handful of rice and she faces the insecurity everyday to provide food for her children and old mother."*

[64] From fieldwork: Mr. B. Sohtun from Nonglang Village who was Respondent No. 35 on 10/10/2005.

[65] From fieldwork: Mr. B. Mawroh from Nonglang Village who was Respondent No. 36 on 10/10/2005.

Creating seasonal food calendars in Umniangriang and Lawsiej Village

A PRA exercise was also conducted in Umniangriang and Lawsiej villages.

Umniangriang Village, which is a 25 minute drive by car from Nonglang Village, is part of the JFM funded project where NaRM Group and SHGs have been formed in the last two years. Lawsiej Village, which is a small village not accessible by car and which is about one hour walk from Umniangriang Village, is not a part of either the IFAD or the JFM project.

The two villages were selected in order to compare their data on the seasonal food calendars and the households' perception of the logging ban and its impact on their livelihood strategies. The results of the PRA exercise conducted in Umniangriang Village were very similar to those done in the Nonglang Village except that the women in Umniangriang Village were less vocal.

The results in Lawsiej Village were different. The households of the village were not trained to save money as a group and do not have group activities since they are not part of the IFAD and JFM project. However, they expressed their interest to be included in project activities and trainings extended to the villages that have joined the IFAD-funded project. After attending a Parscovie SHG meeting in Nonglang Village, they wanted to start their own SHG and other income-generating activities.

The households in Lawsiej Village do not know how to maintain a kitchen garden although their activities are individually based.

	Mid Nov	Dec	Jan	Feb	Mar Apr	May Jun	Jul Aug	Sep	Oct
No. of food secure households	All	All	All	8	5	0	2	4	5
No. of food insecure households				7	10	15	13	11	10
Rice (kg)	1 kg men 1 Kg women 250 g children	1 kg men 1 Kg women 250 g children	1 kg men 1 Kg women 250 g children	1 kg men 1 Kg women 250 g children	1 kg men 1 Kg women 250 g children	1 kg men 1 Kg women 250 g children	1 kg men 1 Kg women 250 g children	1 kg men 1 Kg women 250 g children	1 kg men 1 Kg women 250 g children
Harvested Products	Pumpkins Beans Mustard Leaves	Pumpkins Beans Mustard leaves Sesame Sweet potatoes Yan (Meat on Christmas)	Pumpkins Beans Mustard leaves Sesame Sweet potatoes Yan	Junklow	Junklow		Maize Pumpkins' leaves Cucumbers Squash Beans	Maize Pumpkins' leaves Cucumbers Squash Beans	
Purchased Products	Dhal Potatoes Dry fish	Dhal Potatoes Dry fish	Dhal Potatoes Dry fish	Dhal Potatoes Dry fish	Dhal Potatoes Dry fish	Dhal Potatoes Dry fish	Dhal Potatoes Dryfish	Dhal Potatoes Dry fish	Dhal Potatoes Dry fish

Table 12: Results of the Seasonal Food Calendar in Lawsiej Village (Fieldwork 2005)

The seasonal food calendar of Lawsiej Village in (Table 12) shows that its food insecurity is quite severe. The months from April to July were the most difficult times due to the food shortage and households have to work in their fields to be able to harvest in the month of December. The men worked very hard in their fields and obtained employment as wage labourers in the nearby villages. The households described hunger as "not having enough rice available for the entire year", while poverty for them was "no other income activity apart from agriculture". The time of the

year when they feel poorest and most vulnerable is from the months of June to October when they do not have enough money to buy medicines for their sick children since they invest all their money in buying food.

Picture 4: Conducting a PRA with the households of Lawsiej Village (Fieldwork 2005)

Compared to the other two villages, there is a lack of participation by the households and particularly by the women during the discussions held in Lawsiej Village despite efforts to involve them. Most of the discussions were conducted by the head of the village. Subsequently, with the project activities and trainings and weekly and monthly trainings as part of a SHG, households especially women became more self-confident, assertive and vocal.

Role of the Self Help Groups in Nonglang Village

The SHGs (Table 13) are examples of social capital assets and there are two women's SHGs, namely, Parscovie and Trietyllilang, were formed in Nonglang Village under the IFAD-funded project. The Parscovie SHG, formed by the households of the first category, is the leading group and very active. It paved the way for the other group Treityllilang SHG (Treityllilang means working together).

The members of both SHGs started their kitchen gardens after being trained by the local NGOs under the IFAD-funded project. This increased their food security by cultivating the land surrounding their houses and growing vegetables like mustard leaves, tomatoes and carrots for family consumption and for sale at the weekly town market.

Village	Type of intervention	NaRM Group	Members	Self Help Group	Members
Lawseij	None	No	0	No	0
Umniangriang	JFM	Yes	90	Male group	8 M
				Nangiadshaphrang (keep moving forward)	11 F
				Iatrielang (let us work together)	11 F
				Treihunlang (work together satisfaction)	9 F
				Banpynsuklang (to reach out together)	7 F
Nonglang	IFAD	Yes	46	Trietyllilang (work together equality)	10 F
				Prascovie (name of the founder)	10 F
			136		66

Table 13: Profile of different groups in the 3 villages from the Mairang Cluster (Fieldwork 2005)

To access the weekly town market, the members of Parscovie SHG planned to buy a second hand truck which would cost around Rs. 80,000 or a brand new jeep that would cost about Rs. 450,000. However, they decided against it because no person in the

village was trained to drive and because the bad road conditions could cause the truck to break down and they would not be able to afford to have it repaired.

The SHGs under the IFAD-funded project are working very well in Nonglang Village and the women had very much internalised the spirit behind micro credit programmes. They do not use their savings for consumption purposes and feel ashamed if forced to request a loan for consumption when they have serious problems at home. Instead, they prefer to use their savings to invest in activities that give income to the SGHs so that they will have enough money to buy more agricultural lands. The main livelihood strategies undertaken so far by the Parscovie and the Treityllilang SHGs are as follows:

Parscovie SHG

- Kitchen gardens to grow vegetables to complement nutrients and to sell at the market
- Rice mill
- Grocery shop in the village
- Piggery
- Poultry business
- Purchase of agricultural land

At a special meeting of Parscovie SHG to finalize plans for the purchase of a plot of agricultural land, the husbands of women members were invited to join in the discussions of logistics in connection with a meeting with the local bank for the release of the loan to purchase a land and a meeting with the landowner for the signing of the bill of sale. The meeting was presided by the President of Parscovie SHG and established the women's ability to conduct their meeting and make decisions.

Picture 5: Laying of boundary stone on land bought by SGH in Nonglang Village (Fieldwork 2005)

After the routine recording of savings, repayments of loans and distribution of earnings from the Parscovie SHG activities, each of the items on the agenda was presented, discussed and decisions made. The husbands were consulted and their views taken into account. In 2 hours the meeting was over and all the members were happy with the decisions taken in a truly participatory way. The President of Parscovie SHG made sure that each and every member was involved in the discussions and each decision was agreed upon by everybody.

Treityllilang SHG

- Kitchen gardens
- Grocery shop
- Handicrafts such as making plastic head-straps

• Small business like tea stall in the market

The women of Nonglang Village proved to be agents of change through the formation of SHGs by a) contributing to the households' economy with their earnings and investing in activities to improve households' livelihoods; b) reducing food insecurity through their income generating activities; c) introducing social changes in their own mind set and their husbands' mind set; d) strengthening their position in the family and the community; and e) avoiding disputes by including their husbands in their decisions as a group, hence gaining full support and respect from them.

Role of the Self Help Group Federation

Twenty-seven SHGs from 12 different villages formed the SHG Federation whose main objective is to acquire skills and replace IFAD and the NGOs once the IFAD-funded project was over. The Federation meets once a month and with the help of NGOs discusses and shares the experiences and problems of the respective groups and villages and attempts to find common solutions. It uses the premises of the NGOs in town to stock its products destined for the market. It is planning to open a small shop to sell its products and to buy a vehicle to transport all the SHGs products to the town market. Through its various activities, it aims to contribute to the reduction of food insecurity in the respective villages by establishing a link to the market and to the local banks. It also hopes to become a pressure group that could help to improve good governance performance and it expects to achieve its objective by building partnerships and alliances with the local Government offices like the veterinary, health and agriculture departments.

The role of the SHG Federation is demonstrated in a particular case taken up during the Federation meeting concerning the delivery of health services in IFAD-funded project activities. Each village presents a report on the health services provided by the first-aid nurse who is trained under the project activities. One village had not presented the report and the SHGs' representative was requested to inform the Federation on the situation in the village. The person explained that nobody could write in the village and that they had been waiting for the trained nurse to go to their village and help them with the report. Unfortunately, she never visited their village.

A discussion took place on this case and the Federation unanimously decided a) to call the nurse for a meeting and requested her to report on her services, b) to provide the health services she had been trained for with the community's resources and c) in case she would not perform as requested, the Federation would request her to pay back the amount invested for her training.

A wrapping up session held with households to discuss several issues relating to the logging ban, the livelihood strategies on dealing with hunger and poverty and building local institutions disclosed the following:

1. The households reiterated that hunger is mainly tied up to lack of agricultural lands and unavailability of food for the entire year.
2. They perceived the logging ban as a negative process that had increased poverty over the years and that poverty was connected to lack of access to market, education, health and veterinary services.
3. They suggested that solutions to overcome these challenges have to be attained by

providing the poor rural people with the following:

a. access to agricultural land;

b. access to technology for increasing the quality and quantity of their agricultural and handicraft products;

c. access to veterinary services to increase the quality and quantity of their livestock;

d. access to market;

It is alleged that institutions for sustainable livelihoods were possible

a) within the community:

- among villagers who are part of SHGs since they joined the IFAD project;
- among other poor villagers who have not yet joined the project activities;
- among villages where the project villages can play a catalystic role with the non-project villages; and
- with private landowners, to negotiate the purchase and lease of land.

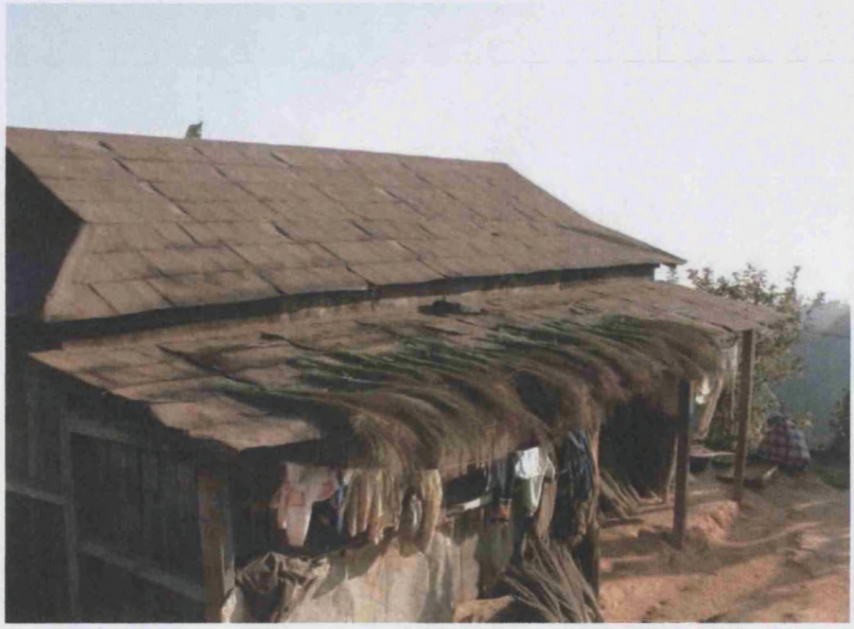
b) outside the community:

- with the SHG Federation, whose bargaining power is higher than a single SHG;
- with state administrative departments like agriculture, forestry and veterinary departments;
- with banks, to build trust with SHGs and grant loans to them; and
- with the State Government, to engage in participatory policies.

4.3 SWOT Analysis of Broomgrass Cultivation and Kitchen Gardens in Mairang Cluster

Many households in the Mairang Cluster were engaged in broom grass cultivation as a strategy to intensify their agricultural practices and to improve their livelihoods after the logging ban.

A SWOT analysis of 20 households in Nonglang Village was conducted to determine if broom grass cultivation, as a livelihood strategy, was a good option for them as shown in the (Table 14).



Picture 6: Drying of broom grass on rooftops in Nonglang Village (Fieldwork 2005)

Strengths	• Land availability and soil are well suited for broom • Marketable and durable and easy to cultivate and to take care • Output of broom is manifold from small input • The leaves can be used as cattle feeder
Weaknesses	• Cannot prevent from domestic animal grazing in the broom fields • The way to the broom field is very bad and they find it difficult to transp the harvest to the market • It makes the soil infertile
Opportunities	• Fencing can be made to protect domestic animals from grazing • Road can be repaired • To plant other vegetation which will increase soil fertility in the plantati
Threats	• Wild animals especially elephants • Thieves

Table 14: SWOT analysis of Broom Cultivation with households in Nongkrem (Fieldwork 2005)

The analysis is meant to identify the positive and negative attributes of broom grass cultivation with the households themselves and to help the households develop a full awareness of their own situation in the village which can then help them with both strategic planning and decision-making. Almost every house in the village had broom grass being dry up in the backyard or on their rooftops, which would then be bundled, packed and transported for selling in the main market of Mairang. The SWOT analysis established that this activity is very lucrative for them.

Picture 7: Kitchen garden in Umniangriang Village (Fieldwork 2005)

Strengths	• Each and every house have a kitchen garden • Manure is available from compost pit • Saves money since they don't have to buy from the market anymore • Women find it very acceptable because they don't have to travel far (jhu field) to obtain vegetables • Vegetables provide necessary nutrients for the health of men, women an children
Weaknesses	• Good productive land is very limited • They cannot produce vegetables in large scale to generate income from i • It is very difficult to keep animals away from their garden
Opportunities	• The NaRM Group will try to find ways and means to get good seeds • The local Dorbar or the community-based organisation will have to pass law that all animals should be properly kept in their own shed and not to re them throughout the year
Threats	• There is no threat regarding this activity

Table 15: SWOT analysis of Kitchen Gardens with households in Nonglang (Fieldwork 2005)

In Umniangriang Village, many households have kitchen gardens as a strategy to strengthen their agricultural practices. A SWOT analysis of 25 households of the village was made to determine if kitchen gardens was a good option to improve their livelihoods after the logging ban.

The analysis, as reflected in Table 15 above, identified the positive and negative attributes of having kitchen gardens and helped the households in Umniangriang Village develop a full awareness of their own situation in the village which was necessary for both strategic planning and decision-making. Almost every house had kitchen gardens in their own backyards since it appears to be a lucrative activity.

4.4 Pre ban Livelihood Activities of Households in Villages of the Mairang Cluster

The headman of the Lawsiej Village, Mr. T. Dkhar,[66] said *"before the logging ban the men could make about Rs. 1500 a day on timber trade, but after the ban they made only Rs. 50 in a day and now they had to rent land for Rs. 100 every year for agricultural purposes from landowners who live in Mairang."* From the interviews conducted, it appears that between 1993 and 1995 most of the households in Nonglang Village worked as labourers doing manual labour jobs. Men were cutting trees for commercial purposes, digging mud roads for timber carrying trucks, herding buffalos for pulling logs out of the forests, loading and unloading timber from trucks, driving and repairing trucks.

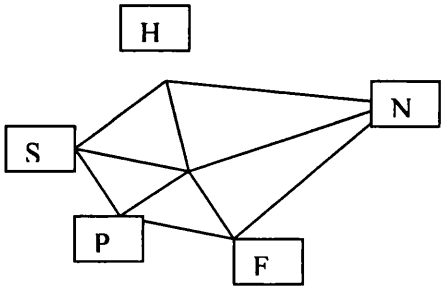


Figure 5: The pre ban asset pentagon shows access to high natural capital from timber trade and related businesses. This contributes to high financial capital from the timber wage and related labour and high human capital.

The households living close to the forests have strong ties of kinship and mutual exchange as social capital, ample access to rich forest resources as natural capital, an intimate knowledge of their local environment as human capital and money from the timber trade as financial capital which gives them and their children access to education.

There is less need for agricultural practices because there is ample timber related commercial work available for all the households. Men earned from Rs.200 to Rs.1500 a day from timber related labour work. The women dugged roads, planted rice and

[66] From fieldwork: Mr. T. Dkhar from Lawsiej Village who was Respondent No. 43 on 15/11/2005.

maize for self-consumption and earned at least Rs. 30 to Rs. 50 per day before the ban came into force. About 90% of the children in the village goes to school from 6:00 a.m. to 9:00 a.m. and afterwards works in the fields, care for their livestock and assists their parents. The headman of Umniangriang Village, Mr. B. Nongrang,[67] said *"in the past the trucks come only in winter seasons from December to March to load up timber because the mud roads were not accessible in the summer months." It* was mentioned that in the summer months the households work in the forests and stock up the timber. They also work in privately owned forests in neighbouring villages.

There was one truck in the village owned by one household but after the logging ban it was sold for only Rs. 50,000 although it was originally bought for Rs. 200,000 thereby incurring a lost of Rs. 150,000. Households, who owned buffalos which were used to pull logs out of the jungles where trucks cannot reach originally purchased for Rs. 20,000 each, had to sell them for Rs. 5,000 thereby incurring a lost of Rs. 15,000. Before the ban most of the households indicated that they had more money to travel to the main town market in Mairang. They could also pay for their bus journeys whenever there is a need to travel such as to carry the sick to the hospitals in Mairang. There were also many timber trucks travelling to the towns so access to transport was better even though the roads were very bad. The Church Elder of Lawsiej Village, Mr. P. Lynkhoi, [68] said, *"most of the villagers used to consume about 2 kg of meat a week but after the logging ban they could only afford 1 kg of meat a year for a special celebration like Christmas day."*

[67] From fieldwork: Mr. B. Nongrang from Umniangriang Village who was Respondent No. 27 on 12/11/2005.

[68] From fieldwork: Mr. P. Lynkhoi from Lawsiej Village who was Respondent No. 41 on 13/12/2005.

4.5 Analysis of Livelihood Strategies in the Mairang Cluster

To add more depth to the research, the effects of the logging ban has been analysed on rich and poor households at village level. The sub-sections below show an intra-village analysis of Nonglang, which has received IFAD intervention, and Lawsiej, which has not. This is followed by an analysis of Umniangriang, which has received a different kind of intervention from JFM.

4.5.1 Analysis of Nonglang Village which had IFAD intervention

In order to get a better understanding of the effects of the logging ban on different classes of people who lived in the same village, this section shows the analysis conducted on the rich and poor households at the village level in Nonglang, which had IFAD intervention in 1999.

A community map of Nonglang Village (Appendix 2) was made with the help of the 20 households who were interviewed. The approximate location of the school, the fair price shop, the church and homes were drawn on map. In order to verify the information that has been presented in the map, transect walks was conducted with the households to locate and identify the resources in the village. The transect walk shows that the schools in the villages are only at lower primary levels up to Class 4 with few teachers for many students. The high schools are located far away from the village in Nongkhlaw town about 22 km which made it difficult for kids to attend. It appears that households received some financial support from the church to build their schools and to pay teachers' salary. Table 16 below presents some examples of the different effects the logging ban had on the rich and poor households in the village.

Nonglang village received IFAD intervention	
Rich households	**Poor Households**
There are 32 households in the village that are in between A – B in the IFAD wealth ranking scale and who are considered rich. The rich households all owned land which they Used for cultivating rice, maize and potatoes. They also had plots of land behind their homes which they used use as kitchen gardens to cultivate vegetables and fruit trees. They did not have to lease land. They cultivated rise, maize, and potatoes for providing food to their families. The amounts of food they had was enough for about ten months. They had three meals a day and did not have to worry about food shortages. The men worked in their fields and the women sold their produce in the local markets. They sent their children to the local school in the morning and made them work in the fields during the day.	There are 33 households in the village that are in between C – D in the IFAD wealth ranking scale and who are considered poor. Poor households do not own any agricultural lands but only had small plots of uncultivated land at the back of their little homes. They leased land from landowners for about Rs. 100 a year. They cultivated rice as food security for their families. The amount of rice that they harvest was sufficient for about three months. They have three meals a day. During times when food is scarce they diminish the quantity of rice. The men work as wage labourers in coal mines while the women cultivate the fields. They send their daughters to work as maids in other towns and villages to get additional income.

Table 16: Effects of the logging ban on rich and poor households at village level

Livelihood strategies of the rich and poor households in Nonglang Village

Migration:

There is depression in the social-economic conditions of the Nonglang Village after the logging ban. The timber workers have lost their jobs and are living in poverty. As a result, the men from poor households became coal migratory workers and left their villages for months to work in coal pit mines near the Bangladesh border. They became sick when they came back to the village and money earned is spent for treatment and medicines.

The rich households kept kitchen gardens and shifted to agricultural farming. They could afford to send their children to school in the morning and encouraged them to work in the fields during the day. The households that were interviewed felt that it

would be better to lift the logging ban so they can make a living from timber trade rather than burning wood for charcoal to survive.

Agricultural intensification:

The poor households in the village live in hardship since the logging ban but they somehow have managed to survive on half empty stomachs. In November 1999, Nonglang Village received assistance from IFAD and the poor households that took part in the project got broomsticks, livestock, toilet facilities, vegetables seeds, organic manure, and fishponds. The NaRM Group in the village bought land and IFAD helped them to set up schools for the children. IFAD also gave agricultural training for the households to plant vegetables, fruits, trees, bananas, build toilet facilities, keep fisheries, and make organic manure.

The rich households did not have to lease lands because they owned lands in the village. They also have plots of land behind their homes which they use as kitchen gardens for planting vegetables and fruit trees. They cultivate rice, maize and potatoes to provide food to their families. They have three meals a day and do not have to worry about food shortages and the amount of food they have was enough for about ten months. The food of the rich households consists of rice, maize, potatoes, vegetables and dry fish and meat which they buy from the market.

Diversification of income:

The poor households survive by selling medicinal plants and leaves. They earn only Rs. 200 a month and have to take loans to buy food. Some work as labourers by burning wood for charcoal production and received Rs. 40 per sack. Others plant and sell

broomsticks for 5-6 kgs per day at Rs. 1 per kg. Women from poor households start knitting cane-made-seats and water carriers that were sold for Rs. 11-15 and they sell about 40-50 of them per week but their prices went down to Rs. 8 after the ban. Some of them work as daily wage road construction workers together with their children. Small children had to knit bamboo products too. Kids at Class 1 had to drop out of school and all kids between 4-5 years had to work.

Picture 8: Households engaged in road construction in Nonglang Village (Fieldwork 2005)

The rich households in the village had enough land where they cultivate enough food to feed their entire families. They also sell some of their agricultural produce in the local markets every week to earn more money which they then used to buy other essentials to sustain their families. The rich households leased plots of land to the poor households in the village on an annual basis. They also have some livestock and poultry in the village which they use for personal consumption.

Before the IFAD intervention, there was no health education hence IFAD sent some women from the village for health training in Mawplang village. After the training, the women received certificates to practice in their own villages and also medical instruments like thermometers, symomanometers and stethoscopes. Since the IFAD intervention in 1999, many positive changes have occurred in Nonglang Village. The livelihood strategies of the households in the village have improved. The wealth ranking exercise below that was conducted with 20 households demonstrates the success of the project.

Wealth Ranking of Nonglang Village

A wealth ranking of 20 households in Nonglang Village shows that the households in the village that joined the IFAD-funded project in 1999 have benefited from the IFAD intervention after the logging ban of 1996. The index (Figure 6) below indicates a positive increase in the wealth of the households over a period of 6 years. A comparison of the data from the December 2005 fieldwork with the December 2000 IFAD wealth ranking system used as a baseline profile of the village before the intervention started show that the households of Nonglang Village had climbed up the index in the 5 years period gaining from the assistance they had received from the IFAD projects.

Impacts from IFAD intervention in Nonglang Village

- The level of participation increased especially from the women's group.
- The NaRM Group and SHGs maintained their own books of accounts.
- The groups have established linkages with various Government Departments.
- Various monitoring formats were developed with the households of the village.

• Transparency and accountability could be seen in the workings of the groups.

• A petition was made to the PHE Department by the NaRM Group to revive the water pipe line construction of the village by offering free labour from the community.

• Water pipe lines and water tanks were installed with minimum expenditures.

Criteria for wealth ranking for households in Nonglang Village[69]

A = Owns large tract of land registered in their names; owns a tin roofed house; has a toilet near the house; has electricity in the house; has a kitchen garden; has other means of earning; rears large number of livestock ; cultivates paddy and other cultivation.

B = Owns land registered in their names; has small kitchen garden; has electricity in the house; has other means of earning; rears some livestock; cultivates paddy and other cultivation.

C = Owns some amount of land registered in their names; thatch roofed house and the food sufficiency is only for 3-4 months.

D = Owns a thatched roofed hut.

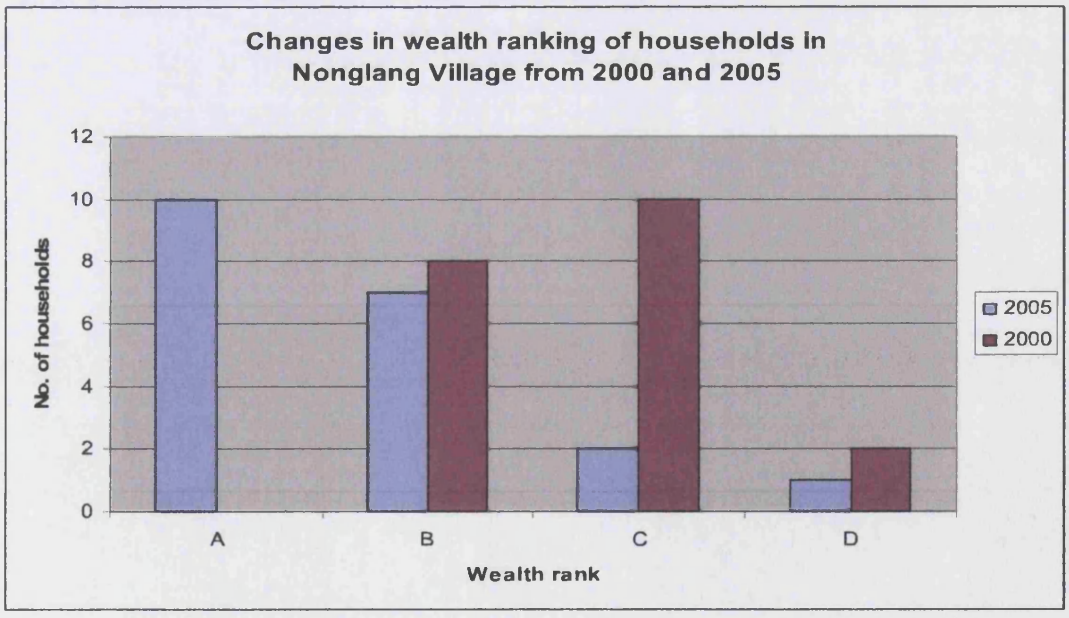


Figure 6: Changes in wealth ranking of households in Nonglang (Fieldwork 2005)

[69] The wealth ranking criteria that was used did not include food security data as the author followed the same old criteria used by IFAD in 2000 which only had the four (A,B,C,D) categories given above.

Results from the IFAD intervention in Nonglang Village

- Kitchen garden practices in every household in the village.
- The Women Village Health Workers started administering treatments for minor health problems.
- Low cost sanitation was constructed in every household in the village.
- 3D Model installed in the villages and planning exercise with the help of 3D Model was done by the households.
- Veterinary Health Workers have build up linkages with the Veterinary Department.
- The SHGs helped revived the local village markets.
- The SHGs secured the right to collect royalty from the stalls during the market day.
- Parscovie SHG has managed to start a free pre-nursery school in the village and has enrolled about 60 children.
- There has been a change in the attitude and mindset of the women from timid housewives to competitive businesswomen.

Income from new livelihood strategies created through IFAD aid

- Kitchen garden and bio compost chamber were practiced in every household: Annual Income: Rs. 56,000/- per annum.
- Rice mill installed in Nonglang Village run by the Parscovie SHG: Rs.33,500/- per annum.
- Broom cultivation annual income since 2000 without expansion of area: Rs. 10,000/- per annum.
- Income of SHGs members from small shop business and handicraft business: Rs. 18,000/- per annum.
- Income from fisheries constructed in the village: Rs. 60,000/-

• Income of some members of the groups who have become resource persons for construction of low cost toilet facilities in other IFAD project villages: Rs. 15,000/- per annum.

Average income and land ownership changes in Nonglang Village

Household survey data (Figure 7) indicates that the average income per week of the 20 households in Nonglang Village had dropped from about Rs.900 before the 1996 logging ban to about Rs. 130 in 1999 before they received the IFAD intervention. Their average income then climbed back to about Rs.480 in 2005 showing that the development aid that they got from IFAD had a positive impact on their average income. This means that the new livelihood strategies mentioned above that have been created in Nonglang Village since 1999 with the assistance from the IFAD project have contributed to the steady rise in the average weekly income level of the households that were surveyed.

