ICIMOD

A REVIEW OF FOREST USER GROUPS: CASE STUDIES FROM EASTERN NEPAL

Dilli Ram Dahal

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Cover photograph: A View of Atmara Village of Handikharka FUG in Dhankuta District

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Foreword

This study is one in a series commissioned by ICIMOD to provide insights into community-managed forests. Continued access to forest resources is crucial for people living in mountainous regions, particularly those who have limited access to non-farm employment and markets.

The over-exploitation of limited resources and the sustainability or unsustainability of carrying capacities are matters of continual concern for all those who work for the betterment of living conditions in the Hindu Kush-Himalayas.

It is already becoming clear that the level of success of user group forestry varies, and that much depends upon the clear-cut identity of the groups, clearly specified user rights, and the bases on which these are determined. Conflict resolution would appear to be another important issue that needs serious consideration.

At what point any given user group becomes or became, institutionalised is another important perspective. Some groups have existed, whether formally or informally, for quite long periods of time and have survived all manner of reform-to emerge in the latter day as Forestry User Groups.

All this should indicate to us the overwhelming importance of studying the intimate relationship between forests and village dwellers throughout the mountainous regions.

What is becoming clearer as these studies emerge is that the indicators for successful management of a forest by a user group are not constant. Hence, ICIMOD's interest in looking for both the commonalities and the differences in User Group management.

ICIMOD organised these case studies on User Groups with a specific framework in mind; i.e., to identify key internal variables

(those within the community); and to identify key external variables (those outside the community). It is hoped that eventually ICIMOD will be able to record the different typologies and their practical implications for planning and management of natural resource use at different spatial levels.

This particular document looks at User Groups from three different areas of Nepal; Sankhuwasabha, Dhankuta, and Ilam, and appraises them in the context of success and failure with a practical perspective on what we can learn for the future in relation to problems and conflicts that are arising and which may arise. Obviously, a lot of teamwork has gone into putting this document together and I would like to thank Dr Dilli Ram Dahal and his team of researchers for the work they have put in. With the publication of this document a series of 4 studies on user group and local resource management systems is completed*. Dr Mahesh Banskota, Director of Programmes, ICIMOD was instrumental in organising and coordinating the studies and deserves a special mention here. Many thanks are due to the Ford Foundation (New Delhi) and Dr Jeffrey Campbell for the financial support to the studies and their publication.

ICIMOD is currently engaged in another 3-year programme supported by the Ford Foundation looking at all aspects of Participatory Natural Resource Management in several of its Member Countries. The questions raised in the present series provide salient issues to be addressed by this project. We expect a continuing close collaboration with the many organisations and individuals who are concerned about the well being of the villagers of the mountains and of their forests.

Egbert Pelinck
Director General

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* 1. User Group Forestry in the Far-western Region of Nepal
- *Ram B. Chhetri & Tulsi R. Pandey*

2. A Himalayan Enclave in Transition: A Study of Change in the Western Mountains of Nepal - *Bihari K. Shrestha*

3. Sustainable Management of Common Forest Resources: An Evaluation of Selected Forest User Groups in Western Nepal
- *M. Karki, J.B.S. Karki, & N. Karki*

4. A Review of Forest User Groups: Case Studies from Eastern Nepal
- *Dilli Ram Dahal*

Acknowledgements

This study is an assessment of the structure and functioning of forest user groups (FUGs) in the Districts of Dhankuta, Sankhuwasabha, and Ilam of the Eastern Hill Development Region of Nepal. It is part of a nation-wide review of FUGs undertaken by ICIMOD and the objective is to help identify mechanisms and processes that can promote more effective management and development of forest resources in Nepal.

I am grateful to Dr Mahesh Banskota, Director of Programmes, ICIMOD, who not only invited me to undertake this study but also meticulously went through the draft report and provided many valuable suggestions. The report has also benefitted from the comments of Dr Pitamber Sharma and Mr Balaram Bhatta of ICIMOD. My sincere thanks also go to my colleagues, Binod Pokharel, Surendra Mishra, Ganesh Ghimire, and Ram Ghimire, who not only accompanied me to collect data in the field but also helped in many ways while I was writing the report.

The DFOs and Rangers of Dhankuta, Sankhuwasabha, and Ilam also deserve thanks for helping us collect the data on various dimensions of forestry. I am also grateful to the users from the FUGs of Thulopakha Dhusune, Chyane Dashe *Danda*, and Sukrabare (Sankhuwasabha district); Handikharka and Thaprong FUGs (Dhankuta district); and Bhedichok and Kharkhare FUGs (Ilam district) who fully cooperated in answering our queries.

I am also greatly indebted to Mr Bhim Raj Suwal, Lecturer from the Central Department of Population Studies, who helped design many of the tables required for the text. Finally, I sincerely thank my colleague at CNAS, Mr. Ananda Shrestha, for providing initial editorial assistance.

I, however, bear the responsibility for the text as it stands.

Dilli Ram Dahal

Glossary of Nepali Words not Defined in the Text

jimawal	-	someone responsible for overseeing land on behalf of the owner.
panchayat	-	a political division of territory which prevailed during Nepal's previous one-party *Panchayat* System of government. The inhabitants of a village *panchayat* would vote representatives on to the village council. Council members were known as *pancha*.
pradhan pancha	-	chairman of the village *panchayat* committee.
VDC	-	Village Development Committee. After the success of the Movement for Democracy in 1990, and the establishment of a multi-party parliamentary system, the former *panchayat* areas became VDC areas.

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Chapter 1

INTRODUCTION

Objectives of the Study

The basic aim of this study is to provide a systematic overview of forest use and management in the Eastern Hill Region, with special reference to user groups.