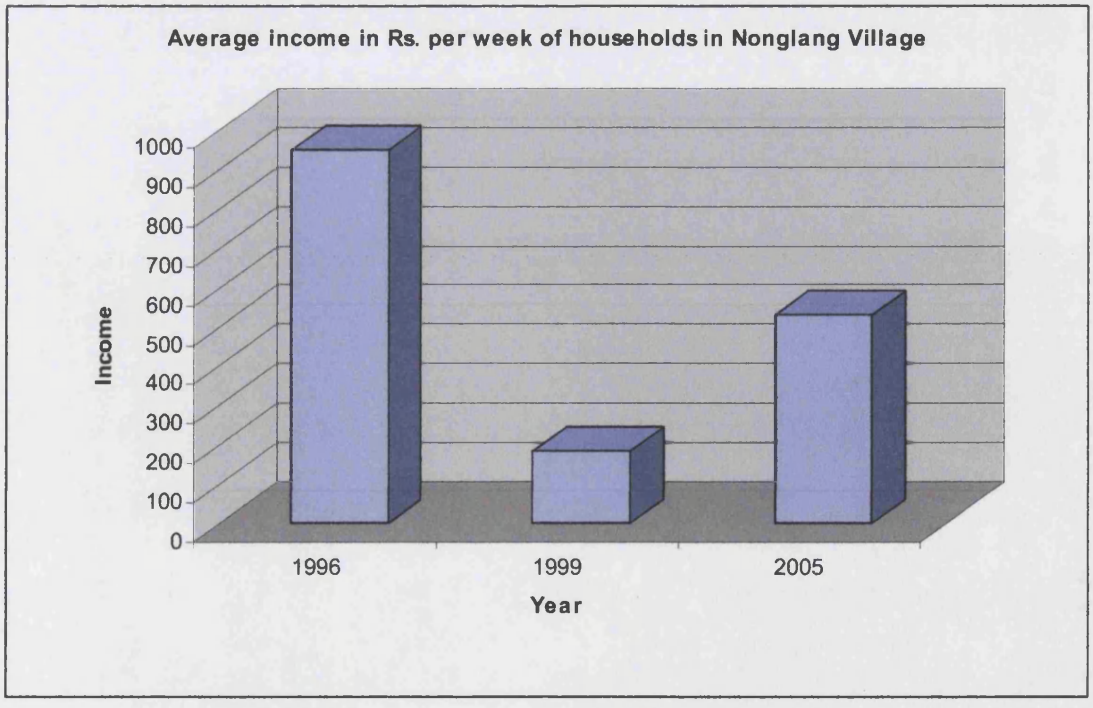


Figure 7: Average income (Rs) per week of households with IFAD intervention (Fieldwork 2005)

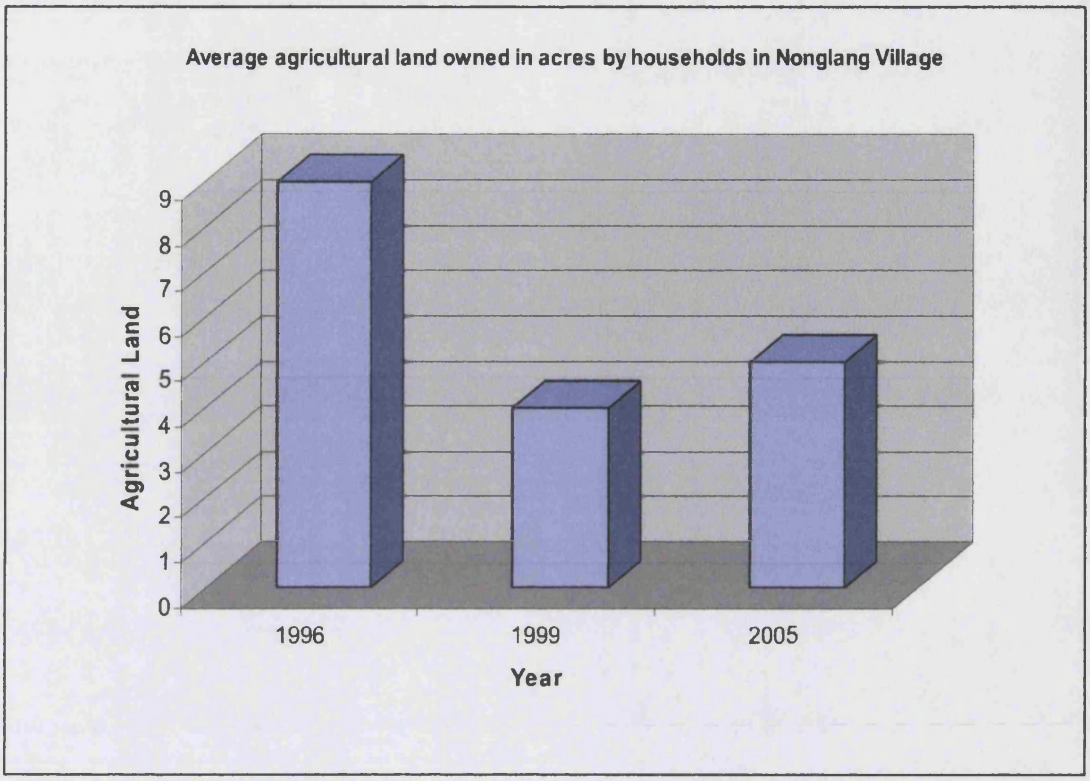


Figure 8: Average land ownership (acres) of households with IFAD intervention (Fieldwork 2005)

Survey data also shows that the average amount of agricultural lands (Figure 8) owned by the 20 households surveyed in Nonglang Village had dropped from about 8.5 acres in 1996 to about 3.5 acres in 1999. It then climbed back to about 4.5 acres in 2005. The land ownership declined because the households sold their lands to rich landlords at a cheap price after the ban since they needed money to sustain their families.

IFAD and Block Development Office statistics were used to generate the 1996 and 1999 average income and land ownership data and a 2005 survey of households of Nonglang Village was used to generate the 2005 new data.

This means that the average weekly income of the households in the village is directly correlated to the average amount of agricultural land owned. This shows that the SHGs

in Nonglang Village have been able to purchase more agricultural lands with the support they received from the IFAD project since 1999.

It also shows that as their average weekly income rises over time they have reinvested their savings to buy more agricultural lands which are the biggest and more secure asset for them and their families. In Nonglang Village, it was easier to negotiate and purchase agricultural lands as a SHG member rather than as an individual. Hence, the households of the village used the existing SHGs to acquire more agriculture lands as a group and later divide the amount of land equally to every household member of the SHGs.

4.5.2 Analysis of the Lawsiej Village Which Has No Intervention

The village of Lawsiej has no intervention since the logging ban in 1996. Because of the lack of intervention and support from either the Government or IFAD, it is the poorest from the three villages that were studied in the Mairang Cluster. It has 60 households and it is remotely located to the closest metalled road. The group meeting organised by the village chief was attended by 10 women and 5 men. A better understanding of the effects of the logging ban on the different classes of households who lived in the same village is shown in the analysis conducted on the rich and poor households at the village level.

The same process for drawing a community map was done for Lawsiej Village (Appendix 3) with the help of the 15 households who were interviewed. The approximate location of the school, the fair price shop, the church and the homes were drawn on the map. In order to verify the information that has been presented on the map,

transect walks were conducted with the households to locate and identify the said structures in the village. The transect walks revealed that the water pipes which were built in 1996 were not working so the households had to build the water system to make it operational. The Public Health Engineering Department brought the pipes to the village but no water came through them and the households had to bring water from another source. Still most of the households have no access to clean drinking water. The table below (Table 17) presents some examples of the different effects the logging ban had on the rich and poor households in the village.

Lawsiej village received no intervention	
Rich households	**Poor Households**
There are 7 households in the village that are in between A – B in the IFAD wealth ranking scale and who are considered rich.	There are 53 households in the village that are in between C – D in the IFAD wealth ranking and who are considered poor.
Rich households owned some land for cultivating maize and potatoes. They also had pots of land near their homes where they cultivated vegetables. They did not have to lease land.	Poor households do not own any agricultural lands but only had small plots of uncultivated land at the back of their little homes. They leased land from landowners for about Rs. 100 a year.
They cultivated rise, maize, and potatoes for providing food to their families. The amounts of food they had was enough for about eight months. They had three meals a day and did not have to worry about food shortages. Their food consist of rice, maize, potatoes and vegetables. They had some fish and meat from the market on special occasions once a year.	They cultivated rice as food security for their families. The amount of rice that they harvest was sufficient for about three months. have three meals a day but during times when food is scarce they diminish the quantity of rice per person. Food consists mainly of rice and vegetables except during the difficult months, which are from July to Oct when they eat just plain rice and salt.
The men worked in their fields and the women went to sell the produce in the local markets. They sent children to the local school in the morning and made them work in the fields in the day.	The men work as wage labourers in coal mines the women cultivate the fields. They send daughters to work as maids in Shillong and other towns to provide additional income to the households.
The men claimed that the logging ban was bad for them as they had lost their timber work and now had to work in the fields. The women suffered after the ban too as they lost their business from the tea and food shops which they had before the ban.	The men said that the logging ban is bad because it gives them sleepless nights worrying about finding solutions on how to provide food for their families and where to go and work as wage labourers. The women perceived the ban had worsened their living conditions.

Table 17: Effects of the logging ban on rich and poor households at village level

Livelihood strategies of the rich and poor households in Lawsiej Village

Migration:

There are limited livelihood opportunities in the village hence the poor men and young boys age 14 and above leave their homes to work in coal pit mines located about 250 kms away near the Bangladesh border. They return to the village after 6 months with all sorts of respiratory diseases and some of them die from lack of medicines and treatment. This strategy of male work force migration is a tragedy which the poor households in the village have to cope up with to survive. The poor households send their daughters to work as maids in Shillong and other towns to provide additional income to the households.

The rich men who own lands work in their fields and the women sell their produce in the local markets every week. They are able to send their children to the local school in the morning and made them work in the fields during the day.

Picture 9: Forest clearing for Jhum cultivation in Lawsiej Village (Fieldwork 2005)

Agricultural intensification:

The poor households do not own any agricultural lands but only had small plots of uncultivated land at the back of their little huts. They lease lands from rich landowners for about Rs. 400 a year. Most of the lands that are leased are used for shifting cultivation.

They cultivate rice as food security for their families and the amount of rice that they harvest is sufficient for about three months.

The poor households have three meals a day but during times when food is scarce they reduce the quantity of rice per person. Food consists mainly of rice and wild vegetables except during the difficult months, which are from July to October, when they eat just

plain rice and salt and this affected their health. They have no money to buy food for their kids, no money to send them to school, no money to buy clothes or blankets to protect them from the cold. They build fires at night to warm up their kids.

The rich households own lands in the village for cultivating rice, maize and potatoes to provide food to their families. They also have pots of land near their homes where they cultivate vegetables. They did not have to lease lands. The amount of food they have is sufficient for about eight months. They have three meals a day and did not have to worry about food shortages. Their meals consist of rice, maize, potatoes, vegetables and some dry fish which they buy from the market.

In general, the households of Lawsiej Village stated that they used to consume about 2 kg of meat a week but after the logging ban in 1996 they could only afford 1 kg of meat a year and only for special celebrations like Christmas day.

Diversification of income:

After the ban, many households in the village did not get their wages which was equivalent to Rs. 5,000 to Rs. 20,000 per household because the landowners (Malik) could not take the logs out of the forests to sell them.

The poor men stated that they did not even get Rs. 50 and sometimes they only work for Rs. 30 a day. The men then started knitting cane and bamboo-made seats and water carriers or digging mud in the paddy fields. They wanted to practice agriculture but they had no lands and could not lease lands due to lack of money after the ban came

into force. Hence, they could not increase their productivity as they had to pay Rs. 100 per head to rent land for agricultural purposes.

The poor women work for only Rs. 5 to Rs. 10 a day by knitting cane and bamboo-made seats and water carriers. They also started plucking leaves from the jungles for packing purposes and got 1 Paisa per leaf or about Rs. 1 per 100 leaves they collected. The tree barks are sold for only Rs. 2 per kg. After the ban, women had to leave their homes at 6:00 a.m. to pluck leaves from the jungles for packing sticky rice and meat and then return home at 7:00 p.m. They then start bundling the leaves till about 12:00 midnight. They sleep for only 1 or 2 hours and then they leave at 4:00 a.m. to carry the packed bundle of leaves walking 1 hour to Kynrut village. They normally reach the bus stop at 6:00 a.m. and then load their leaves to buses that transport them to the market in Mairang. The stronger women could get Rs. 30 a day from plucking leaves but the rest get only Rs. 15 to Rs. 20 per day. If the women can't get leaves they collect the bark of trees for making medicines for Rs. 1 per kg. These challenging physical activities brought them pain and misery. Many household members fell sick due to lack of sleep.

Since the year 2000 the poor households of Lawsiej Village started cutting down all the small trees close to the village for making charcoal in order to survive. The households would then bring the charcoal from the mountains and stock it up in the backyard near their homes in the village as shown below (Picture 12). The time that the households spent to collect firewood and bamboos from the forest affected their other household and farming activities.

During the fieldwork, it was observed that even pregnant women started knitting cane and bamboo-made seats and water carriers all night to make some income to buy food and feed their kids. Sometimes both men and women stay behind in the forests because it would get too late and too far to walk back to the village with their collection of leaves, cane and tree barks hence the kids have to eat by themselves at home and the elder children have to take care of their younger siblings until their parents return home.

Picture 10: Charcoal storage area in Lawsiej Village, which had no intervention (Fieldwork 2005)

The rich households own lands to supply food for their families. They sell some of their agricultural produce in the local markets every week and buy other essentials to sustain their families. They lease plots of land to the poor households in the village. They also have some livestock and poultry in the village which they use for personal consumption.

In general, the limited access to forest resources due to the logging ban has caused problems between the villagers and Government officials. During the interview, the

Church Elder of Lawsiej Village, Mr. P. Lynkhoi, [70] said *"for the first time the landowners and timber barons joined forces together with the villagers, the headman (sadar), the kings (syiem) and organised rallies opposing the logging ban all over the West Khasi Hills District which lasted for a year in 1997."* It was also mentioned that in the following year, they started to negotiate with the Government of Meghalaya in Shillong and the Government of India in New Delhi.

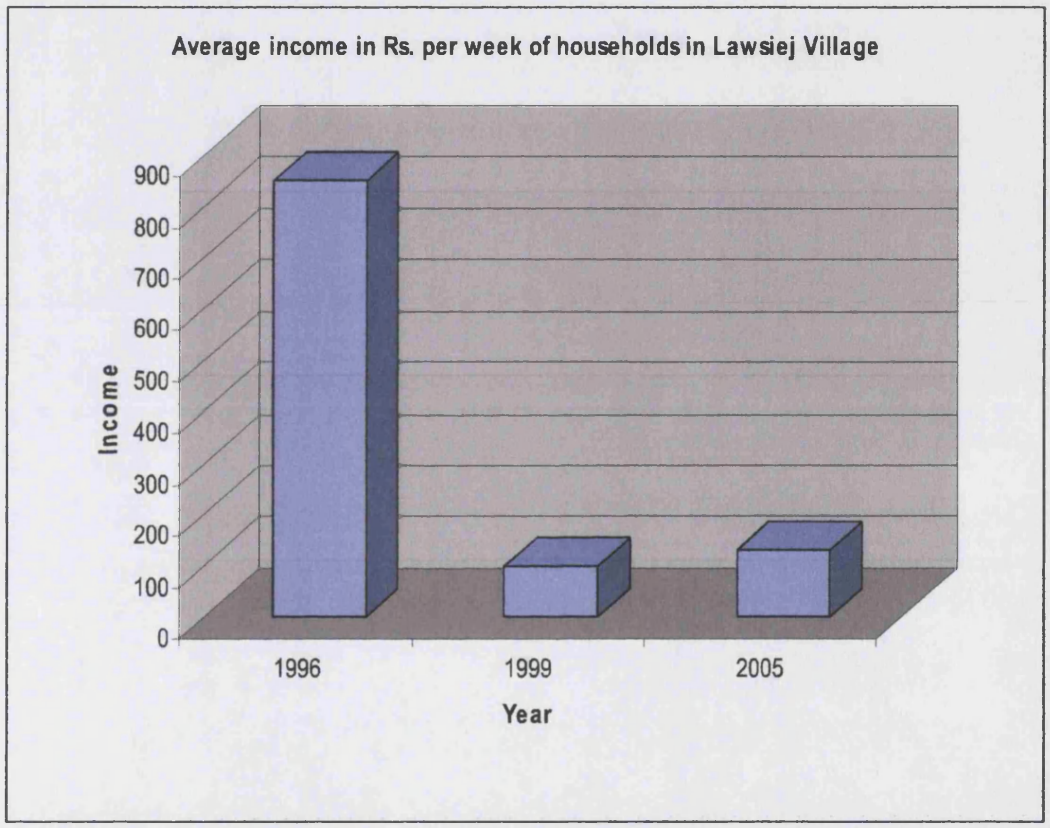


Figure 9: Average income (Rs) per week of households with no intervention (Fieldwork 2005)

[70] From fieldwork: Mr. P. Lynkhio from Lawsiej Village who was Respondent No. 41 on 13/12/2005.

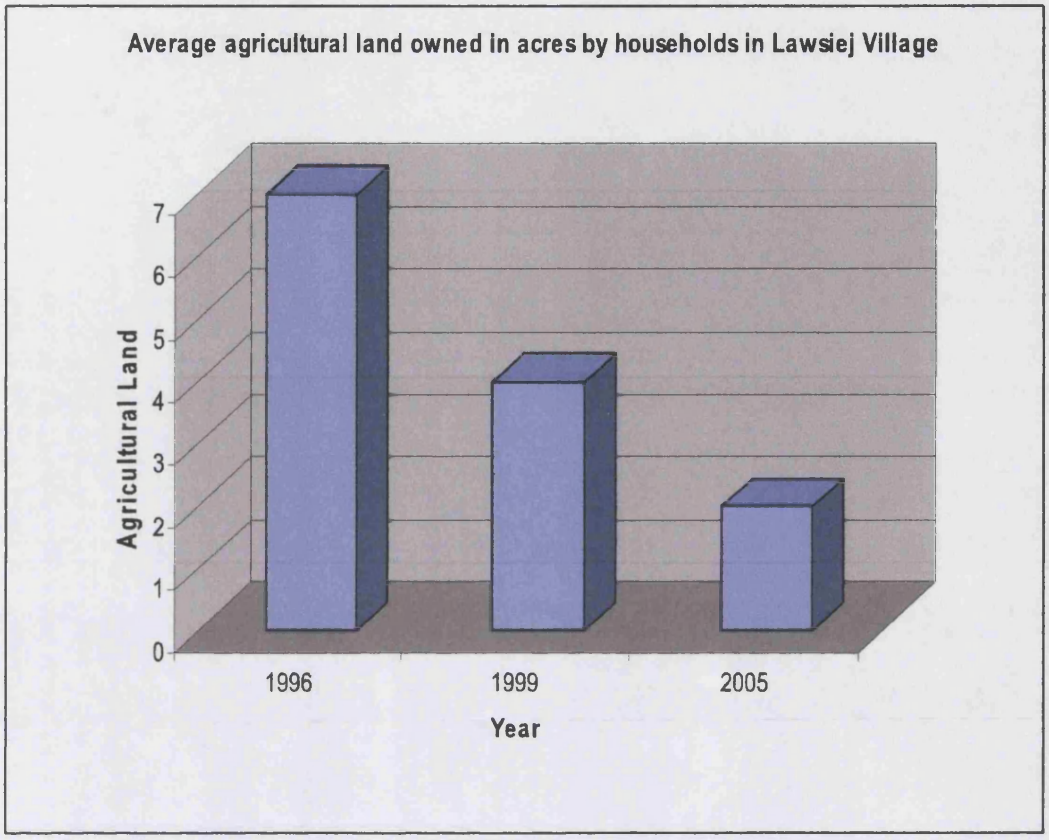


Figure 10: Average land ownership (acres) of households with zero intervention (Fieldwork 2005)

Average income and land ownership changes in Lawsiej Village:

The household survey data (Figure 9) indicates that the average income per week of the 15 households in Lawsiej Village dropped from about Rs. 800 in 1996 before the logging ban to Rs.50 in 1999. Since they receive no intervention their income remains the same at about Rs. 99 in 2005, an indication that they have no growth in their income level.

The average area of agricultural land (Figure 10) owned by the 60 households surveyed in Lawsiej Village dropped from about 6.5 acres in 1996 to about 3.5 acres in 1999. It never climbed back and stayed at about 1.5 acres in 2005.

The Block Development Office statistics was used to generate the 1996 and 1999 average income and land ownership data and a 2006 survey of households in Lawsiej Village was used to generate the new 2005 data.

4.5.3 Analysis of Umniangriang Village which had JFM intervention

Umniangriang Village was the first to get JFM intervention from the Forest Department's Sub Division Office located in Mairang. The households of the village stated that after the ban there was no more timber trade in the village and charcoal production started. After the ban, more destruction of forest occurred and even small trees were converted to charcoal and their leaves were used to pack the charcoal sacks. However, before ban only big trees were cut for commercial timber trade.

The village formed its JFM Committee in August 2005 in accordance with the will of the households and approached the Forest Range Office in Mairang to get their village adopted. The Sordar was elected as Chairman with 10 core group of male leaders sitting in the JFM Committee. The households of the village selected their own members to sit on the JFM Committee which includes both the father and mother.

All households in Umniangriang Village were given lands with an area of about 1/2 - 2 of the size of a football field to plant rice and maize. A nursery of 47,000 trees consisting of khasi pine, neem, rai, pupa depiti, ngi, sherry, soh manir and mango was started in August 2005. The land was given by the village council and the tree seedlings were given by the Forest Department. A second nursery for rotation near the plantation was commissioned in March 2006. The Forest Department also gave the households of the village water pipes and water tanks.

A fishpond was given to Umniangriang Village by Forest Department in January 2006.

Picture 11: Seedlings for afforestation of degraded forests in Umniangriang (Fieldwork 2005)

Reforestation/afforestation was done in plantations by the households themselves. The plantation must be a non-forest area. The households did the labour and were paid by Forest Department the amount of Rs. 40 for females and Rs. 70 for males as daily wages for their tree planting work.

The Forest Department claims that the men can plant more trees than the women per day and also cover a bigger area, hence the difference in wages. Pine trees were planted in 25 hectares under the JFMC. About 1000 pine trees per hectare or a total of 25,000 pine trees were planted.

Average income and land ownership changes in Umniangriang Village

Household survey data (Figure 11) indicated that the average income per week of the 15 households in Umniangriang Village dropped from about Rs. 880 in 1996 before the logging ban to Rs. 98 in 1999. After they received JFM intervention in 2005 their income climbed back to about Rs. 220 in 2005 showing that the aid they got from JFM had a small but positive impact on their income over time. The average area of agricultural land (Figure 12) owned by the 15 households surveyed dropped from about 8.5 acres in 1996 to about 4.5 acres in 1999 and then climbed back to about 2.5 acres in 2005. Again the land ownership declined after 1996 because the households sold their lands to rich landlords at a cheap price after the ban since they needed money to sustain their families. The Block Development Office statistics were used to generate the 1996 and 1999 average income and land ownership data and a 2005 survey of households in Umniangriang Village was used to generate the new 2005 data.

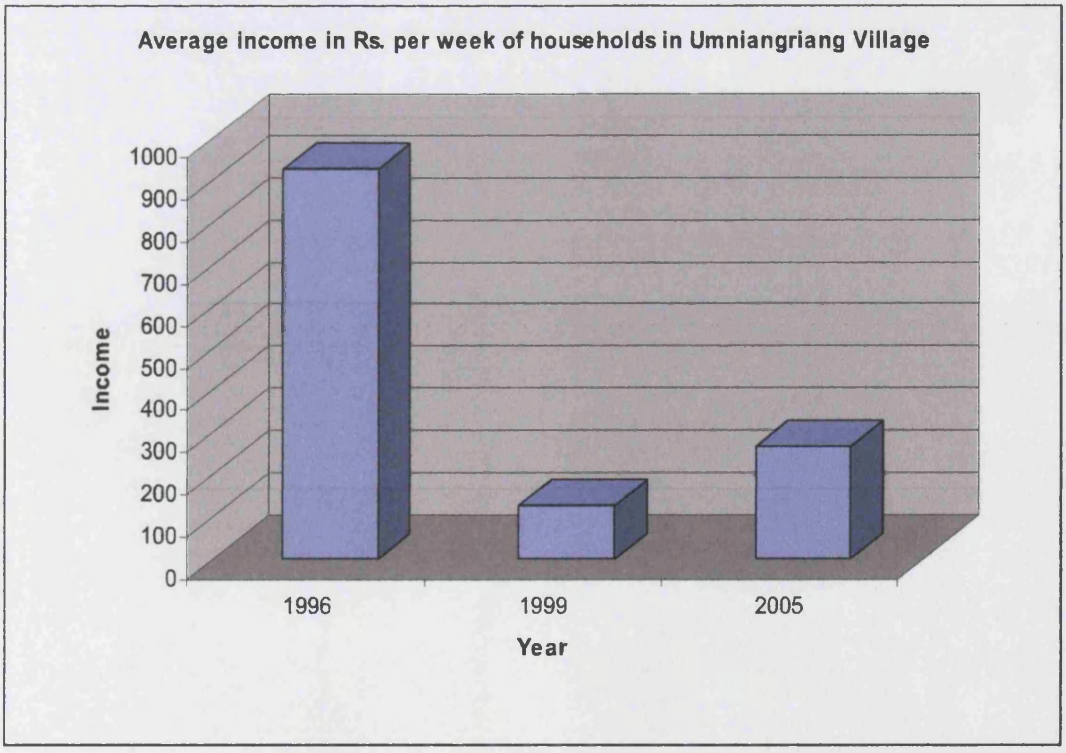


Figure 11: Average income (Rs) per week of households with JFM intervention (Fieldwork 2005)

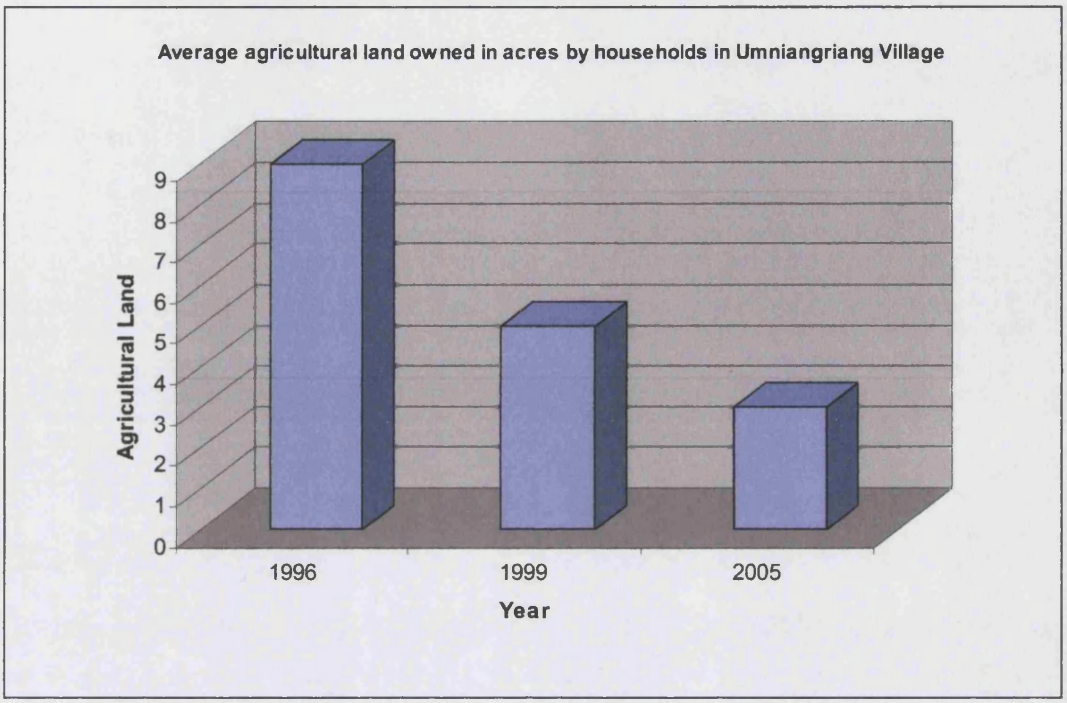


Figure 12: Average land ownership (acres) of households with JFM intervention (Fieldwork 2005)

Emerging land and forest profile of households in Umniangriang Village

Data collected from the household interviews disclosed the following:

(i) Water availability: The households have very little access to drinking water. In winter time they go to nearby ponds and in spring they travel far to get water.

(ii) Soil productivity: Before there was good forest cover and the soil was fertile but now the soil needs manure to support agriculture. Once the burning for charcoal started the soil fertility became very bad and the households lost all the medicinal plants.

(iii) Soil diseases: The households don't use pesticides hence many types of diseases are eating up their vegetables and fruits especially oranges.

(iv) Land use (cultivatable land/sales): 5 of households interviewed owned lands and others renteds land from landowners in Mairang. After the ban the households could not even afford to pay the rent for the lands.

(v) Livelihood opportunity: The households plant rice, maize, sweet potatoes, pumpkins and broomsticks in the village.

(vi) Village infrastructure: The households have 2 lower primary schools, 1 upper primary school from SHGs. The PHE has built a water tank. The village has electricity but 15 households don't have any power connection yet.

(vii) Migration (in/out) of people: Men and boys leave the village to look for labour elsewhere. For months and years, they work in other towns like Shora, Shahlang, Majai, Lad Rymbai, Nongpoh and Byrni. Upon their return, they get sick and some die due to harsh working conditions. Girls work as maids outside the village.

(viii) Forest quality (types of birds/animals): All the areas surrounding the village have lost their forest cover including both flora and fauna.

Perceptions of resource extraction in Umniangriang Village

According to the households interviewed, no licenses are needed from the Forest Department and no payments are made for the extraction of resources because they are all privately owned forests.

The households stated that the Supreme Court ban on cutting timber had severely affected their livelihoods and that the Forest Department and the Government offered no support to help them in the changing availability of forest resources.

Their main agricultural practice is Jhum farming as well as wet terrace. The households are also engaged in handicraft activities to supplement their income. Cane and bamboo handicrafts are substituted to a large extent by plastic strips as raw materials have become scarce due to rampant harvesting. About 70% of the households do not own

lands for cultivation. Lands have to be bought or leased. The households believe that the Forest Department and the Government offered no support to help them in the changing availability of forest resources.

Picture 12: Landscape of Umniangriang Village which had JFM intervention (Fieldwork 2005)

The Sub Divisional Officer is aware of the conditions of the village but did nothing to help them. No assistance and support were received from the Forest Department and the District Council. The Members of the Legislative Assembly (MLA) candidates also visited the village before elections but the winner did nothing after he won the seat. The Central Scheme gave them a lower primary school in 2001. Only one or two households in the village received 27 tin roofs for their homes.

It was only after the JFM intervention that the Agriculture Department gave the households vegetable seeds, spray pumps, fruit seeds through the village committee. JFM gave them a fishpond which was built by the NaRM Group. The households believe that the parties responsible for the decline of these resources are the timber

barons because forest resources have decreased and charcoal production has destroyed all forest since even the small trees are not spared for charcoal production. The information from the interviews conducted with the households indicated that they were dependent on these resources for their livelihoods and survival.

Perceptions of conservation and management of resources in Umniangriang

The households stated that there has been lack of efforts by the Government and NGOs for conservation efforts in the village and surrounding areas. There were no signs of Social Forestry or Joint Forest Management projects after the ban. The households went to Range Forest Office in Mairang 4-5 times to look for tree seeds but each time they only found the security guard and there were no forest officers to help them. It was only later that they got some help from JFM in the form of training for agricultural activities, livestock, toilet construction, organic manure production, horticulture, health, veterinary and fishery.

The households wanted new forest management institutions. They want the NaRM Group as a village institution to manage local forest and asked the Forest Department to provide the tree seeds. The NaRM Group and the SHGs have indicated to take responsibility in doing a better job in the management of natural resources. Before these groups came into existence only the men can sit in village committee (Dorbar) and make decisions for the entire village. The village chief (Sordar) is elected only by men once every three years. Only the NaRM Group have both males and females representatives who make the decisions collectively.

4.5.4 Interviews with the Government Officials of Meghalaya

A series of interviews made with the Government officials of Meghalaya in Shillong including officials from the Ministries of Agriculture, Forestry, Veterinary, Food and Health to get their views on the logging ban and its impact on household strategies disclosed that the Government officials believed that the logging ban was a good measure instituted by the Central Government to protect remaining forested areas and to promote forest conservation across Meghalaya despite some negative effects on the livelihood strategies and daily lives of the poor people in the remote villages.

IFAD Consultant, Mr. T. Blah[71] *in Shillong, said "a State Alliance Against Hunger would be formed in Meghalaya as a pilot project for India together with representatives of SHGs Federation, NaRM Group, District Administration, the State Government, churches, banks and private landowners."* The IFAD project would be extended to non-project villages as requested by the households. The IFAD Consultant also stated that the District Administration and the State Government would be asked to enact policies for community participation in order to gain the trust of poor people in the villages.

On issues relating to land tenureship in Meghalaya, IFAD officials stressed the need to address land reform and land distribution which appears to hinder the reduction of hunger and poverty and the improvement of the livelihood strategies of the poor communities.

[71] From fieldwork: Mr. T. Blah from Shillong who was Respondent No. 4 on 20/09/2005.

There is a general consensus about the need to starting dialogues with the civil society that are already working in the villages and creating possible alliances with them for capacity building and training exercises in the villages. IFAD officials also wanted the health and safety of the communities as important issues to be stressed in the alliances concept.

On support for other livelihood strategies, IFAD wants an increase in quality and quantity of livestock which is an important item in a household's food security especially in view of its market demand. This is particularly important for Meghalaya which imports meat from the nearby states.

The Catholic Archbishop Dominic Jala of the Diocese of Shillong,[72] *Meghalaya, said "the logging ban is bad because it contributes to the increase in poverty in rural Meghalaya."* He showed a keen interest for a possible network with IFAD and other NGOs to help the poor in the remote villages and also suggested a network that could bring together the efforts of local authorities working to rebuild the local livelihoods of the poor in West Khasi Hills District. The Catholic Church through its Natural Resource Centre has been conducting trainings and activities relating to agriculture.

4.6 Analysing the Five Capital Assets in the Mairang Cluster

As mentioned earlier, there is clear evidence from the empirical data collected from all the three villages in the Mairang Cluster to demonstrate that the indigenous people adopted an array of livelihood strategies to survive. From the structured household interviews, it is possible to measure their access to the five capital assets which shows

[72] From fieldwork: Archbishop D. Jala from Shillong who was Respondent No. 5 on 25/09/2005.

that the Supreme Court logging ban has a series of impacts on their livelihood strategies. These include many recorded changes in land use practices, income diversification and migration within the communities that were studied. However, it can be argued that the logging ban did not completely ruin all the livelihoods of indigenous people because poverty and problems of access to resources predated the ban. However, the various interviews show that the ban has aggravated some of these problems for the poor households living in the remote villages and made opportunities for some rich and powerful landowners in the cities who have co-opted the local assets.

Vulnerability and shocks:

While looking for indicators for vulnerability and shocks since the time that the logging ban was imposed, there is clear evidence from the household interviews to show that the villages are exposed to droughts, high winds, crop damage, rain damage and animal diseases. These natural indicators are caused by the lost of forest cover which triggers soil erosion during heavy rains and lowers soil fertility and soil capacity. Once the burning for charcoal starts, the soil fertility becomes worst and the villages lose all their medicinal plants. Since there is no tree cover left to shelter the villages from high winds during the spring seasons, the winds damage many crops and homes. The households also lose their livestock that die from different types of animal diseases. They claim that their poultry die from some kind of bird flu and their cows have some kind of diarrhoea that slowly kill them.

Another indicator of vulnerability and shocks is the rise in boundary conflicts. The villages close to the international boundary with Bangladesh in the south and those close to the national state boundary with Assam in the north are facing border disputes

over land and labour migration. There is a rise in migration of Bangladeshi refugees from the south entering Meghalaya through the West Khasi Hills District and working for very low wages thus taking away the already shrinking livelihood opportunities of the indigenous people. A consequence of the boundary disputes is an increase in the rate of crime and violence.

Households interviewed alleged that the incidence of robberies and petty crimes has registered a significant increase since the imposition of the logging ban.

While looking for indicators to measure the five capital assets as identified in the Sustainable Livelihood Approach, it is very apparent from the household interviews that the logging ban has altered their access to these capital assets. The table below presents some examples of the changes in the asset pentagon before and after the logging ban was implemented in 1996.

	Pre-ban	**Post-ban**
Natural capital	Easy access to forest for timber and other forest resources.	Difficulty in getting access to forest to collect firewood. Decrease in forest resources after charcoal burning.
Financial capital	Easy access to money from daily wage timber activities.	No access to timber wage labour and fall of income.
Social capital	Active participation in the church and family. Strong village councils and rule of law.	Low social status and breakdown in the families increased. Many single mothers were left without husbands.
Human capital	Households could afford to send their children to school and the literacy rate was higher.	Households did not have the money to send their children to school and there is a decline in the literacy rate.
Physical capital	Easy access to land and local markets during the timber trading days.	Decrease in ownership of land, trucks and buffalos. Decrease in the size of local markets.

Table 18: Changes in the asset pentagon before and after the Supreme Court logging ban[73]

[73] The asset pentagon was used to identify perceived pre-ban and post-ban impact of the Supreme Court logging ban on the livelihoods of the local people.

Natural Capital:

Access to natural capital assets since the logging ban has been affected in all the villages in the Mairang Cluster. The households in the villages indicated that water scarcity has increased, soil fertility has decreased, cropping intensity has decreased, and their access to other environmental resources like wild fruits, fodder, aquatic resources, forest products, trees has diminished over the years. They claimed that this was due to destructions caused by charcoal burning practices of the remaining forest and forest resources which has a negative impact on the land and depleted water resources. However, one would argue that the intensive practice of shifting cultivation and keeping large broomstick plantations could have also contributed to the decrease in soil fertility over time. Most of the households in the Mairang Cluster had lands before the ban but sold them at a low price to landowners in Mairang town to survive. Now they have to lease lands from these very landlords at Rs. 100 per annum for agricultural purposes. Since the IFAD intervention in 1999 the households of Nonglang Village have been able to gain access to livestock (cows for milk) and poultry (chicken for eggs) which they use for their own household consumption.

Financial Capital:

Since the logging ban, the households disclosed that their sources and amount of credit have decreased. Remittances have also decreased; loans to neighbours have not been repaid; bank accounts are empty and most households have closed their village bank accounts. Before the ban, their earnings were purely based on timber trade and its related businesses where men would make from Rs. 200 to Rs.1500 per day depending on the nature of his job. After the ban, they lost all their timber daily wages and the women had to close down all their shops and tea stalls that were thriving during the

timber trade. Most of the households had to close their bank accounts in the rural banks in Mairang after the ban. The men from the poor households in the Mairang Cluster have turned into coal pit mines migratory workers after the ban. However, the IFAD and JFM project villages have managed to recover slowly since they received new loans and grants that have been administered through the NaRM Groups and SHGs. The other households in Lawsiej village that received no intervention are in serious financial conditions. Almost every household interviewed are living on credit from money borrowed from impatient moneylenders in Mairang.

Social Capital:

Regarding access to social capital assets, the households in the villages of Mairang stated that their participation in community initiatives through the NaRM Groups and the SHGs increased over time in the IFAD and JFM project villages. However, the households living in the villages that had no intervention and no groups to work with are disorganised and there is no evidence of Non-Governmental Organisation membership. Most households are church members of both Catholic and Protestant congregations. Only men are allowed to be in the Village Council and they can vote for the Village Chief every three years. There are no existing interactions with the private sector at all. Before the ban, the households had a high social status with ample work and money to support their families. There was active participation in the church and local village councils. There was strong family structures build on trust and respect. After the ban, many breakdown in marriages are reported and the social status of the households is very low. The incidents of theft and crimes increased in the villages and the households lost their trust with one another. There is less participation in church and

community events. There are many single mothers left behind by their husbands who are frustrated with the lack of livelihood opportunities in their village.

Human Capital:

When asked about access to human capital assets since the logging ban, the households in the villages indicated that their literacy and numeracy levels for both adults and children have dropped over the years. School attendance by both men and women has dropped after the ban because parents could no longer afford to pay for the school fees and they made their children work in the fields with them. Many households stated that they face an array of illnesses and could not afford to buy the medicines or to pay for the travel costs to get to the hospitals for treatment. Both men and women lost their timber related occupations and wages dropped especially for the women. Women's mobility increased as they have to leave their villages and look for manual labour jobs in the towns. The men from poor households who worked in coal pit mines became ill and some died from respiratory diseases leaving their wives and children behind. The households from the IFAD and JFM villages have been able to get access to agricultural training, farming and health care education and this has positively contributed to the entire community over time.

Physical Capital:

With respect to access to physical capital assets, the households in the villages claimed that their access to land had decreased since they sold their property to landowners after the ban. Infrastructures like roads, dikes, and bridges/culverts have fallen apart and have not been maintained or repaired by the Public Works Department (PWD) since the closure of the timber trade. The local village markets have shrunk over the years

because of few businesses after the logging ban. Some households have their electricity cut off in their homes since they could no longer afford to pay the bills. There are a few run down schools which lack teachers and administrators. There are no health clinics and no access to clean drinking water. Most of the water pipes and tanks in the villages are rusty and inoperational. Households have to walk long distances to collect water from rivers and springs. Commercial assets for transport like trucks and buses are sold at a lost after the ban. Timber pulling buffalos and equipments are also sold at a lost after the ban. The IFAD and JMF project villages received some support for infrastructures like toilet facilities, community halls, schools, footpaths and fishponds. These have contributed to the improvement of the ability of the households to earn adequate livelihoods.

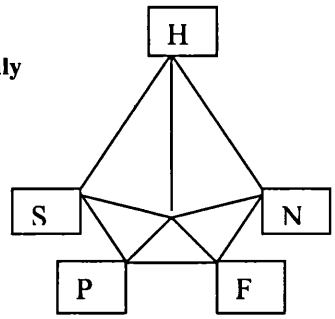
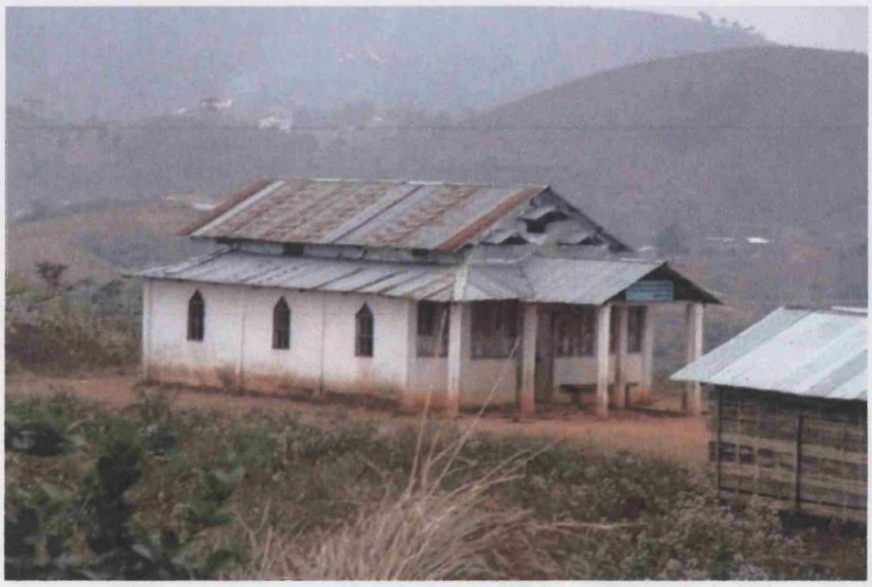


Figure 13: The post ban asset pentagon shows that the poor only have their labour capacity or human capital and the financial they can generate through their labour, but very limited access to natural capital, low levels of education, and very low social status that weakens their social capital base.

The table below (Table 19) shows the measurement of the 5 capital assets in the three villages located in the Mairang Cluster. The data was collected from household surveys during the author's 2005 fieldwork. The current average access and consumption of the 5 capital assets were calculated from the 20 households of Nonglang Village, 15 households of Umniangriang Village and 15 households of Lawsiej Village that were randomly selected from each village and interviewed to generate the data presented above. The figures are estimates given by the households who were interviewed. They

are round up averages depicting the current scenario in each village and showing the differences of household access to the 5 capital assets among the three villages.

The table below also shows that the households in Lawsiej Village, which have no intervention since the logging ban, are the poorest and have extremely reduced livelihood pentagons with extremely limited livelihood assets of any kind at their disposal. Their physical capital is very low as they have no infrastructures in the village. They have to walk for two hours just to get to the PWD road carrying all their supplies. They have no electricity and water or sanitation facilities in the village. However, it can be seen that the livelihood pentagons of the households living in Nonglang and Umniangriang villages are better since they have greater access to the physical and financial capitals, which is due to the fact that they have received interventions from IFAD and JFM, respectively. The micro finance and grants given by IFAD to the households of Nonglang Village through the SHGs have improved their financial capital and they have gained access to bank credits as a group to buy lands and other physical assets to improve their livelihoods.



Picture 13: Presbyterian Church on hilltop in Umniangriang Village (Fieldwork 2005)

Villages in the Mairang Cluster	Nonglang	Umniangriang	Lawsiej
Type of intervention	IFAD	JFM	None
Natural Capital			
Amount of firewood used per month in kgs	200	175	150
Amount of cane used per month in kgs	100	50	30
Amount of charcoal used per month in kgs	50	35	20
Amount of fish used per month in kgs	3	2	1
Amount of meat used per month in kgs	2	1	0
Amount of water used per month in liters	3000	1500	900
Amount of leaves used per month in kgs	60	55	33
Amount of wild fruits used per month in kgs	40	30	20
Physical Capital			
Amount of agricultural land owed in acres	4.5	2.5	1.5
Amount of land rented in acres	3	2	2
Amount of livestock owned in nos	12	7	3
Amount of trucks/jeeps owned in nos	0	0	0
Amount of houses owned in nos	1	1	1
Amount of kitchen gardens owned in nos	1	1	1
Amount of fish ponds owned in nos	2 in village	1 in village	0
Human Capital			
Age of father in years	47	43	31
Age of mother in years	43	38	27
Level of education of father in class	Class 12	Class 10	Class 6
Level of education of mother in class	Class 6	Class 5	Class4
Level of education of male child in class	Class 10	Class 7	Class 3
Level of education of female child in class	Class 8	Class 3	Class 2
Household members under one roof	5	4	4
Household member in Government work	0	0	0
Household member receiving pension	0	0	0
Financial Capital			
Household income per month in Rs.	1920	880	396
Household expenditure per month in Rs.	1800	810	396
Household savings per month in Rs.	120	70	0
Household borrowings per month in Rs.	0	350	200
Household outstanding debts in Rs.	0	275	270
Food produced by household per month in Rs.	500	470	250
Food consumed by household per month in Rs.	450	400	250
Social Capital			
Church affiliation	Catholic	Protestant	Catholic/Protestant
Political affiliation	Congress party	Regional party	None
Member of Dorbar Committee	6 men only	7 men only	5 men only
Self Help Group	20 members	46 members	None
Joint forest management committee	None	50 members	None
Natural resource management group	46 members	90 members	None

Table 19: Comparison of household access to 5 capital assets in Mairang Cluster (Fieldwork 2005)

Policies, institutions and processes

While looking for indicators for policies, institutions and processes since the time that the logging ban was imposed, evidence of the impact was found at both the social and institutional levels. After the ban, the households that were studied went through social changes which impacted on their livelihood strategies. These changes include increase in deaths of household members from illnesses related to coal pit mining activities for the male migratory workers, increase in arrest of household members for theft and robbery, and increase in divorces and separations of spouses when the husbands leave the households to find work in other villages or towns. While on fieldwork in Umniangriang Village, the author attended the funeral of a young boy who was 17 years old and who was working in the coal pit mines. His mother was alone as his father had divorced her and left the village two years ago.

There is evidence of institutional changes after the logging ban that includes the powerful co-opting of local assets by rich landowners from the city, the Government's working plan policy that works against the indigenous people, especially the women, the increase in market fluctuations and the rise in the cost of goods and commodities. The quality of services provided by the Government is appalling. There are no health clinics, no qualified teachers for the schools, no metalled roads for the villages, non-functioning pipes and water systems and no electricity for poor households. These institutional changes have a negative impact on the livelihood strategies of the poor households in the villages that were studied due to the fact that they have limited institutional access to the various capital assets.

4.7 Conclusions

There is evidence that the impact of past State development initiatives has generally fallen short of expectations. The design and implementation of development programmes within the district have not been taken into account as expected by the people. For example, there is a hospital built 10 years ago which is still locked with no one operating it. There are no doctors, nurses, medicines or equipments inside the building but only buffalos enjoying the grass growing outside in the hospital compound. Jhum cultivation continues but most of the households that were interviewed considered this practice as an unsustainable livelihood system because of its effect on declining soil fertility and in shortening of the jhum cycle. However, it appears that the households lack knowledge or conviction of alternative development options and the means to adopt them.

The empirical evidence in the three villages in the Mairang Cluster clearly indicated that the logging ban had a negative impact on the household strategies of the households living in the villages. The evidence points to the fact that the ban also costs the loss of livelihoods, loss of income, loss of access to land and the indigenous Khasi people were worst off after the ban was imposed. However, Nonglang Village that got IFAD assistance in 1999 was better off than Umniangriang Village that got JFM intervention in 2005. But the households of Lawsiej Village that got zero intervention have suffered the most and are still suffering.

An analysis of the three villages in the Mairang Cluster points to a link between the logging ban and the livelihood strategies of the households that were studied. To answer the central question of this research, it appears that the logging ban had affected

household behaviour in the three villages in different ways. The members of each household that were studied in these villages have changed their livelihood strategies from being timber loggers and workers in the timber industry before the logging ban to becoming farmers, daily wage labourers, maids, taxi and truck drivers, fish producers, agricultural producers, handicraft producers, and others.

This change of livelihood strategies tells us that theories of adaptation and sustainable livelihoods are closely connected together. It proves that when poor people are under stress and shocks they try to adapt and cope with their changing environment in order to survive by finding alternative or sustainable livelihoods within their reach and scope.

In the case of the households in the Mairang Cluster, the ones that got strong support from IFAD, i.e., Nonglang Village, in different ways since 1999 have managed to recover from the stress and shocks created by the logging ban and have been able to better organise themselves through local institutions such as the SHGs and NaRM Group in a spirit of helping and caring for each other through these safety networks. The analysis of households in the said village demonstrates that they can improve their living conditions and livelihood strategies when strong local institutions built upon trust and good leadership are created at the grassroots that bring benefit to them.

In the case of the households in Umniangriang Village, they are still behind in their recovery from the stress and shocks caused by the logging ban. The fact that they have received Government support through the JFM in 2005 has encouraged them to form groups like the JFM Committees in their village to implement the community forestry projects supported by the Government of India through the Forest Department of

Meghalaya. Since they are still in the pilot project stage the additional livelihood strategies are being formed via the JFM initiatives. This demonstrates that with some initial support through training and capacity building the households of this village are learning and developing alternative livelihood strategies that are being supported by the JFM. However, it would take some time for them to reach the development stage that the households of Nonglang Village have attained.

Households in Lawsiej Village are way behind in their recovery process. As a matter of fact, the living conditions in the village have not improved following the stress and shocks of the logging ban. They have just barely survived without any help or intervention from either IFAD or the Government's JFM programme.

This demonstrates that the households of this village will never be able to catch up and reach the development stage that the households of Nonglang have achieved unless they also get some sort of support or intervention to create strong local institutions that will help them improve their livelihood strategies and appalling living conditions.

The PRA exercises on building local institutions to support sustainable livelihoods that were conducted in the three villages have highlighted the need to consolidate the efforts of the different stakeholders who are involved and committed to the cause of sustainable development through poverty and hunger reduction.

Building on local people's adaptation to the logging ban which indicated a clear link to their proposed solutions for alternative livelihood strategies, an analysis of the Mairang Cluster has shown that strong institutions at community and state levels are required to

generate the political will and the practical actions required to safeguard local livelihoods and ensure environmental sustainability. However, it depends on many more institutions to work together at different levels of governance to get the best of both worlds of protecting forests and livelihoods at the same time. A network with the Agricultural Department can help the households to increase the quality and quantity of their agricultural and handicrafts products by providing training and support on technology. These are some of the recommendations that have emerged from the case study analysis of the three villages in the Mairang Cluster of the West Khasi Hills District.

Chapter V

Case Study Analysis of Riangdo Cluster

Introduction

This chapter will discuss the case study analysis of the three other villages of Nongpdeng, Umdang and Patharlyndan that were studied in the Riangdo Cluster. They were also selected because they had similar population sizes, land areas under their boundaries, richness of forest resources in the past and involvement in timber trade before the 1996 logging ban. However, these three villages, like in the Mairang Cluster, also had different types of interventions since the logging ban: from IFAD, a multilateral agency, in the case of Nongpdeng Village; from JFM, a Governmental agency, in the case of Umdang Village; and no intervention in the case of Patharlyndan Village. They have been selected for analysis in order to understand the different impacts of the outside interventions on the livelihood strategies of the households after the logging ban.

The chapter covers a brief profile of the three villages and a qualitative analysis of the socio-economic conditions and changes in livelihood strategies using Participatory Rural Appraisal (PRA), SWOT analysis, narratives, structured and semi-structured interviews. The research into operationalising the Sustainable Livelihood Approach (SLA) as a framework was carried out by collecting data on the five capital assets using household surveys. The chapter also presents some quantitative analysis measuring the differences in household access to the capital assets in the three villages that received different types of development interventions since the logging ban. These methods

were discussed in Chapter 1. It concludes with a discussion of the results from the different analysis that were conducted.

5.1 Profile of the Sample Villages in the Riangdo Cluster

The three villages of Nongpdeng, Umdang and Patharlyndan are remote rural villages located in the West Khasi Hills District of the State of Meghalaya and they have a total population of 1035 inhabitants in an area of about 1695 has. There are a total of 190 households in the villages of which 50 were randomly selected and interviewed. The average distance of these villages to the main town market in Riangdo was about 30 km and they can be reached by car using the metalled road that links them to Riangdo. All the three villages are inhabited by the indigenous tribal group called the Khasis.

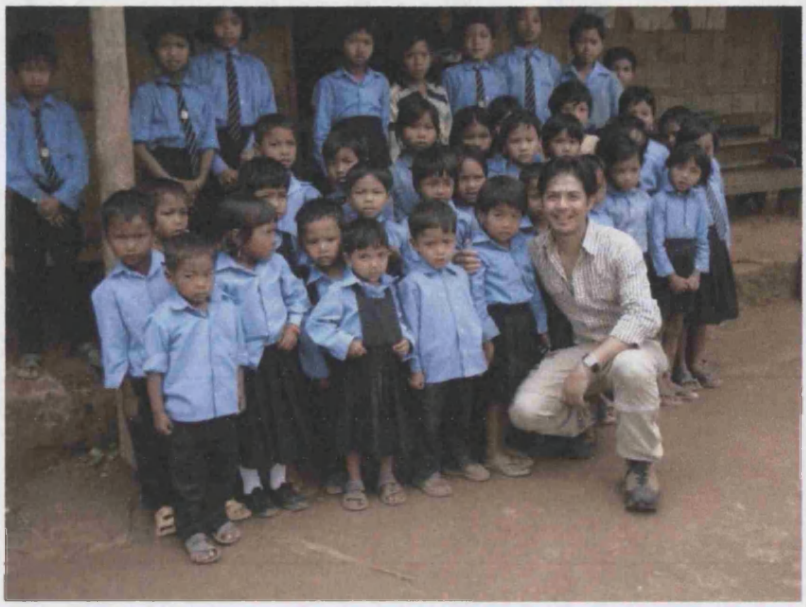
The field study of these three villages located in the Riangdo Cluster was made from April to July 2006. They were also briefly visited in the winter months of 2005 while the author was doing his fieldwork in the Mairang Cluster.

The table below (Table 20) shows the three sample villages with different types of interventions and the data collected from the household surveys conducted in each of them. It shows the distance of each village from the main town market in Riangdo in kilometres to determine if the travel time needed to reach the main market has any impact on the livelihood strategies of the households in these villages. The table also shows the estimated size of the villages in hectares and the Block Development Office (BDO) in Riangdo town. This area includes everything within the village boundary consisting of forested land, cultivated land, residential land, private land, community land and unused land.

Name of village	Type of interventi village	Total population in village	Total households in village	Households interviewed in village	Distance from market in kms	Size of village in hectares
Nongpdeng	IFAD	395	73	20	30	535
Umdang	JFM	327	60	15	33	650
Patharlyndan	None	313	57	15	27	510
		1035	190	50		1695

Table 20: Profile of the three villages from the Riangdo Cluster (Fieldwork 2006)

Nongpdeng Village had a population of 395 people living in an area of 535 ha and a total of 73 households of which 20 were randomly interviewed. The distance of the village from the main town market in Riangdo is about 30 km. Since the logging ban in 1996 the village has received the IFAD intervention through the Central Government in November 1999. The village has a NaRM Group with 54 members and two SHGs. Some households have toilet facilities and electricity in their homes. The households have access to drinking water in the village. There was a fair price shop and a few tea shops on the road passing through the village. There were two lower primary schools until Class 4 with 5 teachers for 75 students and an upper primary school until Class 7 with 3 teachers for 40 students. The village has access to a metalled road which links it to the main town market in Riangdo. There is one community hall donated by IFAD and one Presbyterian Church.



Picture 14: Lower primary school children in Nongpdeng Village (Fieldwork 2006)

Umdang Village had a population of 327 people living in an area of 650 ha and a total of 60 households of which 15 were randomly interviewed. The distance of the village from the main town market in Riangdo was about 33 km. Since the logging ban in 1996 the village has received the JFM intervention from the State Government in July 2005. The village has a NaRM Group with 150 members and one male and two female SHGs. There is a community hall which was funded by the JFM project, one Presbyterian Church and one Catholic Church. Some houses have toilet facilities and electricity. The households have access to drinking water in the village. Three fair price shops can be found in the village and few tea shops along the road passing through the village. There were two lower primary schools until Class 4 with 7 teachers for 215 students. A metalled road connects the village to Riangdo where the main market is located.

Patharlyndan Village had a population of 313 people living in an area of 510 ha and a total of 57 households of which 15 were randomly interviewed. The distance of the

village from the main town market in Riangdo was about 27 km. Since the logging ban in 1996 the village has received no development intervention hence there are no organised NaRM or SHGs. There was one fair price shop in the village and a few tea shops along the main road. A lower primary school until Class 4 with 3 teachers for 53 students exists. There is a metalled road which access to the village but it is not in a very good condition. There is no community hall but there is one Catholic Church. Some houses have no toilet facilities but some houses have electric power.

5.2 Analysis of Socio-economic Conditions of Villages in the Riangdo Cluster

A Participatory Rural Appraisal (PRA) was made in Nongpdeng and Patharlyndan Villages to determine the socio-economic conditions and changes in livelihood strategies. The PRA methodology, was used: a) to investigate the community perception of logging ban and its effect on their food security; b) to explore with the help of the local people if institutions can be built within the community and outside the community; and c) to find out how local institutions can help the community overcome poverty through alternatives to the logging ban.

The PRA was conducted with the community using the local people's appraisal of their own livelihoods to see how the creation of local institutions can help the households recover from the implications of the logging ban. Discussions were held with the households to understand and learn from them about their perception of the logging ban and the need to build their local institutions to safeguard their own livelihood strategies.

The following is a description of interactions with the households of Nongpdeng and the nearby villages of Umdang and Patharlyndan. It presents the different steps that led

to the discussions with the elders of the local community and the learning processes from and with the households about their livelihood options, constraints and opportunities, their perception of the logging ban and their proposed solutions in the context of building local institutions to improve their livelihood strategies. It also summarizes the analysis of the Working Plan and its impact on the households of the three villages in the Riangdo Cluster.

Picture 15: Conducting PRA with the households of Nongpdeng Village (Fieldwork 2006)

Unlike the villages in the Mairang Cluster, the three villages in the Riangdo Cluster have good metalled road links to the town market where people from about 25 neighbouring villages bring their agricultural products to sell and then return home to their families with their basic needs such as fuel, kerosene oil and food. This main market at Riangdo represents the centre of economic and social life for rural people from these villages.

In doing the research the following steps were taken in the villages:

- A visit to Nongpdeng Village for an insight into the lives and activities of the households that included going to the town market where most households go; meeting with the NaRM Group and the SHGs; and meeting with the Bosco Reach Out, a local NGO that was conducting a study for the Catholic Church to explore the possibility of improving the living conditions of the poor people in the villages that have no intervention.
- Discussions with households about the history of their village, their families, the problems they face every day after the logging ban and how they struggle to overcome the impact and the need for an upper secondary school in their village that would also serve the children from the neighbouring villages.
- PRA sessions with households about their livelihood strategies, food security, availability of food and the impact of logging on their village.
- Proposed drawing a seasonal food calendar to determine food security and the hunger situation in the village.

Picture 16: Vegetable and betel nut stall in the main town market in Riangdo (Fieldwork 2006)

Issues discussed with households of Nongpdeng Village:

- Households alleged that drawing a seasonal food calendar helped them to gain a broader picture of their food availability throughout the year and could be used as a base to compare and observe future years and the changes that would occur in their food security. Eventually this could also be used to better plan their resources. They now realize the months when they run short of food.
- Households' perception of logging ban is very much like the big powerful state working against them. They stated that their problem was lack of agricultural lands to move from being forest dependent to agricultural based communities. However, since their land had less forest cover in the first place they have adapted by finding other alternative livelihoods strategies to sustain themselves such as having betel nut and leaves plantation. Out of 20 households interviewed, 7 have no agricultural lands, hence most of them lease it from private landowners. Like in Nonglang Village in the Mairang Cluster, this is not considered cost effective because the households pay a rent which is about one third of their harvest.

1. The following livelihood strategies were suggested to overcome the land problem:
    - SHGs to raise money through their activities to purchase land.
    - Increase the production and quality of their betel nut and leaves.
    - Access to the weekly market in the nearby towns to sell their agricultural products.
    - Obtaining credit from the local bank.

2. Besides the production of rice, the SHGs were also anticipating their income as a group from their activities such as:

- Keeping a fishpond
- Chicken farming
- SHGs' members and husbands working as wage labourers to save money for the group

Like in the Mairang Cluster, husbands provide full support to their wives who were part of the SHGs by helping cultivate the purchased land and helping the women's group repay their loan by working as wage labourers.

3. Other livelihood strategies to overcome food insecurity and poverty apart from cultivating their land, the households mentioned establishing tea shops along the main road selling food to the coal truck drivers that stop by for refreshments daily; own a land for betel nut and leaves plantation; and own a pineapple plantation supported by the IFAD project through the SHGs.

4. Handicrafts as one of the livelihood strategies to supplement normal income although it is time consuming and its production is limited. Moreover, households could only dedicate one month a year to the said industry when there is no agricultural work. They suggested that some modern equipment to refine raw material would greatly help them.

Creating the seasonal food calendar in Nongpdeng Village

A food calendar was drawn which describes the availability of food stocks in different months and how households supplement it with other kinds of foods starting the month of December, which is the time when the households in Nongpdeng Village begin

harvesting and this represents the peak month in their food security throughout the year. Here food security refers not just to supplies of food but the Senian access to the means of getting food, i.e., entitlements, endowments, and others This is a month later compared to the food calendar of Nonglang Village in the Mairang Cluster.

The basic food for the Nongpdeng Village is composed of rice, maize and vegetables. The households eat meat 3 to 4 times a year only such as at Christmas time and on special occasions like weddings. It appears that the households in Nongpdeng Village have enough food (rice) from their crops for 5 - 6 months which is 2 months more of food security compared to Nonglang Village in the Mairang Cluster. The discussions show that for the rest of the year the households have to buy rice from the market and also reduce the quantity of rice they consume.

The approximate quantity of rice household members eat every day is about 1.5 kg for men and 870 gr for women and children above 10 years old who are considered adults, while children below 5 years old eat around 450 gr per day.

The food calendar (Table 21) shows that from the months of December to April all households have food security consisting of rice and vegetables like pumpkins, beans and mustard leaves. Vegetables such as dhal and potatoes are purchased from the main town market in Riangdo. It also indicates that the quantity of food available for each member of the family starts to drop from the month of May except for children whose amount of food remains the same. This situation is similar to Nonglang Village in the Mairang Cluster. There are no discriminations in the distribution of food among the family members particularly children except in case of severe food scarcity the young

members of the family are given priority in food distribution. The same practice is observed by the households of Nonglang Village.

	Mid/Dec	**Jan**	**Feb**	**Mar**	**Apr**	**May Jun**	**Jul Aug Sep**	**Oct**	**Nov**
No. of food secure households	All	All	All	All	All	10	10	8	7
No. of food insecure households						10	10	12	13
Rice (kg)	1.5 kg men 870 g women - 450 g children	1.5 kg men 750 g women - 450 g children	1.5kg men 750 g women - 450 g children	750 g men 700 g women 450 children	750 g men 700 g women 450 children	750 g men 700 g women 450 children	750 g men 700 g women 450 children	750 g men 700 g women 450 children	750 g men 700 g women 450 children
Harvested Products	Pumpkins Beans Mustard Leaves	Pumpkins Beans Mustard leaves Sesame Sweet potatoes Yam (Meat on Christmas)	Pumpkins Beans Mustard leaves Sesame Sweet potatoes Yam					Maize Pumpkin leaves Cucumbers Squash Beans	
Purchased Products	Dhal Potatoes Dry fish	Dhal Potatoes Dry fish	Dhal Potatoes Dry fish						

Table 21: Results of the Seasonal Food Calendar in Nongpdeng Village (Fieldwork 2006)[74]

The village has also livestock made up of poultry, pigs, cows and goats. In December, they also harvest betel and leaves from the plantation.

During the discussions, the issue of land ownership emerged again. It appears that 7 out of 20 households interviewed in Nongpdeng Village have no agricultural lands and most of them lease it from private landowners. This is not considered cost effective

[74] The villagers based the seasonal calendar on the 20 ranked households out of the total of 73 households in the village. Individual household interviews were conducted with the poorest families not included in the wealth-ranking and results were cross-checked.

because like in the case of the households in Nonglang Village the amount they pay is quite high, which is about one third of their harvest.

It also appears that 7 out of the 20 households have food security for the whole year. Using the results of the wealth ranking system that the community had prepared with the facilitation of the Bosco Reach Out, it is possible to identify those families whose food sufficiency decreases from the months of May to October.

As differentiated from the case of Nonglang Village, the analysis of the food calendar of Nongpdeng Village shows that from May to July only those households belonging to the first category of the wealth ranking system and few of the second category still have food availability from their harvest. So there is a difference of three months of food security between these two villages in separate locations. From the month of September onwards, the few households belonging to the first category dropped to second category while the second category drastically decreases.

Similarly in this case, the number of meals was not reduced (3 meals/day) but the portion of the meals was decreased. The other major change that occurred starting from the month of September onwards relates to the consumption of vegetables. By the time October arrives most of the households cannot afford to purchase vegetables from the market.

The food calendar shows that three families from the first category lose food security in the month of July from their crops and are forced to buy rice from the market. But in

the month of September food security slightly increases due to the harvesting of maize and availability of some vegetables from the kitchen gardens.

The months of October and November are the most severe months when most of the villagers survive due to wage labour. In most cases, their daughters work as maids for rich families in the nearby towns and their sons work as handymen on the coal trucks plying the main road. The poor households are forced to send members of their families to work in the closest town of Riangdo.

During the month of December the food security situation improves for all the households in the village. It is the time when they finally can enjoy their food from the harvest. It is also the time when they can harvest the betel nuts and sell them in the market.

Seasonal food calendars in Umdang and Patharlyndan Villages

The same exercise in the Mairang Cluster was conducted in Umdang and Patharlyndan Villages. Umdang was a village 35 minutes by car from Nongpdeng, while Patharlyndan was 20 minutes drive from Umdang.

Like Umniangriang in the Mairang Cluster, the village of Umdang was part of the JFM-funded project where NaRM Groups and SHGs have been formed in the last two years. Patharlyndan was a small village and it was not part of either the IFAD or the JFM project. The two villages were selected in order to compare data on the seasonal food calendars and the households' perception of the logging ban and its impact of their livelihood strategies. While the results of the exercise conducted in Umdang Village

were very similar to those of Nongpdeng, the results in Patharlyndan Village were quite different.

Similar to Lawsiej in the Mairang Cluster by not being part of the IFAD or the JFM project, the households of Patharlyndan Village were not trained to save money as a group and don't conduct group activities. The households do not know how to keep a kitchen garden although all their activities were individually based. They also expressed their wish to be exposed to the project activities and also requested the project staff to include them in the training provided to the villages which have joined the IFAD-funded project.

	Mid Dec	**Jan**	**Feb**	**Mar**	**Apr**	**May Jun**	**Jul Aug**	**Sep**	**Oct**
No. of food secure households	All	All	All	10	7	2	0	4	5
No. of food insecure households				5	8	13	15	11	10
Rice (kg)	1 kg men 1 Kg women 250 g children	1 kg men 1 Kg women 250 g children	1 kg men 1 Kg women 250 g children	1 kg men 1 Kg women 250 g children	1 kg men 1 Kg women 250 g children	1 kg men 1/2 Kg women 200 g children	1 kg men 1/2 Kg women 200 g children	1 kg men 1 Kg women 250 g children	1 kg men 1 Kg women 250 g children
Harvested Products	Pumpkins Beans Mustard leaves Sesame Sweet potatoes Yan (Meat on Christmas)	Pumpkins Beans Mustard leaves	Pumpkins Beans Mustard leaves Sesame Sweet potatoes Yan				Maize Pumpkins' leaves Cucumbers Squash Beans	Maize Pumpkins' leaves Cucumbers Squash Beans	
Purchased Products	Dhal Potatoes Dry fish	Dhal Potatoes Dry fish	Dhal Potatoes Dry fish	Rice Dhal Potatoes Dry fish	Rice Dhal Potatoes Dry fish	Rice Dhal Potatoes Dry fish	Rice Dhal Potatoes Dry fish	Rice Dhal Potatoes Dry fish	Rice Dhal Potatoes Dry fish

Table 22: Results of the Seasonal Food Calendar in Patharlyndan Village (Fieldwork 2006)

From the seasonal food calendar (Table 22) and the discussions held in Patharlyndan Village, households' food insecurity was quite severe. The months of May to July are the most difficult times. There was shortage of food and they need to work in their fields to be able to harvest in the month of December. In order to cope with the scarcity of food, the men in this village worked very hard in their fields and also worked as wage labourers in the near by villages.

Out of the 65 households who live in the Patharlyndan Village, only 20 have their own land and none of the households had food security throughout the year. According to them the time of the year when they feel poorest and most vulnerable was from the month of July to October when they do not have enough money to buy medicines for their children as they needed all their money to buy food.

Picture 17: Conducting PRA with the households of Pathaylyndan Village (Fieldwork 2006)

One main difference that emerged during the discussions with the households of Patharlyndan compared to the other two villages was the lack of participation by the

households particularly the women. Most of the discussions were conducted by the head of the village. Like in the case of Lawsiej, efforts were made to involve the rest of the group but did not succeed. In the case of Nongpdeng Village, the projects activities and training of households especially women gave them more self-confidence. Moreover, they meet weekly and monthly as groups hence they become increasingly vocal and could better express themselves.

Role of Self Help Groups in Nongpdeng Village

The SHGs (Table 23) are examples of social capital assets and two have been formed in Nongpdeng Village under the IFAD-funded project, namely, Rynsankilongkmie (Female) and Triebormet (Male). The women were very proud to be part of the group and of the work they have been able to do thus far. The two SHGs were formed by households who are ranked among the first category of the well-off Rynsankilongkmie SHG - and the second and third category Triebormet SHG - (Triebormet means working with great body effort). The Rynsankilongkmie SHG, formed by the well-off households of the village, was the leading group and very vibrant and active and paved the way for the other group. The members of both SHGs started their kitchen gardens around their houses to increase food security after being trained by the local NGOs under the IFAD-funded project. Growing vegetables like mustard leaves, tomatoes and carrots in the kitchen garden supplies food to the families and also provides the opportunity to sell products at the weekly town market in Riangdo, which is easily accessible by using empty coal trucks since they have no access to the metalled road.

Village	Type	NaRM Group	Members	Self Help Group	Members
Patharlyndan	None	No	0	No	0
Umdang	JFM	Yes	0	Block Umdang SHG	10 M
				Porathaw (time to build)	10 F
Nongpdeng	IFAD	Yes	54	Rynsankilong Kmie (network mothers)	10 F
				Treibormet (work with great l effort)	12 F
			54		42

Table 23: Profile of different groups in the 3 villages from the Riangdo Cluster (Fieldwork 2006)

The SHGs under the IFAD-funded project were working very well in Nongpdeng Village and both the men and women had very much internalized the spirit behind micro credit programmes. They do not use their savings for consumption purposes but prefer to invest in activities that generate income for groups so that they will have enough money to buy more agricultural lands.

The main livelihood strategies undertaken so far by the Rynsankilongkmie and the Triebormet SHGs are as follows:

Rynsankilongkmie SHG

- Kitchen gardens
- Pineapple plantations
- Grocery shops in the village
- Piggeries
- Poultry business
- Purchase of agricultural lands

Triebormet SHG

- Kitchen gardens
- Betel nut plantations
- Poultries
- Grocery shops
- Handicrafts such as making plastic head-straps
- Small businesses like tea stall in the market

The members of the Treibormet SHG in Nongpdeng Village organised their weekly meeting and invited the visitors from the village of Patharlyndan as observers. This was the first time they were exposed to an SHG. At the end of the meeting, they wanted to start their own SHG and small income-generating activities in their village. This is how the idea of local institutions among villagers emerged after their exposure to the SHGs.

Both SHGs save their own money to invest in activities which they themselves choose and were earning and reinvesting their capital to improve their households' livelihoods. The formation of the SHGs has significantly changed their lives. They are now able to contribute to their households' economy and they have gained a new role in their families.

Both the men and women of Nongpdeng Village have proved to be agents of change through the formation of SHGs by: a) contributing to the households' economy; b) reducing food insecurity by their income generating activities; and c) contributing to the social change in their own mind set. Moreover, they have been able to strengthen their position in the family and community and to reduce family feuds.

Role of Self Help Group Federation

Thirty SHGs from 15 different villages in the Riangdo Cluster have formed an SHG Federation whose main objective is to gain skills and replace IFAD and the NGOs once the IFAD-funded project was over. The Federation meet once a month and with the facilitation of the NGOs they discuss and share experiences and problems of their respective groups and villages and try to find common solutions. They were undertaking various activities as a group.

The Federation plans to use the premises of the NGOs in town to stock their products meant for the market; to open a small shop to sell their products and to buy a vehicle to be able to transport all the SHGs products to the town market in Riangdo. Through their planned activities, they hope to contribute to the reduction of food insecurity in their respective villages by linking to the market and to the local banks. They aim to become a pressure group that could help to improve good governance performance and hope to attain their objectives by building partnerships and alliances with the local governmental offices like the veterinary, health and agricultural departments.

A particular case emerged during the discussion in relation to the security of all the 15 villages under the IFAD project along the main road which the coal trucks use daily on their way to the neighbouring State of Assam. It has been reported that there have been some problems when truck drivers stop in the villages to spend the night. The social unrest is either alcohol related or abuses made to women and children in the villages and certain cases of kidnapping.

This has been taken very seriously by the SHG Federation and they have unanimously agreed to ban all truck drivers from spending the nights in the 15 villages. This decision was taken to protect the households from future abuses by these passing truck drivers who come from other Indian states. It was also agreed that anyone found breaking the rule and hosting the truck drivers in their home would be punished by the Dorbars of the 15 villages.

A wrapping session was held with household members to discuss the logging ban, their livelihood strategies on dealing with hunger and poverty and building local institutions. The households reiterated that hunger is due to the lack of agricultural lands and unavailability of food for the entire year; that poverty is caused by the lack of access to market, education, health and veterinary services; and that the logging ban is a negative process but it had less effect on them over the years as they had already adapted to alternative livelihood strategies. The following solutions were suggested to overcome these problems of the poor rural people:

a. access to more agricultural lands;

b. access to technology for increasing the quality and quantity of their agricultural and handicraft products;

c. access to veterinary systems to increase the quality and quantity of their livestock;

d. access to the town market; and

e. access to good roads.

It then emerged that institutions for sustainable livelihoods were possible

a) within the community:

• among villagers who are part of SHGs and poor villagers who have not joined the project activities;

• among villages where the project villages can play a catalystic role with the non-project villages; and

• with private landowners, to negotiate purchasing and leasing of land.

b) outside the community:

• with the SHG Federation whose bargaining power is higher than a single SHG;

• with state administrative departments like agriculture, forestry and veterinary departments;

• with banks, to build the trust with SHGs and grant loans to them; and

• with the State Government, to engage in participatory policies.

The households also expressed they wanted the IFAD-funded project to continue.

5.3 SWOT Analysis of Betel Nut Cultivation and Fishponds

During the fieldwork in the Riangdo Cluster, it appeared that many households were engaged in betel nut cultivation as a strategy to intensify their agricultural practices and to improve their livelihoods after the logging ban. A SWOT analysis with 15 households of Umdang Village was conducted to determine if betel nut cultivation as a livelihood strategy was a good option for them.

The analysis was meant to identify the positive and negative attributes of betel nut cultivation and to help the households develop a full awareness of their own situation in the village which can help them with both strategic planning and decision-making.

Picture 18: Betel nut plantation in UmdangVillage (Fieldwork 2006)

Strengths	• Land availability and soil are well suited for betel nut trees • Marketable and durable and easy to cultivate and to take care • Output of betel-nut is manifold from small input • Income from betel-nut is very high as many people consume it • Betel leaves that are consumed with the betel-nuts are planted beside the
Weaknesses	• The betel-nuts have to be soaked in big tubs and fermented before drying • The way to the betel nut plantation is very bad and they find it difficult t transport the harvest to the market • Betel leave that are consumed with betel-nuts are eaten by domestic anir
Opportunities	• Bigger tubs can be build in the villages for fermentation of betel nuts • Road can be repaired to access the betel nuts plantations • Fencing needed to be constructed around the leave plantations.
Threats	• There is no threat regarding this activity

Table 24: SWOT analysis of betel nut cultivation with households in Umdang (Fieldwork 2006)

The result of the SWOT analysis (Table 24) show that this activity was very lucrative and almost every house in the village had betel-nut trees in the backyard. The nuts are dry, packed and transported for selling to the main market in Riangdo. The table below

was constructed with inputs from the 15 households of Umdang Village that participated in the analysis.

In Nongpdeng Village, both SHGs have fishponds as a strategy to improve their group income and livelihoods after the logging ban. A SWOT analysis was made with the households of the village to determine if keeping fishponds as a livelihood strategy was good option for them.

Picture 19: One of the SHGs' Fishpond in Nongpdeng Village (Fieldwork 2006)

The analysis was meant to identify the positive and negative attributes of having fishponds in the village and to help the SHGs in Nongpdeng Village develop a full awareness of their own situation in the village which can then help them with both strategic planning and decision-making. The SWOT analysis (Table 25) shows that this activity was very lucrative hence the SHGs got support from IFAD to invest in fishponds. The table below was constructed with inputs from the SHG members of Nongpdeng Village that participated in the analysis.

Strengths	• Both the SHGs had fishponds in the village • IFAD provided the fish and the SGHs constructed the ponds • Saves money since they don't have to buy fish from the market anymore • Fish provided the SHG members with good nutrients for their families • Easy to maintain with some care to keep water running in and out of por • Extra fish is sold in the market and provides more income to the SHGs
Weaknesses	• During dry seasons there is difficulty to maintain the fishponds • Water needs to be kept clean to avoid infecting the fish with pollution • It is very difficult to keep animals away from their fishponds
Opportunities	• The SHGs will try to find ways and means to get good fish for their pon • The local Dorbar or the community based organisation will have to pass law that all animals should be properly kept in their own shed and not to re them throughout the year • Fencing needed to be constructed around the fishponds
Threats	• There is no threat regarding this activity

Table 25: SWOT analysis of having fishponds with households in Nongpdeng (Fieldwork 2006)

5.4 Pre ban Livelihood Activities of Households in Villages of the Riangdo Cluster

The Headman of Nongpdeng Village which has 73 households, Mr. S. Syiem,[75] said, *"there has been a drastic slide in its economy since the imposition of the logging ban which resulted in the depression of wages, rising unemployment and the high incidence of dropouts from schools."* An examination of the wage structure during the years 1996-1999 shows that prior to 1996 the minimum wage in the village was Rs. 60 per day but in 1999 even the maximum wage barely crossed Rs. 50 per day.

Before 1996 there were about 5 trucks owned by different families in the Nongpdeng Village which have all been sold thereafter at a big loss. The households were mostly involved in timber trade and other related businesses. The men were working in nearby sawmills and were being paid from Rs. 500 to Rs. 1500 depending on the type of work as daily wage timber labourers.

[75] From fieldwork: Mr. S. Syiem from Nongpdeng Village who was Respondent No. 63 on 07/04/2006.

The headman of Umdang Village, Mr. R. Mawsor,[76] said, *"women in the village were running two food shops, a tailor shop and a number of tea shops all along the road to cater to the timber truck drivers, but they were forced to close down all their shops due to poor business after the logging ban."* However, the most discouraging effect is in education. Before 1996, there were about 15 students from the village who attended college in Nongstoin and Shillong. In 1999, it was reported that only two students were found pursuing a college education.

When the new English nursery school opened in 1996, 55 students registered for admission but within two years the number of students had fallen to less than 20 because parents had difficulty paying the expenses for books, tuition fees and uniforms hence some of the students had been forced to work to support their families. Child labour which was an unknown factor before in the community has become an institution in all villages in the Riangdo Cluster.

The situation in the banking sector corroborates the theory on the downward slide of the rural economy. A study of the deposit and withdrawal trends of some of the banks operating in the district shows a marked fall in the daily business transactions. In one of the banks in the villages of the Riangdo Cluster, where more than 70 per cent of the population were engaged in agriculture and timber sale prior to the ban, the number of frozen or inoperative accounts went up from less than 100 in the last year before the ban (1995) to 300 in 1999.

[76] From fieldwork: Mr. R. Mawsor from Umdang Village who was Respondent No. 74 on 03/05/2006.

The deposits of small-time investors have gone down heavily. According to an interview with a Branch Manager, the number of fresh accounts has fallen from the usual 25-30 per month to a mere 5 per month in the last five years. This dismal picture is indicative not only of the growing poverty in the rural areas following the logging ban but also its differential effect on the rich and poor sections of the population.

5.5 Analysis of Livelihood Strategies in the Riangdo Cluster

5.5.1 Analysis of Nongpdeng Village which had IFAD intervention

A wealth ranking (Figure 14) of 20 households in Nongpdeng village indicates that the households in the village that joined the IFAD funded project activities have benefited from the intervention after the logging ban of 12 December 1996.

A comparison of the data from the July 2006 fieldwork with the August 2000 IFAD wealth ranking system data used as a baseline profile of the village before the intervention started clearly shows that the households of Nongpdeng Village had climbed up the index in the 6 years period which is an indication that it has benefited from the assistance it had received from IFAD.

Impacts from IFAD intervention in Nongpdeng Village:

- The level of participation increased especially from the women's group.
- Unity could be seen in the all the SHGs in the village.
- The NaRM Group and SHGs maintained their own book of accounts.
- The groups have established linkages with various Government Departments.
- Various monitoring formats were developed with the households of the village.
- Transparency and accountability could be seen in the working of the groups.

• A petition was made to the PHE Department by the NaRM Group to revive the pending water pipe line construction of the village by offering free labour from the community.

• Water pipe line and water tank were successfully installed in the village with a minimal expenditure.

Criteria for wealth ranking for households in Nongpdeng Village[77]

A = Owns large tract of land registered in their names; owns a tin roofed house; has a toilet near the house; has electricity in the house; has a kitchen garden; has other means of earning; rears large number of livestock; cultivates paddy and other cultivation.

B = Owns land registered in their names; has small kitchen garden; has electricity in the house, and has other means of earning; rears some livestock and cultivates paddy and other cultivation.

C = Owns some amount of land registered in their names; thatch roofed house; and the food sufficiency is only for 3-4 months.

D = Owns a thatched roofed hut.

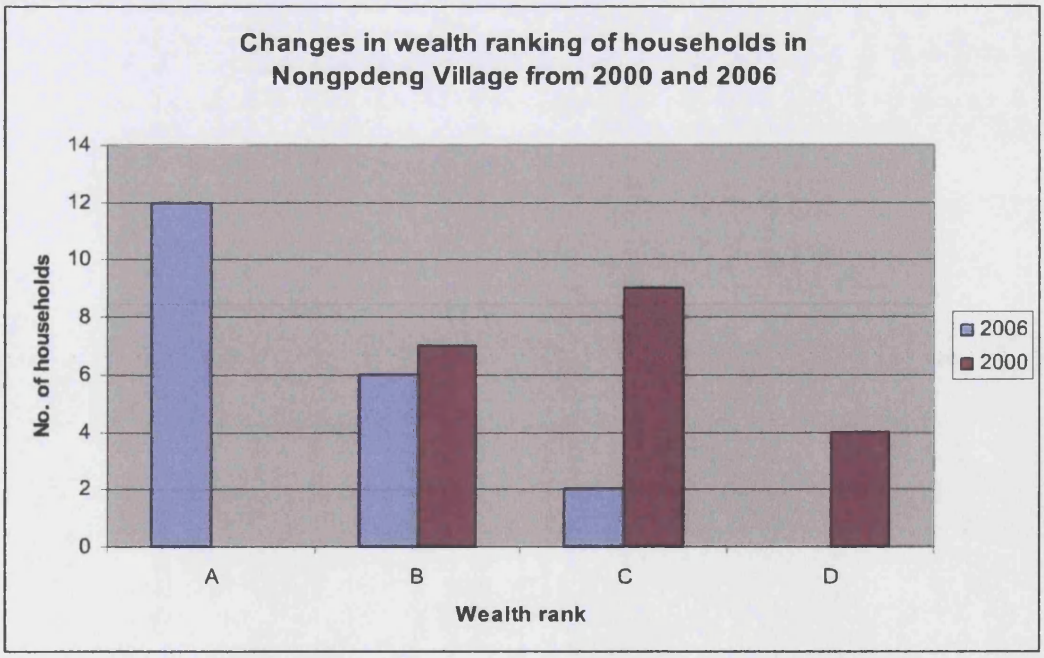


Figure 14: Changes in wealth ranking of households in Nongpdeng (Fieldwork 2006)

[77] The wealth ranking criteria that was used did not include food security data as the author followed the same old criteria used by IFAD in 2000 which only had the four (A,B,C,D) categories given above.

Results from the IFAD intervention in Nongpdeng Village

- Kitchen gardens in every household in the village.
- The Women Village Health Workers started administering treatments on Minor Health Problems.
- Low cost sanitation was constructed in every household in the village.
- The SHGs helped revived the local village markets.
- The SHGs have the right to collect royalty from the stalls during the market day.
- There has been a change in attitude and mindset of the men towards the women giving them more support in financial decisions.

Income and landownership changes in Nongpdeng Village

Survey data (Figure 15) indicates that the average income per week of the 15 households in Nongpdeng Village had dropped from about Rs.900 in 1996 before the logging ban to about Rs. 130 in 1999 before they received the IFAD intervention in July 2000. It then climbed back to about Rs.590 in 2006 showing that the development aid that they got from IFAD had a positive impact on their average income over time.

This means that the new livelihood strategies mentioned above that have been created in Nongpdeng Village since November 1999 with the assistance from the IFAD project have contributed to the steady rise in the average weekly income level of the households that were surveyed. The households surveyed also claimed that their living conditions in the villages are improving as a result of the IFAD intervention.

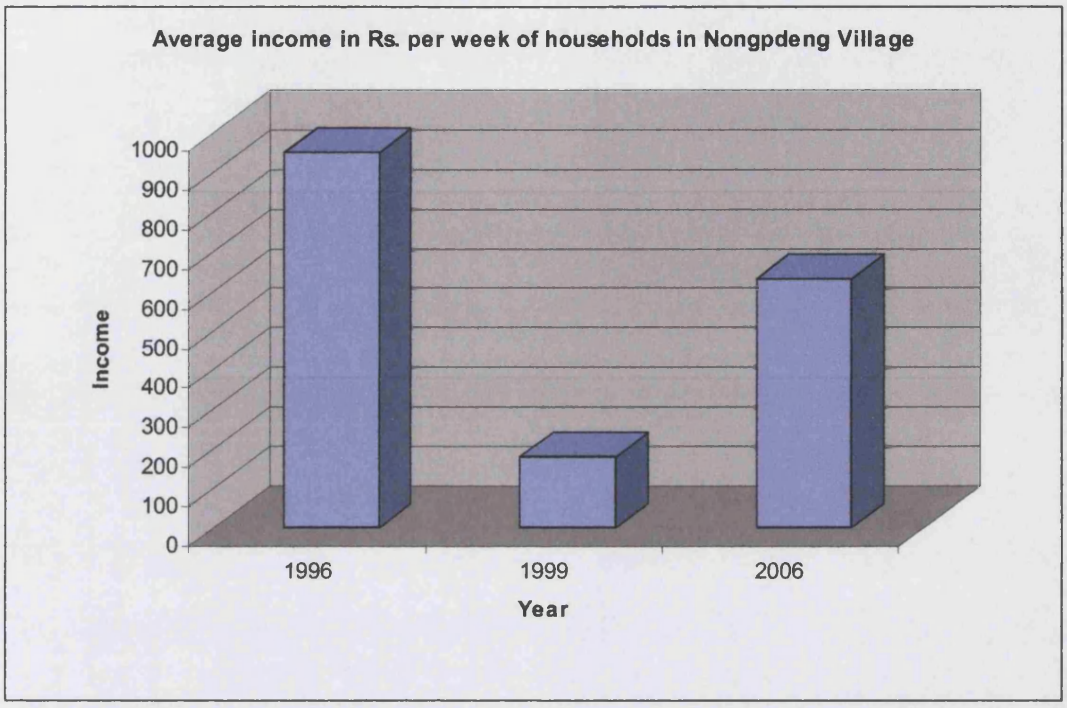


Figure 15: Average income (Rs) per week of households with IFAD intervention (Fieldwork 2006)

Survey data (Figure 16) also indicates that the average area of agricultural land owned by the 15 households surveyed in Nongpdeng Village had dropped from about 8.5 acres in 1996 to about 2.5 acres in 1999. It then climbed back to about 4.5 acres in 2006.

IFAD and Block Development Office statistics were used to generate the 1996 and 1999 average income and landownership data and the 2006 household surveys were used to generate the 2006 new data from households of Nongpdeng Village.

This shows that the SGHs in Nongpdeng Village have been able to purchase more agricultural lands over time with the support they received from the IFAD project since 2000 and that as their average weekly income rises over time they have reinvested their savings to buy more agricultural lands which is the biggest and more secure asset for them and their families.

The field study made in Nongpdeng Village reveals that it was easier to negotiate and purchase agricultural lands as an SGH rather than an individual. Consequently, the households of this village have taken full advantage of using the existing SHGs to acquire more lands as a group and then later dividing the amount of land equally to every household members of the SHG.

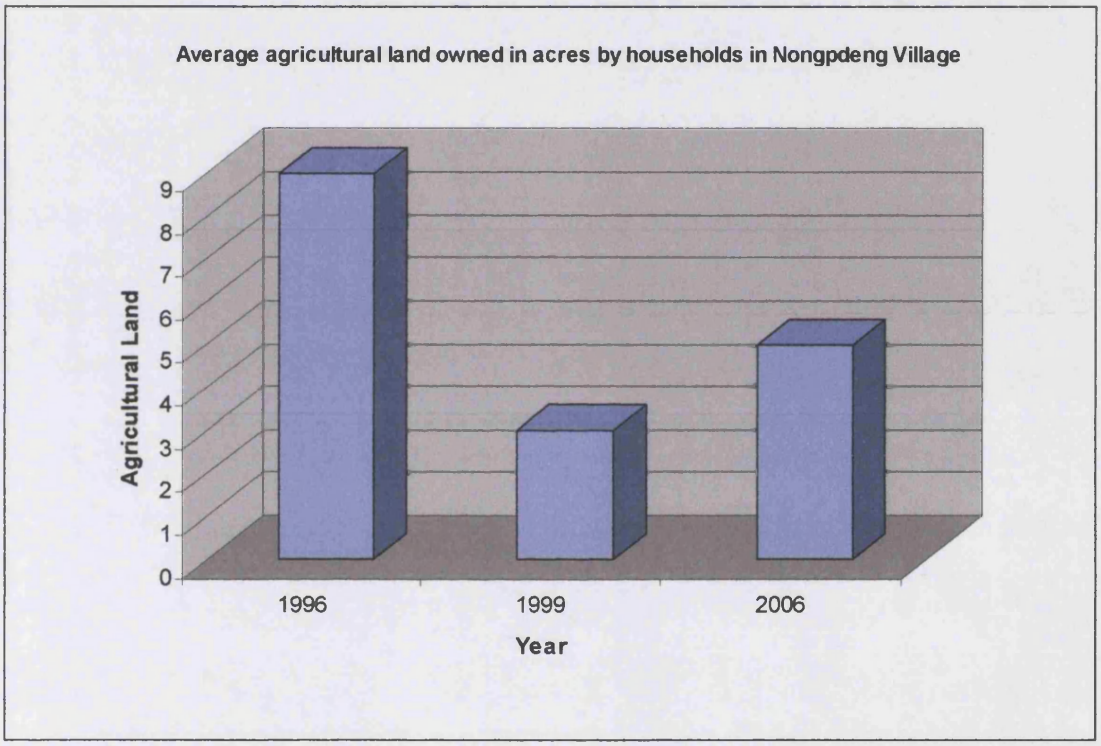


Figure 16: Average landownership (acres) of households with IFAD intervention (Fieldwork 2006)

5.5.2 Analysis of Umdang Village which had JFM intervention

The households of the village of Umdang agreed to set up their JFM Committees in July 2000 and approached the Forest Range Office in Riangdo to get their village adopted. They selected their own members to sit on the JFMC. Every father and mother from each household are members of the JFMC and the Sordar was elected as Chairman with 15 core group of male leaders.

Every household in the village were given lands with an area of about 1 - 2 of the size of a football field by the village clan to plant rice and maize. A nursery of 55,000 trees was started in July 2005 and the tree seedlings were given by the State Forest Department who also gave water pipes and tanks. The types of trees are pines khasi, neem, rai, pupa depiti, ngi, sherry, soh manir and mango.

Reforestation/afforestation was done in plantations, which had to be a non-forest area, by the villagers who were paid by State Forest Department the amount of Rs.40 for women and Rs.70 for men as a daily wage for tree planting.

Under JFMC, pine trees were planted in 50 hectares of land at about 1000 pine trees per hectare. In October 2005, the households had planted 25,000 pine tree seeds in 25 hectares. A fishpond was given to Umdang Village by the State Forest Department in January 2006.

Picture 20: JFM Committee nursery in Umdang Village (Fieldwork 2006)

Umdang was the first village to receive JFM intervention from the Riangdo sub division forest office. There were three Forest Sub Divisions, Mawkyrwat, Raingdo, Mairang with Forest Range Offices in each with the Forest Division in Nongstoin, the district capital.

After the ban, there was no more timber trade in the village but charcoal production started. More destruction of forest occurred and even small trees are converted to charcoal and leaves were used to pack the sacks. But before the ban was implemented only big trees were cut for timber trade by households.

Income and landownership changes in Umdang Village:

Survey data (Figure 17) of 20 households in Umdang Village indicates that the average income per week dropped from about Rs. 920 in 1996 before the logging ban to Rs. 120 in 1999. After they received JFM intervention in 2005 their income climbed back to about Rs. 300 in 2006 showing that the aid they got from JFM had a small but positive impact on their income over time.

The average area of agricultural land (Figure 18) owned by the 20 households dropped from about 7.5 acres in 1996 to about 2.5 acres in 1999 and then climbed back to 2.5 acres in 2006. The Block Development Office statistics was used to generate the 1996 and 1999 average income and landownership data and surveys of households of Umdang Village were used to generate the new 2006 data.

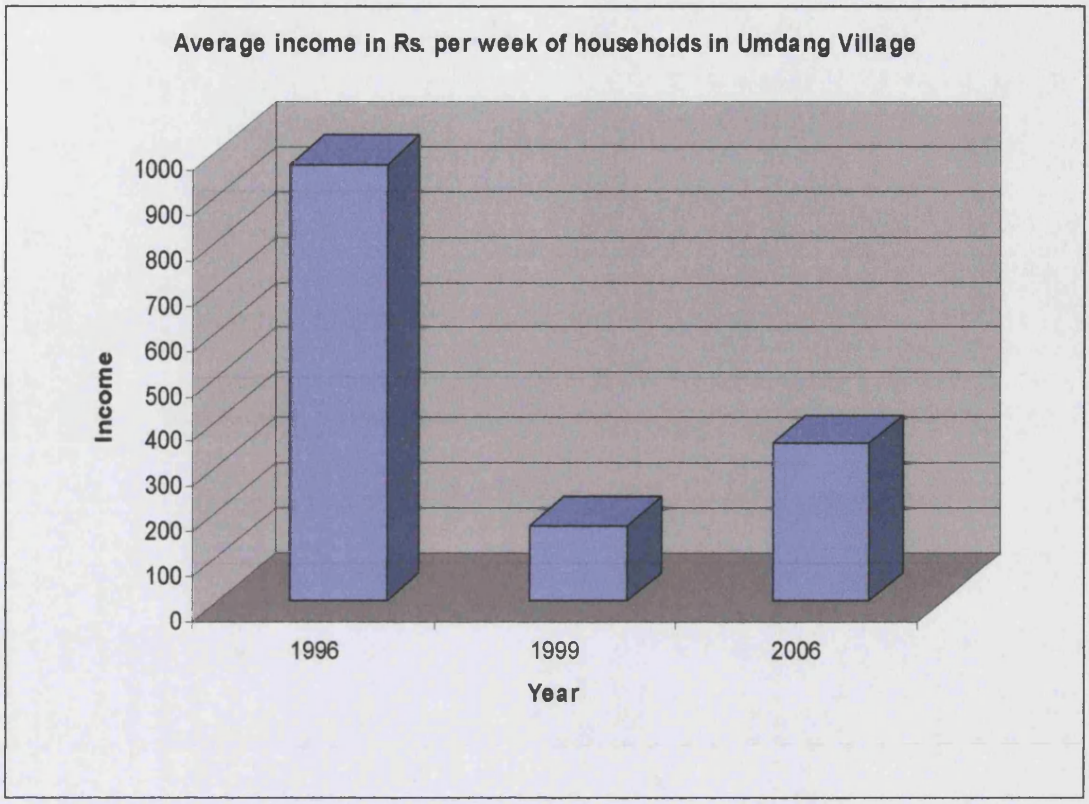


Figure 17: Average income (Rs) per week of households with JFM intervention (Fieldwork 2006)

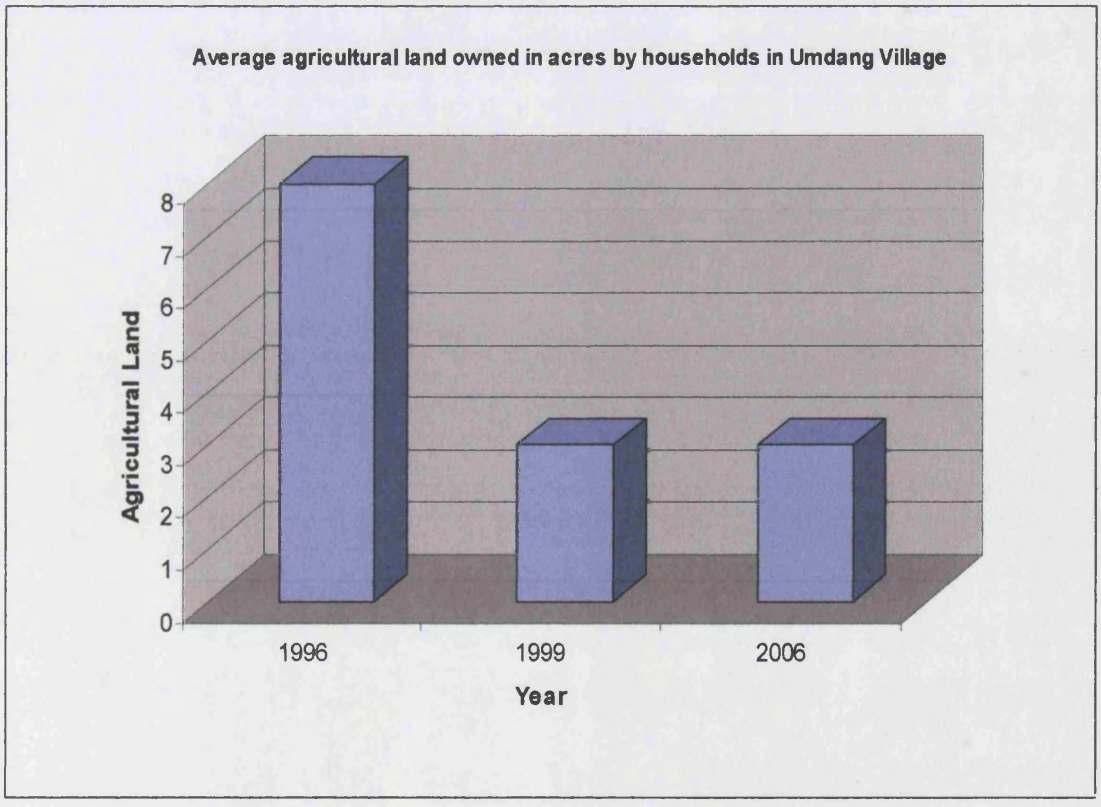


Figure 18: Average landownership (acres) of households with JFM intervention (Fieldwork 2006)

Emerging land and forest profile of households in Umdang Village

Based on the data collected from the household interviews the following scenario occurred in the Umdang Village:

(ix) Water availability: The households in the village indicated that the availability of water has decreased over the years though when the PHE came in 1975 the water system has been working since that time.

(x) Soil productivity: Before when there was forest cover the soil was fertile but now with the disappearance of the forest the JFM is doing reforestation projects on clan-owned land. Once the burning for charcoal started, the soil fertility became very bad and lost all the medicinal plants.

(xi) Soil diseases: They never sprayed pesticides and there are many types of diseases that are eating up vegetables and fruits especially oranges.

(xii) Land use (cultivatable land/sales): According to the Village Chief interviewed in Umdang Village, there were some changes in land use for agricultural intensification but not much sale of land due to tight control by the clan system.

(xiii) Livelihood opportunities: There was an increase in livelihood opportunities like tea stalls and food shops on the side of new roads used by coal carrying trucks and better access to markets in Riangdo.

(xiv) Village infrastructure: Umdang Village has 2 lower Primary schools, 1 upper Primary school from SHGs. The PHE build a water tank. The village has electricity and roads.

(xv) Migration (in/out) of people: There was heavy movement of people since the ban but now the road side population seems to be stable.

(xvi) Forest quality (types of birds/animals): The surrounding areas close to the village are reported to have lost a lot of their forest covers including both flora and fauna.

Perceptions of strategies for conservation and management of resources in Umdang

The households interviewed believe that the parties responsible for the decline of forest resources are the timber barons because forest resources decreased and charcoal production destroyed all forest since even the small trees were not spared for charcoal production. Information received alleged that Forest Officers also take royalty from the timber barons and do not contribute to village development.

The households of Umdang Village stated that the Soil Department has assisted them by supporting them with ginger and fruit trees seeds for plantation. They also received some help from IFAD in the form of training for agricultural activities, livestock, toilet facilities, use of organic manure, horticulture, health training, kitchen gardens, veterinary and fishery training.

The households wanted the Dorbar as a village institution to manage local forest and had asked the State Forest Department to provide the tree seeds. The Joint Action Committee, consisting of members from all the 15 villages in the area, has indicated to take responsibility in doing a better job in the management of natural resources

5.5.3 Analysis of Patharlyndan Village which had No Intervention

Patharlyndan Village had no intervention since the logging ban was imposed in 1996. It took about 1 hour to drive there from Riangdo as the metalled road was being repaired. The village had 57 households but only 15 households came to the focus group meeting which the headman had organised. The village had no infrastructure, no electricity and no water supply. Since this village had no help or support from either the Government or IFAD, the households living in Patharlyndan were the poorest from the three that were studied in the Riangdo Cluster.

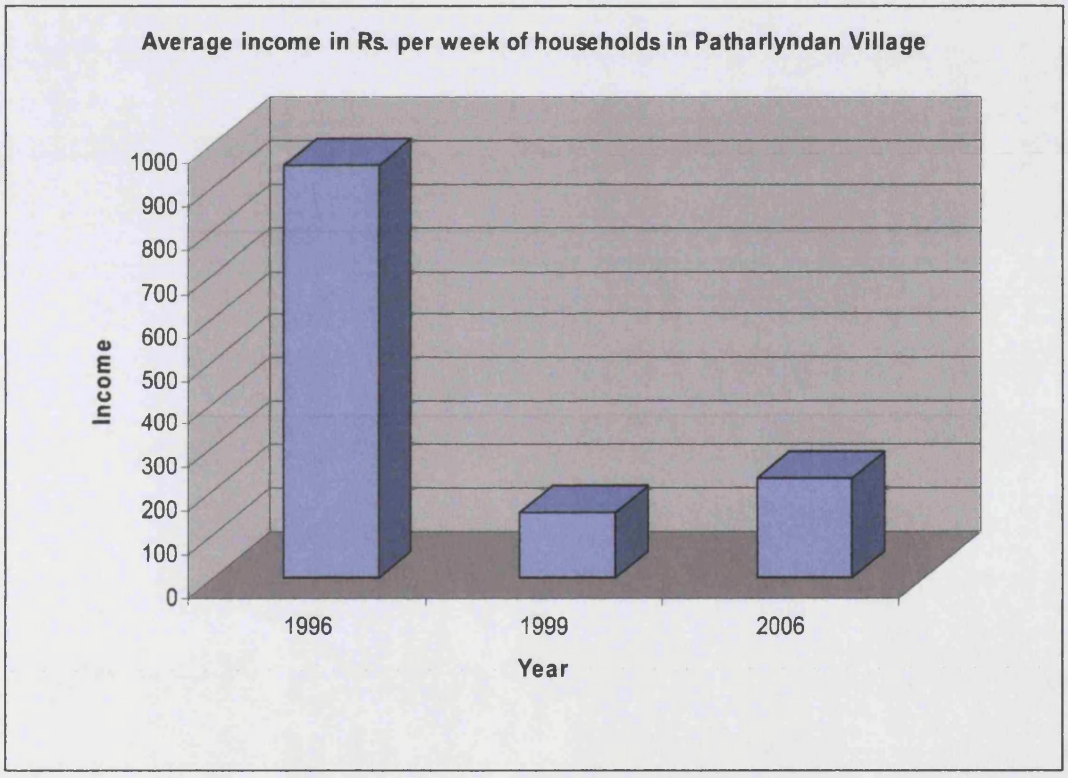


Figure 19: Average landownership (acres) of households with zero intervention (Fieldwork 2006)

Income and landownership changes in Patharlyndan Village:

Household survey data (Figure 20) indicates that the average income per week of the 15 households in Patharlyndan Village dropped from about Rs. 900 in 1996 before the

logging ban to Rs. 100 in 1999. They received zero intervention. Their income rose to about Rs. 190 in 2006 showing that they had a little growth in their income level.

The average area of land (Figure 19) owned by the 15 households surveyed dropped from about 5.7 acres in 1996 to about 2.7 acres in 1999. It never increased again and stayed at about 1.7 acres in 2006. The Block Development Office statistics was used to generate the 1996 and 1999 average income and landownership data and surveys of households of Patharlyndan Village were used to generate the new 2006 data.

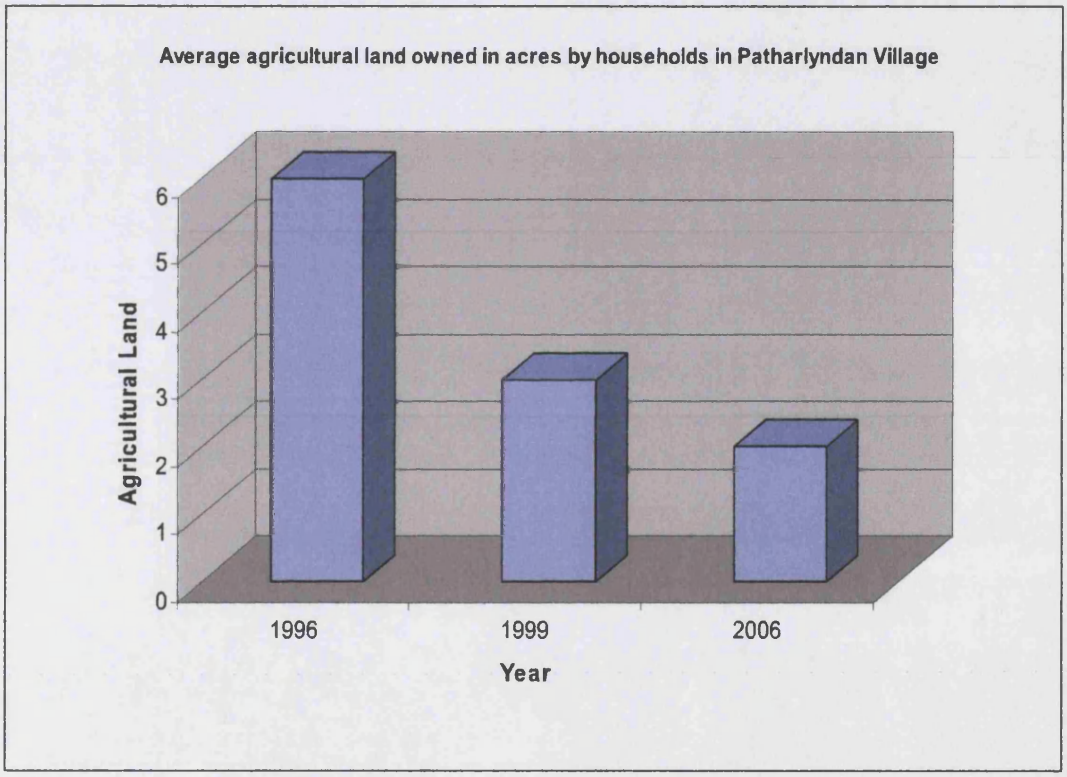


Figure 20: Average income (Rs) per week of households with zero intervention (Fieldwork 2006)

5.5.4 Interviews on the Impact of Ban with Households in Riangdo Cluster

The empirical data collected from the Riangdo Cluster revealed that the entire rural economy revolved around the forests which are central to agriculture and that the income derived from them feeds the market and other economic activities. The IFAD

baseline data from 1999 reveal that more than 85 percent of households in the Riangdo Cluster owned forests and sold timber. As a result of the ban, over 500 food shops operating between Riangdo and Nongstoin, the District Headquarters, were forced to close down due to a sharp fall in business. Since most of these shops were run by local women, many of whom were the main earners of their (matrilineal) families, the closure of the food shops had gravely affected the livelihoods of the households.

The following information collected from interviews in the Riangdo Cluster presents the magnitude of the problem caused by the logging ban.

The headman of Nongpdeng Village, Mr. S. Syiem, [78] said, *"the green concerns that provided the ecological underpinning of the Supreme Court decision, banning the extraction of timber seem to have boomeranged on the environment."*

To escape starvation, households have reverted to shifting cultivation, charcoal burning and even removing and selling the bark of trees, practices that are no less (if not more) destructive to the environment than the felling of trees. Though shifting cultivation per se is not injurious to the environment if carried out with prudence, the idea that the forests have no value since their timber cannot be sold has made many throw ecological caution to the wind.

[78] From fieldwork: Mr. S. Syiem from Nongpdeng Village who was Respondent No. 63 on 07/04/2006.

Picture 21: Charcoal packed in gunny sacks in Patharlyndan Village (Fieldwork 2006)

It was reported that with no other alternatives to survive, the livelihood adaptation of many households in the Riangdo Cluster was made by peeling off the bark of the jalawan (litsea glutinosa) and other varieties of trees and selling them to non-tribal businessmen (Marwari businessmen) for a paltry Rs. 2-6 per kg. The latter in turn sell the material to pharmaceutical firms in South India for making incense and medicines. The practice is not only ecologically destructive (the descaled tree gradually dries up and dies), but if not checked could immediately give rise to large-scale biopiracy.

The logging ban also affected the livelihood strategies of women in the Riangdo Cluster. Although logging is basically a male activity with women having little to do in its actual operations, paradoxically the effect of the ban falls more heavily on women. When the men of the households are out of work because of the ban on timber, the result has been an increase in women's already heavy responsibilities and domestic chores to meet the economic needs of the family. This fact was illustrated by a group of

women from Umdang Village who desperately pleaded with a coal truck driver to allow them to board the truck with their empty kerosene cans for refilling at Riangdo. Most forests in the vicinity are privately owned by well-off families, hence women from poor households had to obtain their fuel from the branches discarded by timber loggers.

With the implementation of the Supreme Court ban, the sources of fuel had become inaccessible. Every week the women from Patharlyndan Village had to undertake the 27 km trip from their village to Riangdo with their plethora of cans to get kerosene for their kitchens. This has not only added to their work load but has also affected the quality of food their families eat because to save on kerosene households have been forced to reduce cooking time, the use of meat and the eating stews by switching to dry fish and chutneys as substitutes.

Driven by the economic crisis that afflicts their households, women from the villages in the Riangdo Cluster are increasingly pushed to sustain their livelihoods by working in road construction, a task they had previously avoided. Given the nature of the job and the availability of male labour, women workers rarely get a fair deal in these activities. Interviews with women working on the road from Umdang Village to Riangdo reveal that they are paid much less than men for the same kind of work.

The dual wage structure is, however, just one side of the picture. As female construction workers often represent the poorest of the poor, with few options open to them for alternative employment, they had to put up with coarse behaviour and sexual harassment from their male colleagues, many of whom happen to be non-tribals. The economic hardships caused by the ban have also threatened women's security due to the

increase in crime and violence, which accentuates women's vulnerability. According to information given by the households in Nongpdeng Village, the incidence of both highway robberies and petty crime has registered a significant increase since the imposition of the timber ban.

5.6 Analysing the Five Capital Assets in the Riangdo Cluster

Similar to the case in the Mairang Cluster, there is clear evidence from the empirical data collected from all the three villages that were studied in the Riangdo Cluster to demonstrate that the indigenous people adopted an array of livelihood strategies. There is evidence from the structured household interviews used to measure access to the five capital assets indicating that the Supreme Court logging ban has a series of impacts on their livelihood strategies.

As in the case of the Mairang Cluster, these includes many recorded changes in land use practices, income diversification, migration and intra-household allocation in different sectors of forest exploitation, ranging in different groups within these communities that were studied. However, since poverty and problems of access to resources predated the logging ban, it can be argued that the logging ban does not completely ruin all the livelihoods of indigenous people. Even in this case there is evidence from the interviews to show that the ban has exaggerated some of these problems for the poor households living in these villages and made opportunities for some rich and powerful landowners in Riangdo who have co-opted the local assets.

Thornton (2006) claims that the five capital assets are only meaningful in the context of Senian ideas of access and empowerment, i.e., how poor vulnerable people can

overcome poverty, while others think the very work 'capital' is too commercial or neo-liberal and does not address the very issues of social trends that make vulnerability (Beall, 2001).

Vulnerability and shocks:

An analysis to identify specific indicators for vulnerability and shocks since the time that the logging ban was imposed shows from the household interviews that the villages are also exposed to some level of droughts, high winds, crop damage, rain damage and animal diseases. Evidently, these natural indicators are caused by the lost of forest covers which triggered soil erosion during heavy rains and lowered soil fertility and soil capacity to support agriculture. The soil fertility decreased in time by the burning of wood for making charcoal. Strong seasonal winds in spring time damaged many crops and homes since there was no tree cover remaining to protect the villages from high winds. The households also lost their livestock after they die from different types of animal diseases.

Another indicator of vulnerability and shocks is the rise of conflicts. Like the villages in the Mairang Cluster, the households are exposed to the increasing rate of crime and violence, which accentuates women's vulnerability. According to information given by the households interviewed, the incidence of both robberies and petty crime has registered a significant increase since the imposition of the logging ban. It is reported that the households in the villages of the Riangdo Cluster have to deal with crimes and abuses directed towards women and children by the coal truck drivers who frequently spend their nights in the villages on their journeys to the neighbouring state of Assam.

While looking for indicators to measure the five capital assets as identified in the Sustainable Livelihood Approach there is evidence from the household interviews that the logging ban has altered their access to these assets similar to what occurred in the Mairang Cluster. The table below (Table 26) presents some examples of the changes in the asset pentagon before and after the logging ban was implemented in 1996.

	Pre-ban	**Post-ban**
Natural capital	Easy access to forest to collect firewood and other forest resources. Ample timber for use.	Difficulty in getting access to forest to collect firewood. Decrease in forest resources after charcoal burning.
Financial capital	Easy access to money from daily wage timber activities.	No access to timber wage labour and fall of income.
Social capital	Active participation in the community and village. Strong village councils and rule of law.	Breakdown of marriages. Rise of crime and violence in the villages.
Human capital	Households could afford to send their children to school and the literacy rate was higher.	Households did not have the money to send their children to school and there is a decline in the literacy rate.
Physical capital	Good access to land and local markets during the timber trading days.	Decrease in ownership of land, trucks and buffalos. Decrease in the size of local markets.

Table 26: Changes in the asset pentagon before and after the Supreme Court logging ban[79]

Natural Capital:

When asked about their access to natural capitals since the logging ban, the households in the villages indicated that water scarcity has increased, soil fertility has decreased, cropping intensity has decreased, and their access to other environmental resources like wild foods, fodder, aquatic resources, forest products, trees has diminished over the years. Again the households claimed that this was due to destruction that was created from charcoal burning practices on the remaining forest and forest resources which has a negative impact on the land and depleted their water resources. They also mentioned the practice of shifting cultivation and broomstick plantations have contributed to decrease in soil fertility over time.

[79] The asset pentagon was used to identify perceived pre-ban and post-ban impact of the Supreme Court logging ban on the livelihoods of the local people.

Financial Capital:

With respect to access to financial capitals since the logging ban, the households indicated that their sources and amount of credit has decreased after the ban. Remittances have decreased; loans to neighbours have not been repaid; bank accounts are empty and most households have closed their village bank accounts. It was reported that after the ban, over 500 food shops operating between Riangdo and Nongstoin, which is the District Headquarters, were forced to close down due to a sharp fall in business in the area. Since most of these shops were run by local women who live in the villages of the Riangdo Cluster, many of whom were the main earners of their (matrilineal) families, the closure of the food shops had gravely affected the livelihoods of the households.

As in the Mairang Cluster, only the IFAD and JFM project villages have managed to recover slowly since they got new loans and grants that have been administered through the NaRM Groups and SHGs. The households in Patharlyndan Village that got no support were poorer in comparison to the ones that received development assistance. It appears that the women from the villages in the Riangdo Cluster have been pushed to sustain their livelihoods by working in road constructions, a task they had previously avoided, because of the economic crisis that has affected their households after the logging ban.

Social Capital:

Access to social capitals since the logging ban has also been affected. The households in the villages indicated that their participation in community initiatives through the

NaRM Groups and the SHGs increased over time in the IFAD and JFM project villages. The households living in the village that have no intervention have no groups to work with. There is also no evidence of membership in Non-Governmental Organisations. However, most households are church members, both Catholic and Protestant congregations. Like in the case of the villages in the Mairang Cluster, only the men are allowed to be in the Village Council and they can vote for the Village Chief every three years. The social status in the villages is lower after the logging ban as households lost their livelihoods and land. According to information given by the households in Nongpdeng Village, the incidence of both highway robberies and petty crime has registered a significant increase since the imposition of the timber ban.

Human Capital:

Inquiries about household access to human capitals in the villages since the logging ban indicated that literacy and numeracy levels in both adults and children have dropped over the years. School attendance by both males and females have dropped after the ban since parents could not afford to pay for the school fees like in the Mairang Cluster. It was recorded that in 1996, 55 students registered for admission when the new English nursery school opened in Nongpdeng but within two years the number of students had dropped to less than 20 because parents had difficulty paying the expenses for books, tuition fees and uniforms and some of the students have been forced to work to help support their families.

Child labour has become an institution in all villages in the Riangdo Cluster, which was an unknown factor before in the community. Many households stated that they faced an array of illnesses and could not afford to buy the medicines or to pay for the travel costs

to get to the hospitals for treatment. Both males and females lost their timber related occupations and their wages dropped after the ban but it was worst for the women. Women mobility increased as they had to leave their villages and look for manual labour jobs in the towns.

Physical Capital:

Since the logging ban, households' access to physical capitals has been affected, land area has become smaller, infrastructures like roads, dikes, and bridges/culverts have fallen apart and have not been maintained or repaired by the Government. Similar to the case in the Mairang Cluster, the local village markets have shrunk over the years. There are also a few run down schools which lack teachers and administrators. There are no health clinics. The road networks are quite bad hence commercial assets for transport like trucks and village buses were sold at a loss after the ban. The timber pulling buffalos were also sold at a loss after the ban. With IFAD intervention, the households of Nongpdeng Village are able to build new infrastructure like schools, community halls, footpaths, fishponds and toilet facilities. This contributes to the positive growth and development of the community since the households are employed by the projects to build these new infrastructures in their village. A similar pattern can be seen in Umdang Village where the JFM has helped the households build their first community hall and a nursery by the side where thousands of trees are kept. The households of the village are also employed by the JFM reforestation project as daily wage workers to carry the trees from the nursery and plant them in huge community owned land near the village.

The table below (Table 27) shows an indication of the differences of household access to the five capital assets in the three villages located in the Riangdo Cluster. The data was collected through the author's household surveys during his fieldwork in 2006. The current average access and consumption of the 5 capital assets was calculated from the 15 households of Nongpdeng, 20 households of Umdang and 15 households of Patharlyndan that were randomly selected from each village and interviewed to generate the data presented below. The figures are estimates given by the households who were interviewed. They are round up averages depicting the current scenario in each village and showing the differences of household access to the 5 capital assets between the three villages.

From the table below, it can be observed that the households in Patharlyndan Village, which have no intervention since the logging ban, are the poorest and have extremely reduced livelihood pentagons with extremely limited livelihood assets of any kind at their disposal. Their physical capital is very low since they have no infrastructures in the village. They have no electricity and water or sanitation facilities in the village.

However, the livelihood pentagons of the households living in Nongpdeng and Umdang villages are better since they have greater access to the physical and financial capitals which is due to the fact that they have received interventions from IFAD and JFM, respectively. Similarly like in the case of Nonglang Village in the Mairang Cluster, the micro finance and grants given by IFAD to the households of Nongpdeng Village through the SHGs have improved their financial capital and they have gained access to bank credits as a group to buy lands and other physical assets to improve their livelihoods.

Villages in the Raingdo Cluster	Nongpdeng	Umdang	Patharlyndan
Type of intervention	IFAD	JFM	None
Natural Capital			
Amount of firewood used per month in kgs	300	205	175
Amount of cane used per month in kgs	70	67	43
Amount of charcoal used per month in kgs	75	55	33
Amount of fish used per month in kgs	4	2	1
Amount of meat used per month in kgs	2	1	0
Amount of water used per month in liters	2500	1750	975
Amount of leaves used per month in kgs	60	55	33
Amount of wild fruits used per month in kgs	30	20	15
Physical Capital			
Amount of agricultural land owed in acres	4.5	2.5	1.7
Amount of land rented in acres	2	2	2
Amount of livestock owed in nos	9	5	3
Amount of trucks/jeeps owned in nos	0	0	0
Amount of houses owned in nos	1	1	1
Amount of kitchen gardens owned in nos	1	1	1
Amount of fishponds owned in nos	1 in village	2 in village	0
Human Capital			
Age of father in years	53	41	37
Age of mother in years	45	37	23
Level of education of father in class	Class 10	Class 6	Class 6
Level of education of mother in class	Class 8	Class 7	Class 5
Level of education of male child in class	Class 12	Class 9	Class 5
Level of education of female child in class	Class 6	Class 4	Class 4
Household members under one roof	4	4	3
Household member in Government work	0	0	0
Household member receiving pension	0	0	0
Financial Capital			
Household income per month in Rs.	2360	1200	760
Household expenditure per month in Rs.	2100	1000	700
Household savings per month in Rs.	260	200	60
Household borrowings per month in Rs.	0	235	317
Household outstanding debts in Rs.	0	200	375
Food produced by household per month in Rs.	500	300	100
Food consumed by household per month in Rs.	300	280	100
Social Capital			
Church affiliation	Protestant	Protestant	Catholic/Protestant
Political affiliation	Regional party	Regional party	None
Member of dorbar committee	10 men only	8 men only	4 men only
Self help group	22 members	20 members	None
Joint forest management committee	None	65 members	None
Natural resource management group	54 members	0 members	None

Table 27: Comparison of household access to 5 capital assets in Riangdo Cluster (Fieldwork 2006)

5.7 Conclusions

The empirical evidence from my research in the three sample villages of the Riangdo Cluster clearly indicates that the logging ban had a negative impact on the household strategies of the households living in the villages. The evidence is clear that the ban created the loss of livelihoods, loss of income, loss of access to land and the households became worse off after the ban was imposed. However, the village of Nongpdeng that got IFAD assistance in 1999 was better off than the village of Umdang that got JFM intervention in 2005. But the households of Patharlyndan village that got no intervention have suffered the most and are still suffering.

Jhum cultivation has decreased as most of the households that were interviewed considered this practice as an unsustainable livelihood system because of its impact on declining soil fertility and as a result shortening of jhum cycle. However, it appears that households have created alternative development options and the means to adopt them. From the analysis of the three villages in the Riangdo Cluster, a clear link can be established between the logging ban and the livelihood strategies of the households that were studied. To answer the central question of the research, indeed there is clear evidence that the logging ban had affected household behaviour in the three villages in different ways. Like the households in the villages in the Mairang Cluster, the members of each household that were studied in these villages have changed their livelihood strategies from being timber loggers and workers in the timber industry before the logging ban to becoming farmers, daily wage labourers, maids, truck drivers, fish producers and agricultural producers. Again this change of livelihoods strategies tells us that theories of adaptation and sustainable livelihoods are closely connected together. It proves that when poor people are under stress and shocks they try to adapt and cope

with their changing environment in order to survive by finding alternate or sustainable livelihood within their reach and scope. In the case of the households in the Riangdo Cluster, the ones that got strong support from IFAD in different ways since 1999 have managed to recover from the stress and shocks created by the logging ban and have been able to better organise themselves through local institutions such as the SHGs and NaRM groups in a spirit of helping and caring for each other through these safety networks. The analysis of households in Nongpdeng Village demonstrate that the households can improve their living conditions and livelihood strategies when strong local institutions built upon trust and good leadership are created at the grassroots that bring benefit to them all starting from the bottom up.

In the case of the households in Umdang village, they are still behind in their recovery from the stress and shocks created by the logging ban. The fact they received Government support through the JFM in 2005 has encouraged them to form groups like the JFM Committees in their village to implement the community forestry projects supported by the Government of India through the Forest Department of Meghalaya. Since they are still in the pilot project stage, additional livelihood strategies are still being contemplated via the JFM initiatives. This demonstrates that with some initial support through training and capacity building the households of this village are learning and developing alternative livelihood strategies that are being supported by the JFM. However, it would take some time for them to reach the development stage that the households of Nongpdeng Village have attained.

Households in Patharlyndan Village are still behind in their recovery process. As a matter of fact, the living conditions in the village have not improved since they were

impacted by the stress and shocks of the logging ban. However, they have managed to survive even without any help or intervention from either IFAD or the Government's JFM programme. This demonstrates that the households of this village have adapted to their difficult living conditions by resorting to other livelihood strategies like seasonal migration of male workers to coal mines or women engaging in wage labour in nearby towns. But if they had the same opportunities or interventions or institutional access as in the case of the other two villages in the Cluster, they would be able to accelerate their development process.

Building on local people's adaptation to the logging ban which indicated a clear link to their proposed solutions for alternative livelihood strategies, the author's analysis of the villages in the Riangdo Cluster suggests that to start with there is a need for strong institutions at community and state level to generate the political will and the practical actions required to safeguard local livelihoods and to ensure environmental sustainability. However, it depends on many more institutions to work together at different levels of governance to get the best of both worlds of protecting forests and livelihoods at the same time. The households have clearly identified solutions to reduce their vulnerability from hunger and poverty by creating their own adaptations through an array of livelihood strategies. They have indicated how institutions within and outside the community can help them in their daily struggle. Institutions and networks could be built at the village level between members of SHGs and poorest households who are not involved in the development intervention projects to train them on microfinance, agriculture and the income-generating activities that they have undertaken.

Chapter VI

Cross-cluster analysis between Mairang and Riangdo

Introduction

This chapter compares and differentiates how the villages in the Mairang Cluster (Nonglang, Umniangriang and Lawsiej) and in the Riangdo Cluster (Nongpdeng, Umdang and Patharlyndan) have adapted to the effects of the logging ban and the livelihood strategies that they adopted in relation to the Sustainable Livelihoods Approach (SLA). It also adds some policy recommendations drawn from the empirical work and draws conclusions based on the findings of the research. The chapter answers the research question after examining the effects of the logging ban on access to the five capital assets associated with SL. The five capital assets, namely, natural, social, physical, financial and human, which are components of the SLAs, will also be discussed in relation to their effects on the livelihood strategies of the households in the Mairang and Riangdo villages.

6.1 Cross-cluster analysis of villages in Mairang and Riangdo

As discussed earlier in Chapters 4 and 5, the logging ban as an approach has been seen as a top-down control by the big state on small forest users living in both the clusters that were studied. From the analyses presented in the two preceding chapters, the research confirms the negative effect of the logging ban on the capital assets of the rural poor in Meghalaya. This shows that there are conflicts between the state-led Supreme Court logging ban and the people-led livelihood strategies. It is evident from the

empirical data collected from the six villages in both the clusters that there is a direct clash between these approaches.

The experience of the author from the fieldwork in West Khasi Hills District strengthens the dilemmas that exist between the state officials responsible for conserving the forest and the poor people in the villages who are tying to secure their livelihoods. While there will always be clashes between such approaches, this chapter looks at the impacts and how the people and the state can create institutional arrangements that better addresses these conflicting objectives about forest use.

It must be noted that the SL approach is not just a research approach but a way of securing livelihoods in times of environmental security, hence a development intervention too (Farrington, 2001). A common effect of the SL approach is that it also challenges alternative perceptions of how to manage environments by allowing poor people to identify and protect resources valuable to them rather than excluding them from forests (Carney, 2003, p. 32). But part of the SLA has been to consider questions of how far gaining such institutional access can allow poor people to override common conceptions of environmental degradation by allowing them to define how and when ecosystems can and cannot assist with their needs.

Following the SL framework, the empirical data from the two clusters confirms that when poor people gain more institutional access and control over their land and forest, they overcome the conceptions of forest degradation and take the necessary steps needed to sustain the ecosystems that support their livelihoods. This holds true for the households of Nonglang and Nongpdeng villages that got institutional access with the

help of IFAD intervention in November 1999. As earlier discussed in the preceding two chapters, these households living in the IFAD project villages have organised themselves into groups such as the SHGs and NaRM Group to collectively work together to improve their livelihoods and to combat hunger and poverty while conserving the remaining forests surrounding their respective villages. This shows that the SLAs of the poor people can be helped by outside interventions like IFAD.

The same household behaviour can be seen in Umniangriang and Umdang villages that both joined the JFM programme. The households are involved in reforestation projects working in plantations that are located on community owned lands. They receive tree seedlings from the Forest Department and gain additional income from tree planting work paid through the JFM Committees in their respective villages. Kaushal and Kala (2003) propose specific recommendations on how to create livelihoods for the poor through forestry. This research supports their proposal which states that the problem of regeneration of degraded forests on permanent basis and the development of indigenous communities can be better tackled through SL approach of which Community Forest Management has to be an integral part.[80]

The SL approach recognises the importance of institutional structures and processes which determine access to the capital assets and their value and to the attractiveness of different livelihood strategies. Further analysis below examines the resulting livelihood adaptations, the impact on forest resources and the protection measures taken by the households in the two clusters to secure their assets. The discussion below presents the findings from cross-cluster analysis of the six different villages that were studied.

[80] See Joint Forest Management in India - Need for Sustainable Livelihood Approach: www.livelihoods.org/post/Docs/TAP_JFM.doc

6.1.1 Comparison between Nonglang Village and Nongpdeng Village

Both the village of Nonglang in the Mairang Cluster and the village of Nongpdeng in the Riangdo Cluster received IFAD intervention in November 1999. From the empirical data collected in 2006, the research shows that the 20 households of Nongpdeng Village have a higher weekly average income of about Rs. 590 (Figure 15) compared to about Rs. 480 in the case of the 20 households in Nonglang Village (Figure 7) who were surveyed in 2005. The average income in all these six villages was calculated using the data collected from the individual household surveys and comparing them with the old IFAD data and government statistics from the Block Development Offices in the towns of Mairang and Riangdo.

Income is expressed in 2005 prices and it was corrected for inflation since 1996 using a price index. It is difficult to get data for other years consequently all the graphs presented in Chapters 4 and 5 just have three data points, which may not give, the full picture of what happened during the other years. However, the pre-logging ban data in 1996 and the post-logging ban data in 1999 are available for comparison (even though they are not very accurate) with the data collected during the fieldwork to give some quantification of what occurred.

While analysing the difference in wealth ranking between the two villages, the research shows that the 20 households that were surveyed in Nongpdeng Village have a higher ranking compared to the 20 households that were surveyed in Nonglang Village. There are 12 households in Nongpdeng Village who have reached the first 'A' category compared to 10 households in Nonglang Village. There is also one household still in

the last 'D' category in Nonglang Village whereas there are none left in the same category in Nongpdeng Village.

Village	H/H	December 2000 IFAD data				December 2005 Fieldwork data			
		A	B	C	D	A	B	C	D
Nonglang	20	0	8	10	2	10	7	2	1
Village	**H/H**	**July 2000 IFAD data**				**July 2006 Fieldwork data**			
		A	B	C	D	A	B	C	D
Nongpdeng	20	0	7	9	4	12	7	1	0

Table 28: Comparison of wealth ranking between the IFAD villages of Nonglang and Nongpdeng

Criteria for wealth ranking for households in the IFAD Village

A = Owns large tract of land registered in their names; owns a tin roofed house; has a toilet near the house; has electricity in the house; has a kitchen garden; has other means of earning; rears large number of livestock besides cultivating paddy and other cultivation.

B = Owns land registered in their names; has small kitchen garden; has electricity in the house; has other means of earning; rears some livestock besides cultivating paddy and other cultivation.

C = Owns some amount of land registered in their names; thatch roofed house and the food sufficiency is only for 3-4 months.

D = Owns a thatched roofed hut.

Some of the driving factors that have contributed to these differences in wealth ranking are the closer distance of Nongpdeng Village to the main town market of Riangdo and the good access to metalled roads for the all households of the village which enabled them to have smooth and quicker transport of their agricultural products to the market place. Nongpdeng Village is about 30 km away from the main town market in Riangdo while Nonglang Village is about 45 km away from the main town market in Mairang. The road from Nonglang Village to the main town market is very bad and most of it is

not yet paved. The households of Nonglang Village spend more time and money to get to the town market in Mairang to sell their products. The 20 households of Nonglang Village (Figure 8) and Nongpdeng Village (Figure 16) that were surveyed owned the same area of agricultural lands with an average of about 4.5 acres per household in 2005-2006.

The livelihood strategies of the households in Nongpdeng Village included agricultural intensification practices such as investing in betel nut and betel leaf plantation, among others, which have given them fruitful harvest and gainful returns over the years. The village is also located at a lower altitude compared to Nonglang Village and therefore it had the suitable climatic conditions needed for betel nut plantation which is quite lucrative due to high demand in the market. All the Khasi tribal people consume betel nuts with a bit of lime and betel leaves to keep themselves warm and energetic.

The households of Nongpdeng Village also have tea and food shops along the road which give them additional income by catering to the needs of the coal truck drivers that used the metalled road daily to deliver coal to the bordering State of Assam. However, the households of Nonglang Village do not have the same access to metalled roads but used the mud roads. These mud roads are impossible to drive on especially in the summer months hence transportation of goods to the market is more difficult.

Unlike Nongpdeng Village, the Nonglang Village is not on the coal belt and hence has no traffic of coal carrying trucks and so the households do not have any tea or foods shops along their mud roads. The information from the interviews conducted with the households of Nongpdeng Village indicated that since they lost much of their forest

cover before the logging ban, they became less dependent on timber logging and trade for sustaining their livelihoods. Therefore, they adopted new livelihood strategies in order to survive much earlier on as compared to the households of Nonglang Village who still have more forest cover around their village but who could not use the wood for commercial purposes. The livelihood strategies included planting of betel nut trees, pineapple, investing in fisheries and piggeries and operating many tea and food stalls along the road for coal truck drivers. Having these other livelihood activities they became less dependent on timber base trade and businesses.

6.1.2 Comparison between Umniangriang Village and Umdang Village

Both the village of Umniangriang in Mairang Cluster and the village of Umdang in Riangdo Cluster received JFM intervention in July 2005. From the empirical data collected in 2006, the research shows that the 15 households of Umdang Village (Figure 17) have a weekly average income level of Rs. 300 compared to Rs. 220 in the case of the 15 households in Umniangriang Village (Figure 11) who were surveyed in 2005.

The households of both the Umniangriang Village (Figure 12) and Umdamg Village (Figure 18) have the same area of agricultural lands with an average of about 2.5 acres per household in 2005-2006.

Most of the lands in Umdang Village are owned by the village clans and not the households. This explains the fact that even though the households of Umdang Village have a higher weekly income compared to the households of Umniangriang Village,

they cannot acquire more lands easily in their village due to tighter control in the clan system of land ownership and management.

Similarly in the case of Umdang Village, the households have good access to metalled roads which enables them to transport their goods to the main town market in Riangdo which is about 33 km away. The households of Umniangriang Village are far away from the main town market in Mairang and do not have access to good mettaled roads hence their journey to the market takes much longer and is more expensive.

The livelihood strategies of the households in Umdang Village included planting of betel nuts, betel leaves, rice, maize and ginger. As the village is close to the road used by coal truck drivers to deliver coal to the bordering State of Assam, the households of Umdang Village have tea and food shops along the road. Since about 500 trucks use the road everyday, the households get additional income from the drivers who stop daily to buy food and refreshments from their shops. Umniangriang Village, on the other hand, is not on the coal belt and hence its households do not get the traffic of coal carrying trucks passing through their village. Therefore, they do not have any additional income from similar sources.

In their interviews, the households of Umdang Village claimed that since their land had also lost much of its forest cover before the logging ban, they were forced to adopt new livelihood strategies much earlier in order to survive as compared to the households of Umniangriang Village.

6.1.3 Comparison between Lawsiej Village and Patharlyndan Village

Both the village of Lawsiej in Mairang Cluster and the village of Patharlyndan in Riangdo Cluster received no intervention since the logging ban in 1996. Even without receiving any assistance from either the Government or IFAD, both these villages have adapted from the impact of the logging ban. From the empirical data collected in 2006, the research shows that the 15 households of Patharlyndan Village (Figure 19) have a higher weekly average income level of about Rs. 190 per household compared to about Rs. 99 per household in the case of the 15 households of Lawsiej Village (Figure 9) who were surveyed in 2005.

However, the households of Lawsiej Village (Figure 10) and Patharlyndan Village (Figure 20) have the same average size of agricultural land of about 1.7 acres per household in 2005-2006. Patharlyndan Village has no development aid intervention but the households have good access to metalled roads that enable them to transport their agricultural products to the main town market in Riangdo which is about 27 km away with no difficulty.

The households of Lawsiej Village, on the other hand, have no access road to their village and have to walk about 2 hours to get to the closest road. Lawsiej Village is further away from its main town market in Mairang at a distance of about 49 km and hence the households take much longer and more expensive to travel to the town market.

The livelihood strategies of the households in Patharlyndan Village included planting of betel nuts, betel leaves and rice. To get additional income, the households of

Patharlyndan Village also owns tea and food shops along the road which is patronised by coal truck drivers daily. With hundreds of coal trucks using the road everyday, the households derive additional income from the drivers who stop to buy food and refreshments. On the other hand, Lawseij Village does not have the same convenience of having a road close to it.

According to Brown *et al.* (2006) in their study of livelihood strategies in the rural Kenyan highlands, households with more lands and more individuals working off-farm in skilled employment are able to achieve higher average per capita incomes than their neighbours. The findings of this research support this literature since when compared the households of Nonglang and Nongpdeng who have access to more agricultural lands and diversified off-farm additional income sources have higher average per capita income than their neighbours in Lawsiej and Patharlyndan.

6.2 Cross-cluster Analysis of Households' Perceptions on the Logging Ban

The data collected from the 50 households surveyed in October 2005 suggested that the indigenous Khasi people from the three villages of the Mairang Cluster are not happy with the implementation of the logging ban in their communities. From the survey conducted, the research found that about 75% of the households claim that the logging ban has a negative impact on their livelihood strategies; about 10% claim that the ban was good; and about 15% don't know what to say (Figure 21). Upon further analysis it was found that in the village of Umniangriang where the Meghalaya Forest Department has been working since early 2005 on its JFM programme, 5 of the households surveyed indicated that the logging ban was good for them. However, the majority stated that their living conditions were better off before the ban was introduced.

To find out if the household's perception of the logging ban changed over time, another survey was made in the summer months between April to July 2006 and no changes were found. However, previous surveys conducted before the IFAD intervention indicated that about 95% of the households in the Mairang Cluster were unhappy with the logging ban.

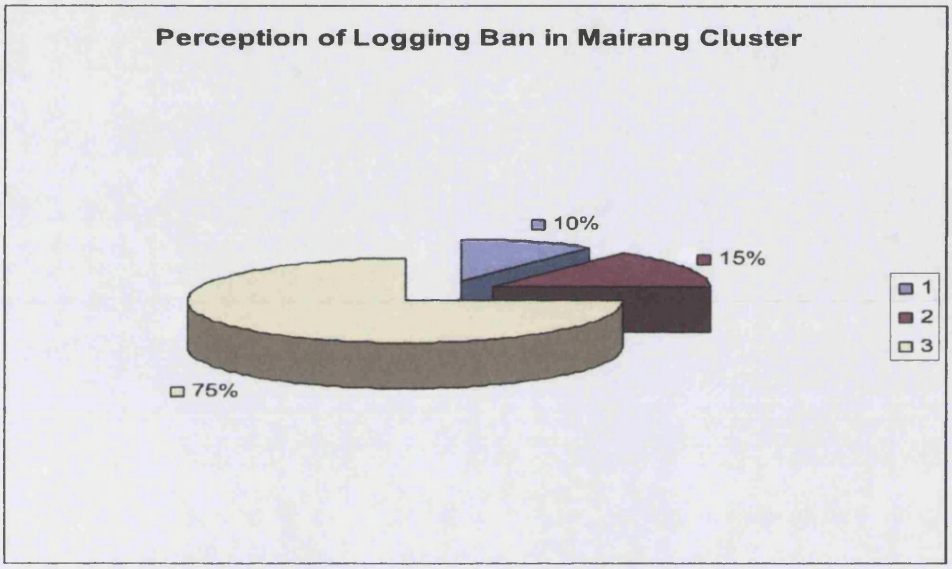


Figure 21: Household's perception on logging ban in Mairang Cluster (Fieldwork 2005)

Legend: 1. Happy 10%; 2. Don't know 15%; 3. Not happy 75%

The data collected from the 50 households surveyed in Riangdo Cluster also suggested that the indigenous Khasi people from the three villages in the Riangdo Cluster were not happy with the implementation of the logging ban in their communities. About 65% of the households claim that the logging ban had a negative impact on their livelihood strategies, about 15% claim that the ban was good and about 20% don't know what to say.

After further analysis of the data, it appears that the 15% of the households that indicated that the logging ban was good came from the JFM village of Umdang where the Meghalaya Forest Department has also been working since early 2005 on its JFM programme. However, the majority of the households also stated that they were better off before the ban was introduced back in December 1996.

The perception of the logging ban has not changed to the positive side over time because as per the survey conducted by IFAD in 1999 before their intervention about 90% of the households in the Riangdo Cluster were unhappy with the logging ban.

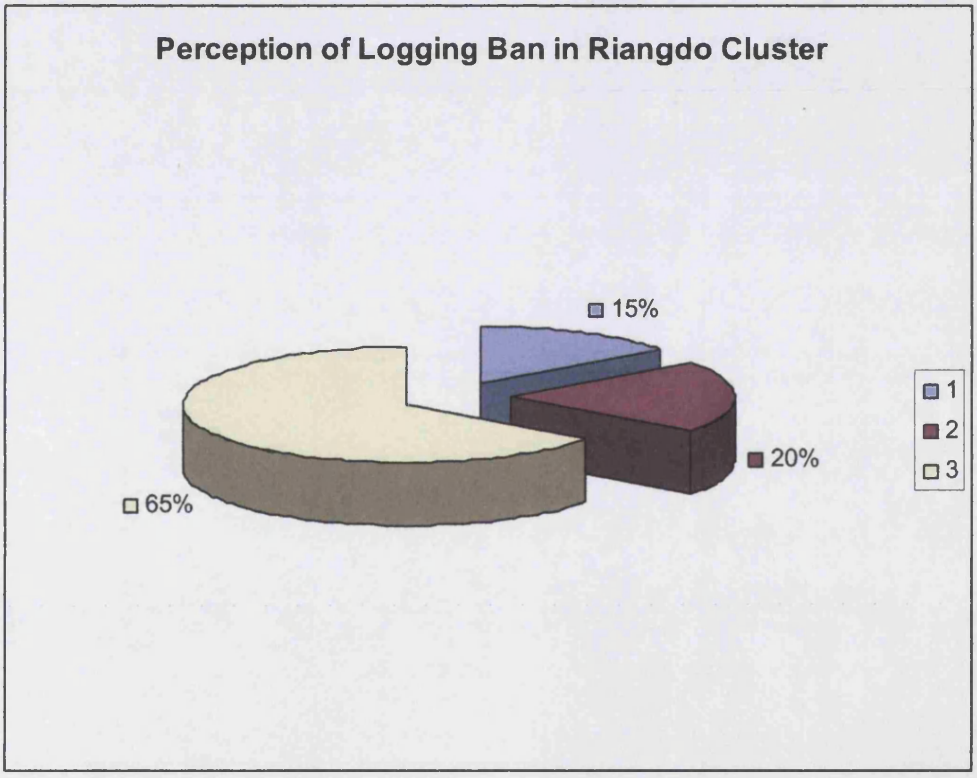


Figure 22: Household's perception on logging ban in Riangdo Cluster (Fieldwork 2006)

Legend: 1. Happy 15%; 2. Don't know 20%; 3. Not happy 65%

From the survey conducted in both the clusters, the research concluded that the majority of the households in the six villages that were studied are still unhappy with the logging ban even after 10 years have passed since it was introduced.

6.3 Cross-cluster Analysis of Households' Livelihood Strategies

From the survey of the 50 households that was conducted in October 2005 in the three villages of the Mairang Cluster, the research shows that the households are involved in an array of livelihood strategies. They practiced agricultural intensification activities, which included maintaining kitchen gardens in their backyards and acquiring more agricultural lands for planting rice, maize, ginger, broom grass, fruit trees and vegetables.

The households were involved in income diversification activities which included making handlooms and handicrafts, gathering leaves and tree barks from the forests, rearing livestock and fisheries, young women working as maids in nearby towns. Some of the households had left their villages and migrated to other towns and cities to find jobs and some men left to work as coal miners in coal mines as far as 250 km away near the Bangladesh border. They worked as seasonal migratory workers in these coal mines from 4-6 months.

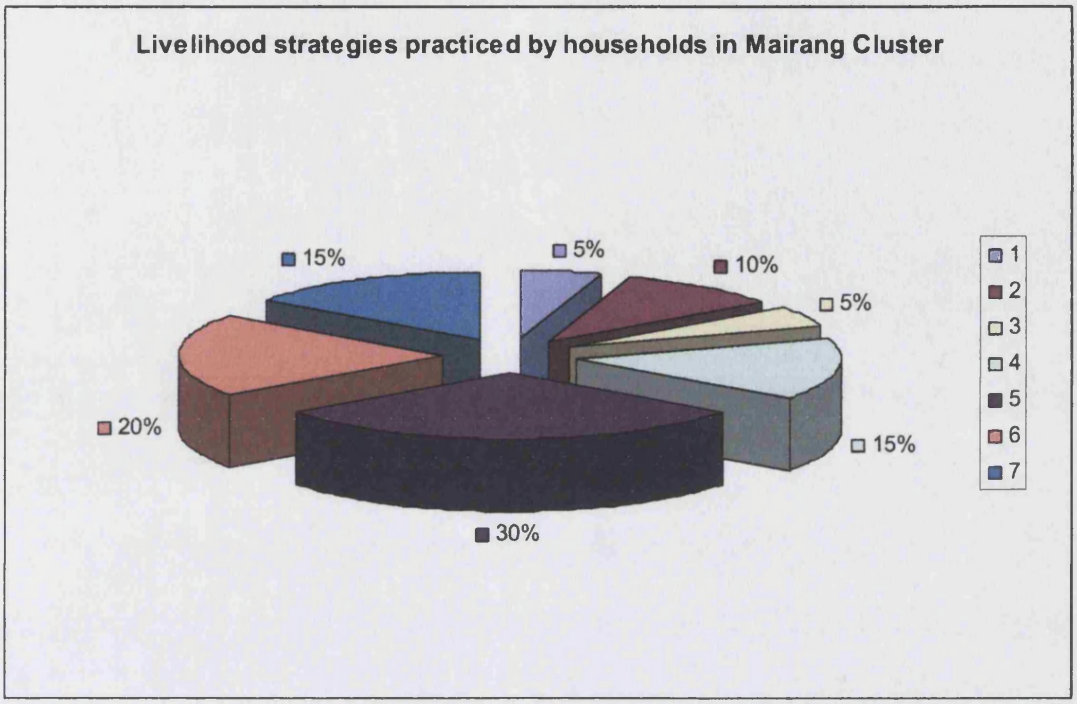


Figure 23: Household's perception on livelihood strategies in Mairang Cluster (Fieldwork 2006)

The 50 households that were surveyed in the Mairang Cluster had a combination of livelihood strategies that are shown on Figure 23 which includes the following:

1. Migration 5%
2. Agricultural Intensification 10%
3. Income Diversification 5%
4. Agricultural Intensification and Migration 15%
5. Agricultural Intensification and Income Diversification 30%
6. Agricultural, Migration and Income Diversification 20%
7. Migration and Income Diversification 15%

Surveys of the 50 households conducted in May 2006 in the three villages of the Riangdo Cluster revealed that the households are involved in an array of livelihood strategies. They practiced agricultural intensification activities which included

maintaining kitchen gardens in their backyards and acquiring more agricultural lands for planting rice, maize, ginger, betel leaves, betel nut, fruit trees and vegetables.

The households were involved in income diversification activities which included making handlooms and handicrafts, maintaining tea stalls and food shops, rearing livestock and fisheries, young men driving trucks and taxis. Like in the case of Mairang Cluster, some of the households had left their villages and migrated to other towns and cities to find jobs and some men left to work as coal miners in coal mines as far as 250 km away near the Bangladesh border. They worked as seasonal migratory workers in these coal mines from 4-6 months.

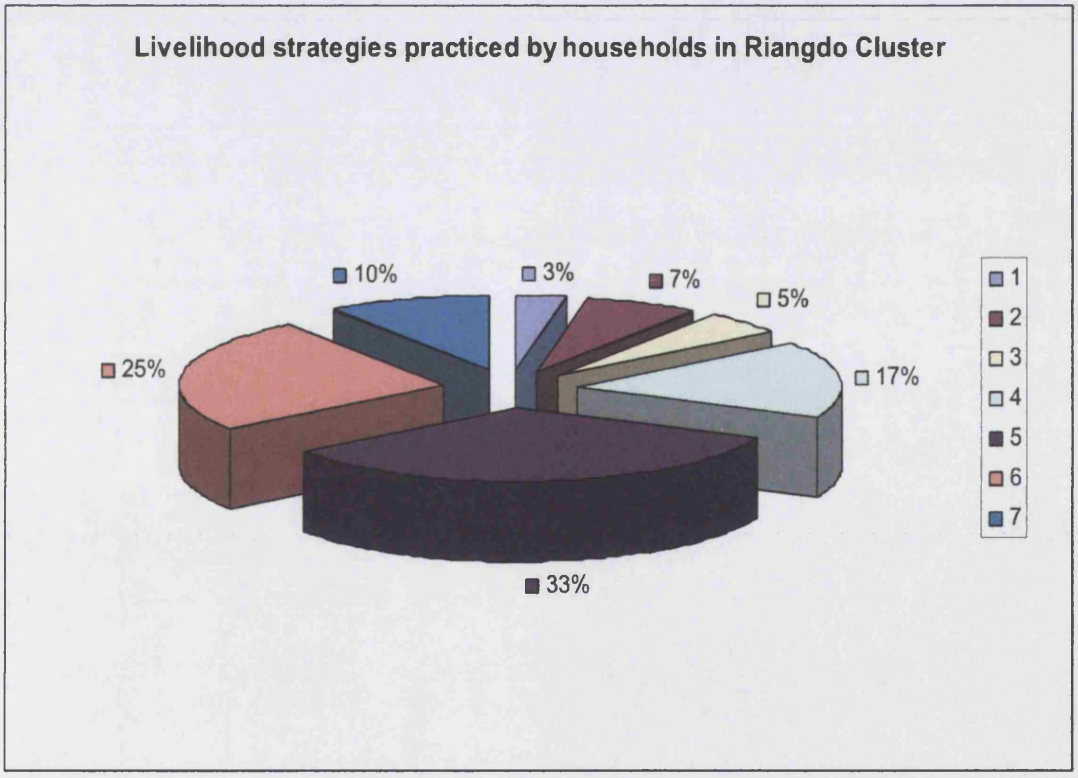


Figure 24: Household's perception on livelihood strategies in Riangdo Cluster (Fieldwork 2006)

The 50 households that were surveyed in the Riangdo Cluster had a combination of livelihood strategies that are shown on Figure 24 which includes the following:

1. Migration 3%

2. Agricultural Intensification 7%

3. Income Diversification 5%

4. Agricultural Intensification and Migration 17%

5. Agricultural Intensification and Income Diversification 33%

6. Agricultural, Migration and Income Diversification 25%

7. Migration and Income Diversification 10%

6.4 Cross-cluster analysis of the Five Capital Assets in Mairang and Riangdo

As mentioned earlier in Chapters 4 and 5, there is clear evidence from the empirical data collected from all the six villages in the Mairang Cluster and the Riangdo Cluster to demonstrate that the indigenous Khasi people adopted an array of livelihood strategies to survive after the logging ban. Using structured household interviews, it is possible to compare household access to the five capital assets between different villages in the two clusters. The research shows that the households have organised different strategies for accessing livelihoods, namely, agricultural intensification, income diversification and migration. It can be argued that the logging ban did not completely ruin all the livelihoods of indigenous Khasi people because poverty and problems of access to resources predated the ban. The structured interviews indicate that the ban has aggravated some of these problems for the poor households living in the remote villages and it made opportunities for some rich and powerful landowners in the cities who have co-opted their local assets.

While looking for indicators for vulnerability and shocks since the time that the logging ban was imposed, there is clear evidence from the household interviews to show that all

the six villages in the two clusters were exposed to some level of droughts, high winds, crop damage, rain damage and animal diseases. These natural indicators were caused by the lost of forest cover which triggered soil erosion during heavy rains and lowered soil fertility and soil capacity which support agriculture. In the case of Lawsiej and Patharlyndan villages located in different clusters, once the burning for charcoal started, the soil fertility became worst and the villages lost all their medicinal plants. Since there was no tree cover left to shelter the villages from high winds during the spring seasons, the winds damaged many crops and homes. The households also lost their livestock that died from different types of animal diseases.

Another indicator of vulnerability and shocks is the rise in boundary conflicts. The villages in the Riangdo Cluster are close to the international boundary with Bangladesh in the south and those in the Mairang Cluster are close to the national state boundary with Assam in the north and both are facing border disputes over land and labour migration. There is a rise in migration of Bangladeshi refugees from the south entering Meghalaya through the West Khasi Hills District and working for very low wages thereby taking away the already shrinking livelihood opportunities of the indigenous people. As a consequence of the boundary conflicts, there is also an increase in the rate of crime and violence in all the three villages in the Riangdo Cluster as they are all situated close on the main road used by coal truck drivers who come from all over the country. Households interviewed alleged that the incidence of robberies and petty crimes has also registered a significant increase since the imposition of the logging ban in the villages of the Mairang Cluster.

While looking for indicators to measure the five capitals as identified in the Sustainable Livelihood Approach there is clear evidence from the household interviews conducted in the six villages of both the clusters that the logging ban has altered their access to these capital assets.

Access to the natural capital assets since the logging ban has been affected in both the clusters. The households in all the six villages indicated that water scarcity has increased, soil fertility has decreased, cropping intensity has decreased and their access to other environmental resources like wild fruits, fodder, aquatic resources, forest products, trees has diminished over the years. They claimed that this was due to destruction created from charcoal burning practices on the remaining forest and forest resources which has a negative impact on the land and depleted water resources. However, the households in Nonglang and Nongpdeng villages have been able to secure their water resources using water tanks and pipes supported by development aid. They have also received agricultural training to increase the soil fertility using organic manure composting techniques and to intensify their agricultural practices by planting new types of crops like fruit trees, ginger and maize. They have also benefited from the fishponds that they had constructed in their village.

With respect to access to physical capitals since the logging ban, the households in the six villages claimed that their access to land had decreased, infrastructures like roads, dikes, bridges/culverts have fallen apart and have not been maintained or repaired. Only the households of the villages of Nonglang and Nongpdeng have been able to acquire more lands over the years since they received aid assistance which was invested through their SHGs and NaRM Groups. The three villages in the Riangdo Cluster have

access to metalled roads but they have not been properly maintained or repaired since the logging ban. On the other hand, the three villages in the Mairang Cluster do not have access to metalled roads and rely on mud roads that are difficult to drive during the monsoons. The local village markets in all the six villages have shrunk over the years and all the households from these villages have to travel to the main town markets of Mairang and Riangdo to buy their fuel and food. After the logging ban, electric power in some households in the villages were cut off since they could no longer afford to pay the bills. There are a few run down schools which lack teachers and administrators. The villages of Nonglang and Nongpdeng have got access to new school buildings which have been supported thought the SHGs. All the six villages in both the clusters have no health clinics and no access to medicines. Commercial assets for transport like trucks and buses that the households in the villages had in the past were sold at a lost after the ban. In the same way, the villages that had cattle and timber pulling buffalos in the past had sold them at a lost after the ban. Only the villages of Nonglang and Nongpdeng have been able to get aid and support for livestock like pigs, cows, ducks and chickens.

When asked about access to human capitals since the logging ban, the households in the six villages in both the clusters alleged that their literacy and numeracy levels for both adults and children have dropped over the years. The school attendance for both men and women in all the villages has dropped after the ban since parents could not afford to pay for the school fees anymore. Many households in all the villages stated that they faced an array of illnesses and could not afford to buy the medicines or to pay for the travel costs to get to the hospitals for treatment. All the households in all the villages claimed that they had lost their timber related occupations after the logging ban. Their

wages dropped drastically after the ban and it was a worst situation for the women. Hence, women mobility increased as they had to leave their villages and look for manual labour jobs in the towns.

When enquired about access to social capitals since the logging ban, the households in the villages of Nonglang and Nongpdeng stated that their participation in community initiatives through the NaRM Groups and the SHGs increased over time. The same is true in the case of Umniangriang and Umdang villages that had established their JFM Committees. However, the households living in the villages of Lawsiej and Patharlyndan had no groups to work with hence they were much disorganised. There was no evidence of Non-Governmental Organisation membership in any of the six villages that were studied. However, most households were church members of both Catholic and Protestant congregations. Only men were allowed to be elected members in their Village Councils of all the six villages that were studied and they can vote for their Village Chiefs every three years. In both the clusters, there were no existing interactions between the villages and the private sector.

After the ban, the households that were studied in all the villages went through depression and social changes which impacted on their livelihood strategies. These changes include increase of deaths of household members from illnesses related to coal pit mining activities for the male migratory workers, increase in arrest of household members for theft and robbery, increase in divorces and separations of spouses. The male household members from the villages of Lawsiej and Patharlyndan in both the clusters worked in coal pit mining. There is also evidence from the interviews in these villages showing an increase in the breakdown of marriages in the villages when one of

the spouses leaves the households to find work elsewhere.

With reference to access to financial capitals since the logging ban, the households of all the six villages in both the clusters disclosed that their sources and amount of credit had decreased after the ban. Remittances had also decreased and loans to neighbours have not been repaid. Bank accounts are empty and most households have closed their village bank accounts in the towns of Mairang and Riangdo. However, the villages of Nonglang and Nongpdeng have managed to recover slowly since they got new loans and grants that have been administered through the NaRM Groups and SHGs. The same is true for the villages of Umdang and Umniangriang that have established their JFM Committees and received some aid. The other households in the villages of Lawsiej and Patharlyndan created other opportunities to secure their livelihoods, e.g., the men left the villages to work as coal migratory workers and the women as wage labourers in nearby towns.

While looking for indicators for policies, institutions and processes since the time that the logging ban was imposed, evidence of the impact was found in all six villages in both the clusters at both the social and institutional levels. There is evidence of institutional changes in all the six villages in both the clusters after the logging ban that included the powerful co-opting of local assets by rich landowners from the towns, the Government's Working Plan policy that disfavours the indigenous Khasi people, especially the women, the increase in market fluctuations and the rise in the cost of goods and commodities. There are no health clinics, no good teacher for the schools, no good roads for the villages, non-functioning pipes and water systems and no electricity for households who are poor. These institutional changes had different levels of

negative impact on the livelihood strategies of the poor households in all the six villages in both the clusters that were studied due to the fact that they had limited institutional access to the various capitals. However, the households of these villages have gathered together forming SHG Federations and organized strategies as a bigger group for accessing livelihoods.

The cross-cluster analysis comparing the five capitals above shows that the livelihood strategies of the all the six villages studied in the both clusters of Mairang and Raingdo have been seriously affected by the logging ban. These changes in livelihood strategies differentially affect those who are anyway socially excluded. The empirical data from all the villages indicated that even the poorest households like in the case of Lawsiej and Patharlyndan villages still have the capacity within their communities in risky environments to adapt their livelihoods to a variety of types of stress and to make do with apparently very limited opportunities for diversifying sources of income.

The finding of this cross-cluster analysis reaffirms and adds onto the recent work on Livelihood Adaptation that errs on the side of socio-economics with only passing reference to the importance of community structure in how poor people adapt. When looking at the bigger picture of the SL debate, there are a number of exceptions to this socio-economic bias. In other parts of India and neighbouring countries in South Asia, the importance of caste in defining adaptive options is emphasised (Lingam, 1994). The research found that in the case of Meghalaya, there is no caste system but there exist a class system between the rich and powerful landowners in the towns and the poor and weak people in the villages.

When looking at kinship and friendship ties as revealed by anthropological research, they are found to be vitally important for livelihood adaptive processes in all societies especially for women who are excluded from more formal channels of access to resources (Chen, 1991; Adams, 1993). The success story of the women SHGs creating a local institution build on networks between mothers in Nonglang Village support this argument. The role of existing social capital which is based on trust and leadership bonded the women led SHGs and they are able to save more and use it as a revolving fund to support each other within the group and access other resources collectively.

In the broader SL debates there are other forms of intra-community exchanges which do exist to assist adaptation: for example, intricate and multi-dimensional informal credit, savings and transfer systems exist in most poor societies, especially for groups excluded from formal credit mechanisms (Schampers, 1984; Longhurst, 1986). This research supports the debate from the evidence found in the case of the Lawsiej Village in the Mairang Cluster where a barter system of exchanging agricultural products for livestock with no financial consideration with other villages still exits.

From the analyses of the SLAs in the six villages that were studied, the research shows a much broader livelihood agenda which demonstrated that there are multiple opportunities for the poor households in Meghalaya to improve their livelihood strategies. These go beyond the traditional rice cultivation and include fisheries, horticulture, organic agriculture, livestock and forestry-related activities with some aid assistance. At the same time, it is important to note that the actual selection of the livelihood activities is made by the poor households.

In addition, the analyses of the SLAs and the structured interviews of households in both the clusters brought to light the need to explore the issue of access to land. The research found that if solutions to tenure security and access to land were not developed alongside the livelihood enhancement activities, then all the livelihood strategies would be compromised. It seems that some sort of Land Bank pilot initiative has been initiated by IFAD to address this issue by promoting long-term tenure arrangements through purchase or long-term lease of productive land. The research discovered that the pilot works with individual households, SHGs and village and district institutions with an objective to help the households by increasing their motivation to make larger investments of their time, labour and capital.

6.5 Policy Recommendations

Aid agency interventions:

From the fieldwork experience in Nonglang and Nongpdeng villages where aid agencies like IFAD have provided outside intervention since November 1999, some recommendations have emerged. After analysing the current work of IFAD in the villages that were studied, the research identified areas and extent of aid agency interventions for improving the livelihood strategies of the poor. In order to help poor people enhance their livelihood strategies in the villages, aid agency interventions could consider the following recommendations:

Building the capacity of local communities and participating agencies

It is important for aid agency interventions to facilitate community-level transparent decision-making processes and to strengthen the capability of local communities to take responsibility for managing their own development by supporting:

- Community decision-making that further integrated women into their processes.
- Ensuring the interests of marginalised groups when reorienting the local power structures.
- Promoting community self-reliance by establishing and strengthening existing village institutions.
- Assisting government agencies and NGOs to strengthen their work on developing better livelihood activities for the poor people.

Creating more activities from livelihood enhancement

It is important for aid agency interventions to provide viable opportunities for the poorest people to increase their incomes. These activities could be based on the following criteria to ensure that they provide meaningful and viable livelihood opportunities for the poor:

- Local indigenous knowledge should be incorporated in the activities.
- Adequate remuneration should be provided to the participants during training.
- The goods and services they generate should have well established market linkages.
- Activities should serve as substitutes for less paid and more labour-intensive work and be more directed towards women.
- Provide additional training and also make use of existing skills to create new activities.
- The livelihood enhancement activities should be environmentally sound.

State interventions:

From the fieldwork experience in Umdang and Umniangriang villages where the Government has implemented its JFM programme since 2005, some recommendations

have emerged. After analysing the current work of the Forest Department in the villages that were studied, the research identified areas and extent of state intervention for developing an effective forest policy that also improves the livelihood strategies of the poor.

In order to help poor people secure their sustainable livelihoods, there is a need for policies and institutions that include their resource use and livelihood decisions into the equation. A people-led sustainable forestry policy should be identified very carefully with their participation before the intervention is made in the community forests, specifying the areas of intervention and the extent of intervention. This people-friendly policy needs to be developed by the Government that would ensure a favourable environment for Government and community participation in protecting the sustainable livelihoods of the poor while also trying to conserve the community and private forests. This is one way how the people and the state can create institutional arrangements that address the conflicting objectives about the environment and forest use.

The areas where facilitation is required and the areas where regulatory mechanisms are to be there, strategies for strengthening the traditional institutions for effective forest management need to be identified for formulating an effective and implementable community forest policy for Meghalaya. While identifying such areas of intervention, sensitivity regarding government interference in community affairs and autonomy of traditional institutions should be kept in mind. The fear of land alienation due to government interference in people's mind and the issue of possible alteration of land ownership must be given top priority while undertaking such an exercise for developing the appropriate policy.

Considering the need of practicing sustainable forestry in community and private forests, which is viewed to be a viable strategy to ensure the continued existence of forests on community and private land, and given the limitations of the Meghalaya Forest Department in terms of number of forestry personnel vis-a-vis the large forest areas under community/private ownership, it is desirable to train the representatives of Village Dorbars on various aspects of technical forestry. Researches need to be undertaken for identifying the areas and topics for capacity building programme for the communities. The modus operandi to commence such programme also needs to be worked out.

Community interventions:

From the fieldwork experience in Lawsiej and Patharlyndan villages where the communities have been helping themselves with no outside interventions since the logging ban on 12 December 1996, some recommendations have emerged. The research identified areas where community interventions can be strengthened to improve the livelihood strategies of the poor.

Institutions and local networks could be built at the village level between members of SHGs and similar groupings and the poorest households who are not involved in the development intervention projects to train them on microfinance, agriculture and the income-generating activities that they have undertaken.

Institutions and local networks could be built between villages that received outside interventions and villages that did not. The SHGs and NaRM Groups could play a

catalytic role in exposing and training the poor households of the villages with no outside interventions on microfinance and natural resource management activities. In this context the Dorbar - the village assemblies and the existing churches can join hands and play a facilitating role.

In identifying the lack of agricultural lands as the major cause of hunger and poverty in the villages that were studied, the households have suggested that the solution was for the SHGs, like in the case of Nonglang Village, to purchase agricultural lands that they can cultivate as a group and generate income by selling their products to the market. The local institutions in this context could be built:

- With the local banks, to facilitate and secure loan financing through the SHGs.
- With the landowners, who would be willing to sell their lands by informing them of the SHGs' activities to enhance their trust in the groups. Also, land leasing prices as well as the leasing period could be negotiated with the landowners.
- With the Government, who could play an important role in facilitating access to market for the remote villages in terms of road construction and public transportation.
- With the SHG Federation, which is an important institution to facilitate market access.

As proposed by its members, the SHG Federations could consider the option of purchasing their own vehicles that would collect the agricultural products from the different villages in each cluster and transport them to the main town markets.

A network between local community institutions with the Agricultural Department could help the households to increase the quality and quantity of their agricultural and handicraft products by providing training and support on technology. These are some of

the recommendations that have emerged from the case study of the villages in the Mairang and Riangdo clusters of the West Khasi Hills District.

6.6 Conclusions

This chapter sought to conduct a cross-cluster comparison between the Mairang Cluster and the Riangdo Cluster for the purpose of understanding SLAs better and answering the key research question based on the findings of the different analyses.

In answer to the research question, the research found that the logging ban has affected household behaviour in different ways in the two clusters of Mairang and Riangdo as discussed earlier in this chapter and in Chapters 4 and 5. From the analysis on the SLAs, the research has demonstrated that the households in all the six villages that were studied had used an array of livelihood strategies to adapt and cope with the negative impacts of the logging ban while trying to avoid poverty. Hence, the research supports the literature on the theories of adaptation and sustainable livelihoods. So based on this research, this thesis found that there are clear linkages between the poor people's adaptations and their objective to secure sustainable livelihoods.

The research also disclosed that the SLAs of the poor people living in Nonglang and Nongpdeng villages have been helped by aid from outside interventions. It shows that the people in these villages have gathered themselves together into groups such as SHGs and NaRM Groups and organised strategies collectively for accessing livelihoods. The successful factors underlying different livelihood strategies include household access to the capital assets as discussed earlier. The households living in the villages in the Riangdo Cluster would seem to confirm that having good access to metalled roads

and good transportation that links them to the main town markets has allowed them to develop new livelihood strategies. Therefore, it suggests that the households in Riangdo Custer were able to access more SLAs than those in the Mairang Cluster.

The research reveals that in the tribal economies of West Khasi Hills District, forestry and agriculture are closely interlinked. Hence, it argues that the state-led restriction on how poor people use the forests is an infringement on their livelihoods, which the Supreme Court logging ban seems to have overlooked. In its eagerness to conserve the forests, the Supreme Court has failed to perceive the effect its judgement would have on the poor people whose livelihoods and very survival depended upon open access to the forests.

Poverty has pre-existed in Meghalaya before the ban came into force on 12 December 1996. But the ban on timber trade and logging seems to have increased the impoverishment experienced by the local forest users and this raises pertinent questions about their rights to livelihood. The research show that the logging ban affected not only the forest owners and contractors who had a stake in the business but thousands of farmers and woodcutters for whom the forests are the primary basis of their subsistence. The area of research in West Khasi Hills District was the worst affected because the sheer abundance of forest and rough terrain in large parts of the district not only inhibits agriculture, but also increases people's dependence on forest to sustain their livelihoods. Lastly, from the analyses of the SLAs, the research recommends two major actions for reducing poverty and enhancing livelihoods in Meghalaya:

Supporting the improvement and use of existing village institutions

The village institutions and individuals (such as the headman, dorbar or village council) should be supported with capacity building and training in order to better address the needs of the poor people, especially their access to resources. Government agencies operating from outside of the villages should also receive capacity building so that they would be more supportive and responsive in dealing with the needs of the poor people and their village institutions. There is a need for capacity building across all these levels to create bridges and fill the gaps between those who make decisions and those whose lives are affected by the decisions that are made.

Promoting agricultural growth

It is important to promote the agricultural growth needs by helping poor people gain access to new technology, better farming equipment, power and information which will contribute to the enhancement of their livelihood strategies. The goal is not to provide direct technical assistance but rather to ensure that the demand that develops as a result of the first action is provided freely and fairly to the poor people. There is a need for interventions on both the supply side as well as on the market institutions themselves. The research suggests that these actions would have a significant impact on reducing poverty and food insecurity in the villages. These actions are not difficult to implement. However, it must be recognised that these actions whether they are taken at the village, district, state or national level would succeed only if they were initiated by the poor people themselves.

Chapter VII

Conclusion

7.1 Forest Conservation and Poverty Alleviation

To revert to the issue of achieving forest conservation and poverty alleviation, it is clear from the literature that there is no simple solution to these twin challenges. There are no clear cut policies in place yet at the national, regional or international level to directly address the poverty issue faced by 90% of the 1.2 billion people around the world whose livelihoods depend on their use of forest resources. It is important for policy makers to recognise that these same vital forest resources also indirectly support the natural environment that nourishes agriculture and food supplies of nearly half of the population of the developing world. The fact is that there is still very less appreciation of linking these issues of poverty alleviation and conservation of forests at the governmental level. Hence, responses led by NGOs such as the IUCN advocating for a need to document projects that demonstrate the links that exist between forest conservation and poverty reduction are important and should be supported and replicated by others. While this is one way to bring these issues to the attention of key policy makers and economic planners, both within and outside the forest sector, so that forest conservation activities can be integrated into mainstream national-level poverty reduction processes, much more needs to be done.

Indeed some may argue that over the past two decades there have been many international and regional processes and agreements that have officially recognised the link between poverty and conservation. However, these processes have been regarded more as lip service by people at the grassroots since there has been no real meaningful action on the ground to position poverty alleviation at the centre of conservation. As discussed earlier, the main problem that has blocked the pro-poor conservation strategies is perhaps the misrepresentation of the poverty-conservation connection.

Some experts have suggested that one common myth is that poor people are forced into a downward spiral of forest and environmental degradation and human despair while another, more complacent, outlook suggests that forest and environmental degradation may be an inevitable, short-term consequence of people moving from poverty to prosperity but that forest and environmental damage will eventually be ameliorated once people pass a certain threshold of wealth. However, the findings of this research support IUCN's argument that neither explanation holds as a general truth for the fact that poverty cannot be alleviated unless additional assets are made available to poor people. This is more in line with how poor people organize themselves to create new livelihood strategies and adapt to their changing environment using the assets that they have available to them as justified in this thesis. From the case study analyses in the two clusters of Mairang and Riangdo, this research supports the SL literature and it has shown that with more institutional access to these assets, the poor people living in even the most remote parts of the world like in the villages that were studied in West Khasi Hills District will be able to avoid poverty and continue to improve their own livelihood strategies.

7.2 Logging Bans

The discussion about achieving forests conservation leads to the state-led logging bans approach that has been used by many countries in response to the rapid decline of their forest resources and sometimes in reaction to natural calamities believed to be exacerbated by forest loss. As discussed earlier in Chapter 2 several countries in Asia and the Pacific have imposed total or partial logging bans in an attempt to promote forest conservation. However, the logging ban as an approach for forest conservation and protection has caused both negative and positive implications on state forest policies of the concerned state and on its economic, environmental and social conditions. Based on research and fieldwork experience, this thesis supports the arguments made by experts who claim that most of the logging bans in Asia have proven to be ineffective (Macan-Markar, 2001).[81] This is exemplified from the literature reviews of selected countries, namely, Thailand, China, Philippines, Vietnam, Sri Lanka and New Zealand, who have used and are still using logging bans as a process to conserve their forest resources.

The FAO study also revealed that the experiences of countries in implementing logging bans and harvesting restrictions have been mixed, with successful achievement of objectives in a few areas but disappointment in many others. The report states that in all areas, the removal of natural forests from timber production has had significant mixed social, economic and environmental impacts. The forest products sector has suffered and neighbouring countries have experienced negative impacts as a result of both legal

[81] http://www.earthisland.org/borneo/news/articles/011112article.html see Marwaan Macan Markar, November 18th, 2001. From Malaysiakini <http://www.malaysiakini.com./>

and illegal trade, timber smuggling and market disruptions.

As discussed earlier, all of the case study presentations in the FAO report revealed the great complexity and variability of the issues related to implementing logging bans and other restrictions on timber harvesting. Even though most logging bans have been imposed to promote the concept of forest conservation, based on research and fieldwork experience in Meghalaya, India, this thesis supports the findings of the FAO report that most countries have conducted only a minimal degree of analysis on the social and economic impacts of logging bans prior to their imposition.

Logging ban's relationship with poverty

With regards to the relationship between logging bans and poverty, this research has shown that the Supreme Court logging ban in India has removed an important source of income for households in all the six villages that were studied in the two clusters resulting in a higher incidence of poverty. This has been discussed in detail in Chapters 4, 5 and 6. The impact of the Indian logging ban on poverty in the villages that were studied in West Khasi Hills District is similar to the cases of other countries in Asia where logging bans have been used as a way to conserve forest.

The experience from Thailand shows the link between the logging ban and poverty. From the social aspect, the ban has seriously affected employment due to the closure of sawmills, wood-product factories and provincial logging companies. Many employees lost their jobs and therefore their individual income is affected. Many of them have to

look for alternative employment and some have turned to illegal logging either on their own or as employees for others (Dudley, 1991).[82]

Based on the research, this thesis supports Dudley (1991) in his argument about the situation in Thailand. The results of the fieldwork done in Meghalaya, India, shows that the poor people who are living in the villages that were studied lost their livelihoods after the logging ban due to the closure of all the sawmills and wood-product factories in the West Khasi Hills District.

According to some experts,[83] the logging ban in Southwest China also has some negative economic and social impacts. The negative effects of the ban in the state sector include loss of fiscal revenues for local governments, rise of unemployment and difficulties for timber companies to survive. The negative effects of the ban in non-state sector include loss of farmer livelihoods, dysfunctional community economies and lack of availability of timber for local use by the poor people. Based on research and field experience in West Khasi Hills District, this thesis supports Maoying (2003) who argued that China's logging ban has excluded local people from their community forest thus affecting their livelihoods. A similar situation occurred in the villages that were studied after the logging ban came into force on 12 December 1996. As discussed in Chapters 4, 5 and 6, many households working in the timber industry lost their

[82] See also The Logging Ban in Thailand, Nigel Dudley, Earth Resources Research, London, 1991. A report of a field investigation into the impacts of the Thai government's logging ban and the resulting sharp increase in illegal logging.

[83] See newsletter of the CCICED Western China Forest Grasslands Task Force Issue 1: February 2001: http://www.harbour.sfu.ca/dlam/WorkingGroups/Forestry/newsletter1.html

livelihoods and this had a serious impact on all the local markets in the region that drive the rural economies.

In the case of the Philippines, the impact of the logging ban on poverty consists of displacement of forestry workers and lost of jobs resulting from the decline in the economies of areas dependent on commercial logging (de los Santos and Oliva, 1996; Ramirez and Laarman, 1993). It was reported that the logging ban has contributed to the decline in rural economies since schools and clinics have been forced to close down and road maintenance has been reduced thereby limiting poor people's access to these physical assets. This research supports this finding in the Philippines and justifies the link between the logging ban and poverty from the case study analyses in the two clusters of Mairang and Riangdo. There are very close similarities on how the poor people are affected by the logging ban in the villages that were studied when compared to what happened in the Philippines.

Alternatives to logging ban for the region

What kind of institutional arrangements, as an alternative, can be developed as solutions for better management of forest resources in a way that ensures a supportive environment for poor people to secure their livelihoods?

This research has found evidence that local institutional arrangements can conserve forest and mitigate poverty. As discussed in Chapters 4, 5 and 6, the villages that were

studied in both the clusters have been able to create their own local institutional arrangements to secure their livelihoods since the logging ban and also conserve their forest resources that are vital for their survival. The households in villages that received IFAD intervention are improving their livelihood strategies by organising themselves into SHGs and NaRM groups and then collectively invested their resources in livestock, fisheries and agricultural intensification activities while starting to conserve their remaining forest and sacred groves. The households in villages that received JFM intervention are diversifying their income by organising themselves into JFM Committees working on reforestation projects by planting new trees and conserving old ones under their control in the community owned lands. The findings of this research supports what Kaushal and Kala (2003) proposed, that the problem of regeneration of degraded forests on permanent basis and development of indigenous communities can be better tackled through SL approach of which Community Forest Management has to be an integral part.[84]

The households are also investing in agricultural intensification activities like ginger, rice and maize farming to avoid poverty. With the current logging ban being partially relaxed through the introduction of the working plan scheme, some farmers have an incentive to invest in and protect their remaining forests. The field study conducted also reveals that there is higher household participation in forest conservation programmes in the JFM villages where there is better training, education and leadership provided to the community. In the IFAD villages where households had better access to credit and

[84] See Joint Forest Management in India - Need for Sustainable Livelihood Approach: www.livelihoods.org/post/Docs/TAP_JFM.doc

agricultural extension services, there was evidence to show some improvement in agricultural yields.

It is evident that forest conservation in these villages can succeed if the living standards of the households are improved. For this to happen, the local people must be allowed to access and sustainably use the forest resources around them. Indeed, the empirical data from the two clusters of Mairang and Riangdo studied in West Khasi Hills District shows that different sections of the population have various practices that have different impacts on the forest.

From the empirical data collected, it appears that the households that were studied have a strong tradition of some sort of sustainable forestry in the past. But sadly this practice no longer exists and the concept of the 'fittest will survive' has become the mindset adopted by the indigenous people. There is evidence to show that the logging ban has halted this traditional system of managing forests.

The households that were interviewed from the two clusters indicated that they had lost confidence in the Government's policy-making processes and its policymakers especially during the time period between 1996 and 1999 when there was no intervention to support them. The logging ban itself can be seen more holistically in terms of how it affects local socio-economic realities over a period of time. However, the scenario improved over time as the households benefited from the assistance they

received with the arrival of the IFAD intervention in 1999 and the JFM intervention in 2005. This explains the notion that such things are historically rooted and trust comes and goes over time with each new debate providing different means.

There is evidence that suggests that the households stopped their old traditional management of forests and even started logging from their own clan protected sacred groves and forests since the ban was imposed on them in 1996. The households that were interviewed argued that since timber had zero value in the market and since they were left with no other alternative sources of livelihood to sustain themselves, they were left with the only option of cutting down all their remaining trees and bamboos and converting them to charcoal which sold for 1/10 of the price they would have got for the same amount of timber before the ban.

There is also evidence to show that after the ban the local government foresters have much more difficulties in managing forest resources as they would encounter logging and theft of trees even in state-owned forest lands.

Based on all the analyses and findings in the West Khasi Hills District, Meghalaya, this thesis states that the state-led logging bans are not good approaches for forest conservation.

7.3 Answers to Research Questions

This thesis started with the research question: *How has the logging ban affected household behaviour? What does this change tell us about theories of adaptation and sustainable livelihoods?*

Now we can answer this research question as follows:

From the empirical data collected from the six sample villages in the Mairang and Riangdo clusters, this research has found that the logging ban has significant impact on household behaviour since it came into effect in December 1996. As discussed earlier in Chapters 4, 5 and 6, most of these households were fully dependent on forest resources for their livelihoods, hence when the logging ban was imposed, it came like a big shock for them as they did not really understand the full implications of new forest policy that came from the Central Government in New Delhi under the direction of the Supreme Court of India. The whole region that was studied in West Khasi Hills District fell into a depression from 1996 to 1999 as rural economies disintegrated when their markets shrunk due to the logging ban.

From the structured interviews and household surveys that were conducted in all the six villages, it is clear that there were many changes in household behaviour over time as the local forest users adapted to their fast changing environment. This supports what Hussein & Nelson (1998) proposed as it shows that rural livelihood strategies in the villages were constructed in three main ways: agricultural intensification, income

diversification and migration, and the three also intersected as the households had a combination of all three strategies depending on the local institutional arrangements. As discussed in Chapter 6, there is evidence to suggest that the households used the different livelihood strategies or a combination of them as explained in the SL literature:

Agricultural intensification:

The empirical data collected from the households of the Mairang and Riangdo Clusters shows that after the logging ban many households were engaged in broom grass cultivation; maintaining kitchen gardens or fishponds and livestock rearing to improve their livelihoods. They also bought agricultural lands and planted rice, maize, ginger, fruit trees and vegetables. Some have invested in betel nut and betel leaf plantations. The findings of this research support the argument made by Carswell (2003) who also considers agricultural intensification as a strategy for achieving sustainable livelihoods.

Diversification of income:

The households that were surveyed alleged that they diversified their income to non-agricultural activities to gain additional income and avoid poverty. These include out of village income generating activities such as the men driving taxis or trucks; making handloom and handicrafts; gathering leaves and tree barks from the forests; young women working as maids in nearby towns; women knitting cane-made-seats and water carriers and also digging roads; and small children knitting bamboo products. Some

households in the villages in the Riangdo Clusters have also opened tea and food shops along roads used by coal truck drivers. The findings of this research supports the argument made by Eliss (1998, 1999a, 1999b, 2000) which considers income diversification as a poverty reduction strategy of poor rural households especially in developing countries.

Migration:

The households that were surveyed claimed that they have members from their households leave the village to find temporary and permanent work opportunities in towns and cities in other parts of the State. For example, men leave their households to work as coal miners in coal mines near the Bangladesh border and young girls are sent to work as maids in nearby towns. However, the households claim that they also combine migration with other strategies like income diversification and agricultural intensification. The findings of this research supports the argument made by McDowell and de Haan (2004) who state that migration should be seen as one of the sustainable livelihood strategies open to households and that it is often combined with other strategies.

The empirical data collected from the two clusters establishes the link between the theories of adaptation and sustainable livelihoods. The research supports what Davies and Hossain (1997) stated about the two types of livelihood adaptations which are the dynamic processes of constant changes to livelihoods which either enhances existing security and wealth or try to reduce vulnerability and poverty. The evidence from the

empirical data indicates that both positive and negative adaptations occurred in the villages that were studied in the two clusters on Mairang and Riangdo.

As far as negative adaptation is concerned, the literature states that it occurs out of necessity, tends to be irreversible, and frequently fails to contribute to a lasting reduction in vulnerability. It is also stated that this occurs when the poor are forced to adapt their livelihoods because they can no longer cope with short-term shocks and need to alter fundamentally the ways in which they subsist. From the evidence in the empirical data the research found that seasonal migration for working in coal pit mines is a form of negative adaptation in the case of West Khasi Hills District. In the case of the households from Lawsiej, it is clear that since there were no other livelihood opportunities left in the village, all the males aged 14 and above were forced to leave their homes and migrate to work in coal pit mines about 250 km away near the Bangladesh border. It was found that upon their returned to their households after 6 months, they develop all sorts of respiratory diseases due to the dangerous and risky working conditions in the coal pit mines as discussed earlier in Chapters 4 and 5.

There is evidence to show that many of these male coal miners die from lack of medicines and treatment when they return to their homes. It is of great concern to see this trend of male workforce migration as a coping strategy for these poor communities in order to survive. This clearly links to the theory of negative adaptation because the households can no longer cope with short-term shocks and therefore they need to alter fundamentally the ways in which they subsist. The adaptation of households in Lawsiej

occurred out of necessity and this migration of male workforce tends to be irreversible as most of them that return do so because they are sick and would die shortly. Loosing the heads of the households who are the primary workforce would certainly fail to contribute to a lasting reduction in vulnerability in the communities. The findings of this research support the concerns of D'Souza (1989); Campbell (1990); Jodha (1991) about the capacity of poor people within communities in risky environments to adapt their livelihoods to a variety of types of stress and to make do with very limited opportunities for diversifying sources of income.

As far as positive adaptation is concerned, the research shows that the households of Patharlyndan have diversified their income by investing in building tea stalls and food shops along the main road that links their village to the main town market in Riangdo. They have benefited from the additional income generated from the coal truck drivers who patronise those shops daily.

The theory defines that the relations people have with the state during the process of livelihood adaptation are differentiated by gender and other forms of social exclusion. It is stated that links between the state and the poor are variable, complex and highly differentiated in terms of the degree of access, reciprocity, exploitation and marginalisation both within communities and in community relations with the state. From the empirical data, the research shows that different local actors have different relationships with the state. The poor tribal and indigenous people in general have been seriously affected by the Supreme Court logging ban. However, the rich and powerful

timber merchants from outside the state have experience a relatively less impact from the ban. This scenario in West Khasi Hills District relates to the theory of social exclusion which may be the direct result of institutional rules. But it is stated that it may also arise from self-exclusion in recognition of the rules conspiring against profitable and sustainable participation. Although much of the literature does not refer directly to social exclusion, there is a frequent concern with 'marginal groups' and, latterly, a preoccupation with understanding who is normally socially excluded and the terms of that exclusion (Figueiredo, 1994 and Rodgers et al., 1995).

7.4 Conclusions for the Sustainable Livelihoods Debate

To sum up, from the earlier discussions and analyses in Chapters 4, 5 and 6, this thesis concludes that the Supreme Court logging ban as state-led approach had a negative impact on the social life and structure of the six villages that were studied and on their access to environmental and economic resources.

This proves the hypothesis that the ban has a 'negative impact' on the combined purposes of forest protection and livelihood strategies.

Ashley and Carney (1999) stated that a livelihood is environmentally sustainable when it maintains or enhances the local and global assets on which livelihoods depend. They also stated that a livelihood is socially sustainable if it can cope with and recover from stress and shocks and provide for future generations. To support this argument, after

analysing the impact of the logging ban on the livelihood strategies in the six villages that were studied, it is clear that the ban has contributed to the lost of livelihoods of the indigenous Khasi people. Therefore, like the experiences in China, Laos, Vietnam, Cambodia and Thailand, these logging bans have been seen as top-down mandatory legal instruments that have resulted in great confusion. Therefore, they are in direct conflict with the concepts and processes of ensuring and protecting the sustainable livelihoods for the poor. Still despite all these, the poor people have adopted new livelihood strategies after the logging ban and made these strategies work in different context and with different inputs as discussed in Chapters 4, 5 and 6.

7.5 Limitations of this Thesis and Potential for Future Research

The limitations of this MPhil thesis is that it cannot cover all the aspects of the SL debate due to time constraints and limited financial resources and therefore it cannot find the answers to all the questions. Other relevant questions that surfaced during the course of this research are: If this traditional or indigenous knowledge exists, why is this knowledge not being used? What are the conditions under which traditional or indigenous knowledge can enter into decision-making and management processes? How can one create the conditions under which this knowledge can be used?

There is tremendous potential for future research here and all these questions could be answered in a more comprehensive PhD thesis, which builds upon the work completed on this MPhil thesis.

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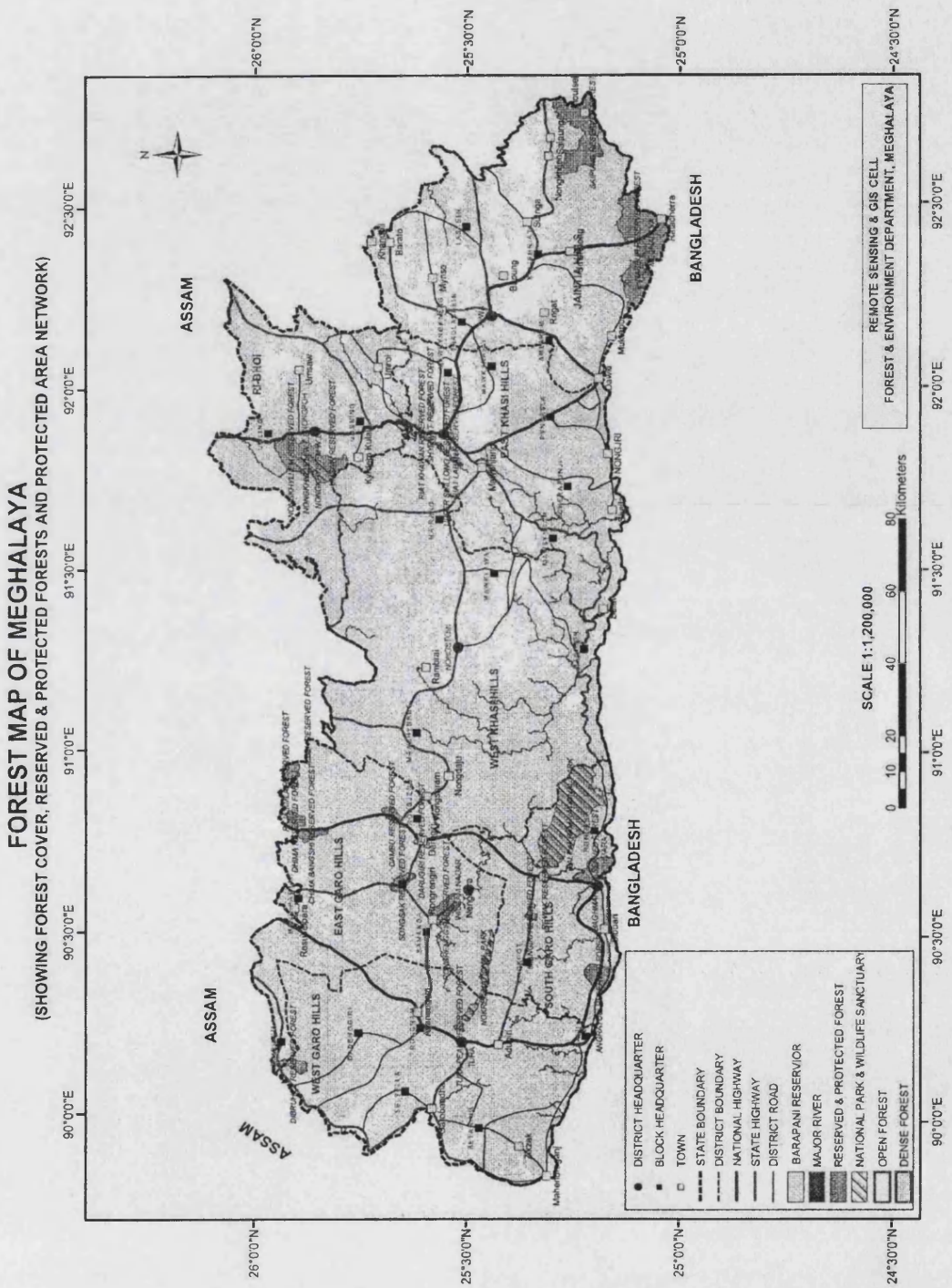
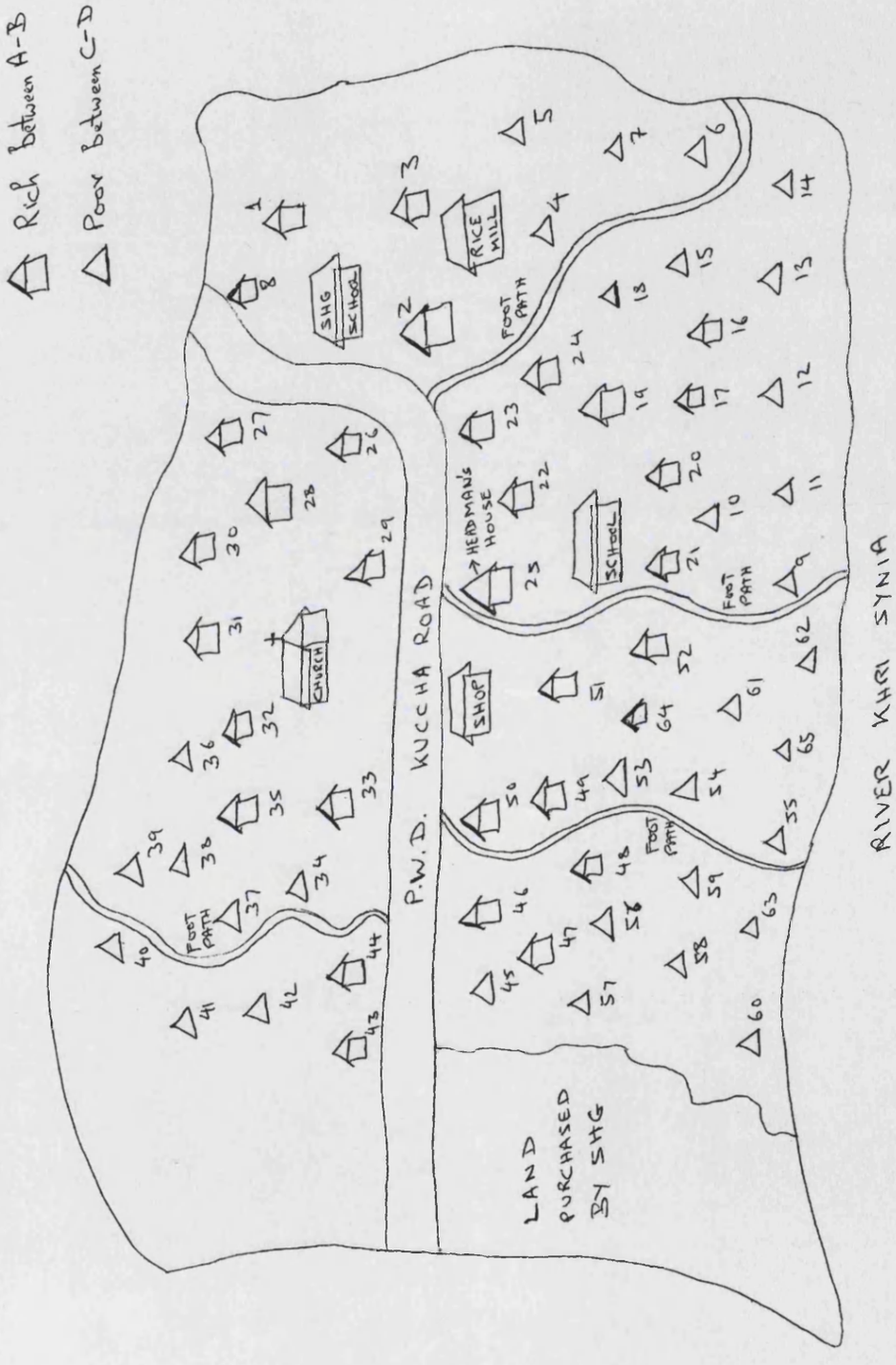
Appendix 1

Forest Map of Megahalaya (Forsest and Environment Department)



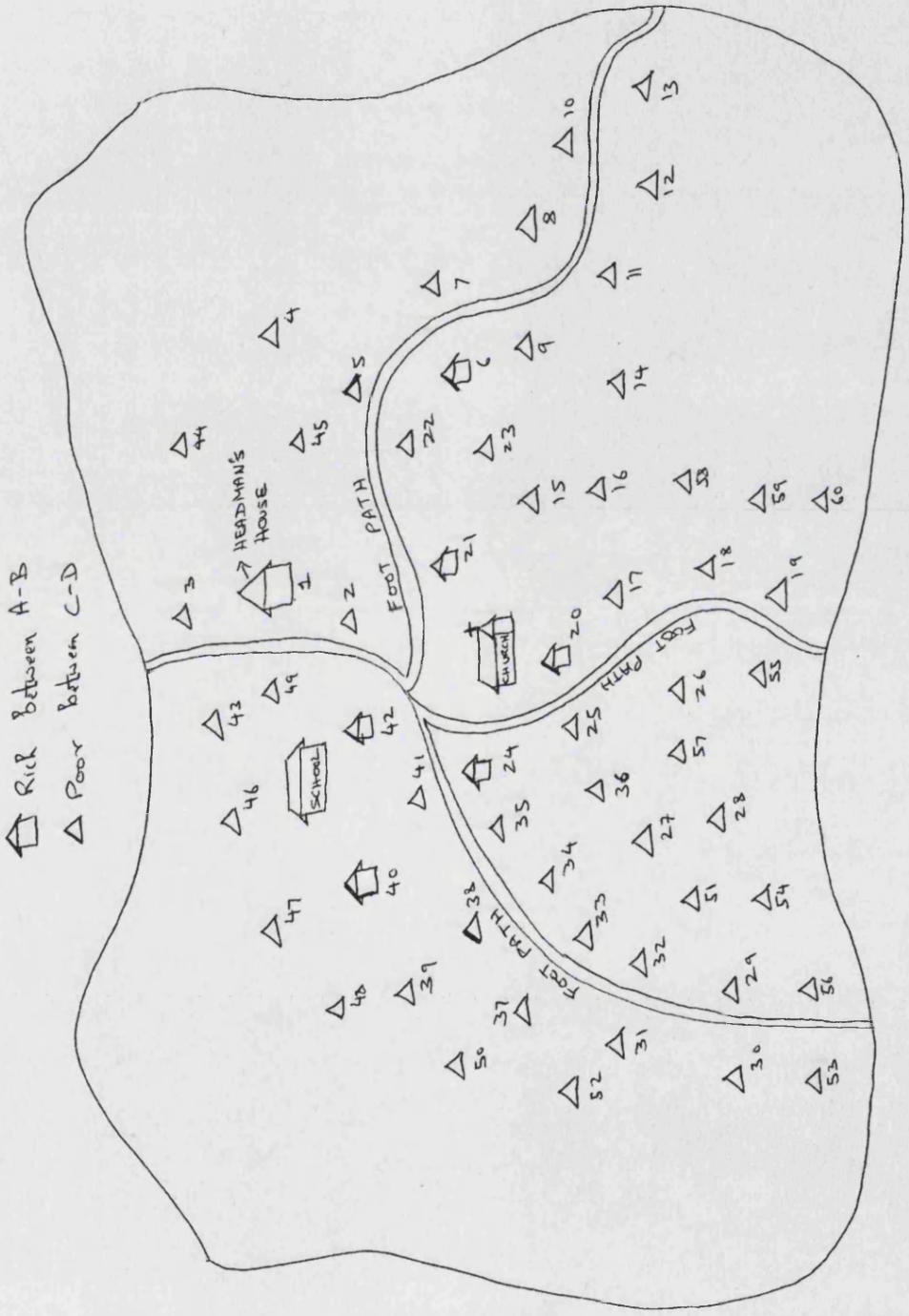
Appendix 2

Community Map of Nonglang Village (Fieldwork 2005)



Appendix 3

Community Map of Lawsiej Village (Fieldwork 2005)



Appendix 4

Questionnaire 1
Short Interview Questions

1 Details:

1.1 Date of Interview: _____
1.2 Name of Village: _____
1.3 Name of Headman/Sardar: _____
1.4 Population of Village: _____
1.5 Area of Village in Hectares: _____
1.6 Households of Village: _____
1.7 Forest Division: _____
1.8 IFAD Intervention: _____No_____Yes_____Since when
1.9 JFM Intervention: _____No_____Yes_____Since when
1.10 NaRM Group: _____No_____Yes_____Members
1.11 Self Help Group: _____No_____Yes_____How many
Name: _____Members_____
Name: _____Members_____
Name: _____Members_____

2 Personal Information of Respondent:

2.1 Name: _____
2.2 Sex: _____Male _____Female
2.3 Age: _____Years _____. Don't know
2.4 Religion: _____Protestant_____ Catholic_____Khasi
2.5 Tribe: _____
2.6 Education: _____
2.7 Marital Status: _____
2.8 Name of Head of Household: _____
2.9 Respondent him/herself: _____
2.10 Specify Relationship: _____

3 Household Size, Occupation, Income, and Farms:

3.1 No. of people in Household: _____Total
Male_____ Female_____
Adults_____ Children under 12_____
3.2 Household occupation:
Father: _____
Mother: _____
Children in school: _____No_____Yes_____How many
3.3 Household Income:
Per week: _____
Per month: _____
Other (specify): _____
3.4 Land ownership: _____Yes _____No
If yes, total holdings: _____
3.5 Nature of farming practices:
Self and family: _____
Mechanised: _____Yes _____No
Hired Labour (No.): _____

4 Income from other sources:

Type of Occupation	Monthly Income (Rs.)

5 Recording changes observed over time:

(a) in water availability:

(b) in land use (cultivable land/sales):

(c) in employment opportunity:

(d) in village infrastructure:

(e) migration (in/out) of people:

6 Measuring Per Ban and Post Ban Senario:

	Pre Ban	Post Ban
Household Income		
Assets		
Land ownership		
Livestock		
Nutrition		

7 Measuring the 3 Coping Strategies:

Agricultural intensification:_____Yes_____No

Diversification of income:_____Yes_____No

Migration of people:_____Yes_____No

8 Measuring the Five Capitals:

Natural Capital
Amount of firewood per month in kgs:_____
Amount of tree bark per month in kgs:_____
Amount of cane per month in kgs:_____
Amount of charcoal per month in kgs:_____
Amount of fish per month in kgs:_____
Amount of meat per month in kgs: _____
Amount of water per month in liters:_____
Amount of leaves per month in kgs:_____
Amount of wild fruits per month in kgs:_____
Amount of wild flowers/orchids per month in kgs:_____

Physical Capital
Amount of land owed in acres:_____
Amount of land rented in acres:_____
Amount of livestock in nos:_____
Amount of trucks/jeeps in nos:_____
Amount of machinery nos:_____
Amount of houses nos:_____
Amount of kitchen gardens nos:_____

Human Capital
Age of father in years:_____
Age of mother in years:_____
Level of education of father in class:_____
Level of education of mother in class:_____
Level of education of son in class:_____
Level of education of daughter in class:_____
Household member in government work:_____
Household member receiving pension:_____

Financial Capital
Household income per month in Rs._____
Household expenditure per month in Rs._____
Household savings per month in Rs._____
Household borrowings per month in Rs._____
Household outstanding depts in Rs._____
Food produced by household per month in Rs._____
Food consumed by household per month in Rs._____
Remittances from family members outside village in Rs._____

Social Capital
Church affiliation:_____
Political affiliation:_____
Member of dorbar committee:_____
Self help group:_____
Joint forest management committee:_____
Natural resourse management group:_____

Appendix 5

Questionnaire 2
Long Interview Questions

9 Personal Impressions:

9.1 Since the logging ban was enforced what types of changes have you found in the quantity, quality and availability of local forest resources and why do you think these changes (if any) have occurred?

_____

_____

9.2 Has the access to natural resources caused problems between locals/government due to the logging ban? If yes, specify how.

_____

_____

9.3 Does the time that you spend to collect natural resources affect your other household/farm activities? If yes, specify how.

_____

_____

10 Resource Extraction (Identifying responsible entities):

10.1 List any licenses through the Forest Department, any payments (Rs.) involved for the extraction of resources:

_____

_____

10.2 What do you think is the role of the forest department/government in the changing availability of forest resources?

_____

_____

10.3 Who do you think are the parties responsible for the decline of these resources? And how have they contributed to resource decline?

_____

_____

11 Strategies for conservation and management of resources:

11.1 Are there any efforts by the government or NGOs for conservation efforts in your village and surrounding areas? (e.g. Social Forestry, Joint Forest Management, Community Forestry)

_____

_____

11.2 What are some management options that you can think of:

(i) For local forests:

_____

_____

(ii) Identify persons/institutions who could be in charge of management, and why would you consider them better resource managers than what is observed presently?

_____

_____