The specific objectives of the study are as follows

i. To review the structure, function, and sustainability of forest user groups (FUGs) in three hill districts - Dhankuta, Sankhuwasabha, and Ilam of the Eastern Development Region (study area) - with special focus on (a) the socioeconomic characteristics of user groups; (b) identification of users and the formation process of user groups, particularly origin, history, and membership structure; and (c) institutional attributes of FUGs, particularly resource allocation rules, distribution of benefits by users, and institutional mechanisms for resolving conflicts, particularly the role of leadership at the local level.

ii. To explore the sociocultural and biophysical linkages of user groups with special reference to the following: (a) biomass characteristics of the user group forest resources and their adequacy in terms of user requirements; and (b) to what extent the FUG structure is affected by outside areas, institutions, and markets.

iii. To determine the extent of peoples' participation and collective action in the management of common pool resources, such as forests, in the study area and to observe whether user group forest management is sustainable or not.

iv. Finally, to assess the positive/negative determining factors for FUG development in the study areas.

The major area of emphasis will be the communal/non-communal forest resource management systems, particularly after the introduction of community forest user groups in the study areas. This research aims at understanding how some of the factors, such as altitude and climate, district headquarters, market, forest size and biodiversity, user group size, land tenure system, and leadership, are influencing (positive/negative) the management and functioning of FUGs.

This research was undertaken primarily for two reasons (i) the Eastern Hill Region of Nepal is under-represented in forestry research to date, i.e., there is an urgent need to carry out forestry research in this part of Nepal to examine how people use and manage local forest resources for their daily needs. This will help to develop a typology showing commonalities and variations among forest user groups in the Eastern Hill Region. (ii) Many studies (see literature review below) indicate that people's participation is a key solution to effective management of common property resources, e.g., forests. To what extent collective action, or people's participation, for managing forest resources is taking place in the Eastern Hill Region is another theme of the research.

The author believes that this type of research will provide in-depth knowledge of local forest use and management systems and will help to assess the positive/negative determining factors for FUG development in the area also.

Background: Some Basic Issues in Forestry

In recent years, deforestation has become one of the major environmental crises in Nepal. It is said to occur at an annual

rate of 4.1 per cent (1981-85), the highest among all countries surveyed (World Resources Institute 1991). Serious concern is being expressed by many donor agencies who are now extending their activities in community forestry programmes in Nepal to deal with this crisis (Nepal-UK Forestry Project Report 1991; Fisher et al. 1989; World Bank 1990). This crisis has led to the formulation of the Himalayan Environment Degradation (HED) theory, i.e., that population pressure in rural areas, insufficient landholdings, and poverty are linked to massive deforestation (Eckholm 1976; Ives 1987; HMG 1988; NPC 1992). Considering the urgent need to redress the deteriorating forest situation, in 1988 HMG prepared a Master Plan for the development of forestry programmes in Nepal. The main strategy was to promote people's participation in forest resource development and to develop community forest user groups (FUGs) as one of the important alternatives for the forestry sector in Nepal. The Community Forestry User Group Programme is supported strongly by many donor agencies such as the Nepal-UK Forestry Project, the Nepal-Australia Forestry Project, the World Bank, and others.

The Government has already set an ambitious target for forestry programmes in Nepal. It is stated in the Eighth Five-year Plan that, during the plan period (1992-97), 5,000 forest user groups (FUGs) will be formed throughout the kingdom and 2,52,000ha of forest land will be handed over to FUGs (NPC 1992: 225). Therefore, depending upon the availability of forests and their accessibility, the Government has already started distributing forests to the people by forming user groups. According to Haq (1993:71), 1,900 FUGs had been formed in the country by December 1992 and 77,000ha of forest had already been handed over to FUGs. This process is expanding rapidly, like supplying pills and condoms to eligible couples to accept family planning (whether the couple accepts it or not). The Government feels that this will not only tackle the problem of deforestation but will also relieve it from the burden of protecting the forests at large. As people are the real producers and consumers of forest resources, it is believed that they can be good forest managers also. Many experts today echo radical views that people's participation, or community participation, is the ultimate solution to forest management problems in Nepal (Campbell et al. 1987; Tamang et

al. 1992; Gilmour and Fisher 1991; Messerschmidt 1988; Molnar 1981; Fisher et al. 1989). But important research questions remain unanswered: how are **biophysical, sociocultural, economic,** and **institutional** characteristics shaping the effective functioning of forestry user groups (FUGs) in Nepal? To what extent is collective action or, to use the catch phrase, people's participation, taking place in the management of common pool resources, e.g., forests, in Nepal? In addition, as Fisher notes (1989:11), how does a highly centralised bureaucracy implement a decentralised programme such as community forestry? These are some of the questions which will be considered while analysing the structure and functioning of FUGs in the Eastern Hill Region of Nepal. Before developing a conceptual framework for research, it is necessary to review the pertinent literature on forestry in general and on indigenous forest resource management systems in particular.

Literature Review

The literature on forests in Nepal, concerning problems of deforestation and patterns of forest use and management, is fairly good. In general, the existing literature is of three types. The **first type** presents a scenario in which forests have been severely depleted over the years, therefore urgent protection and management are needed. This type of literature shows an imbalanced relationship between population growth and demands for forest products. The strain on land resources due to the increasing population pressure has contributed to accelerating rates of deforestation and erosion in the fragile mountain ecosystem (Eckholm 1976; NPC 1980; Macfarlane 1976; Banskota 1979; Bajracharya 1981; World Bank 1990). However, Ives and Messerli, in their remarkable book **Himalayan Dilemma** (1989), questioned the theory of Himalayan Degradation and outlined agendas for further research to show the cause and effect sequences prevailing in the Himalayas as a whole.

The **second type** of literature presents an indigenous system of forest resource management, with reference to a particular ethnic group or culture. Acharya (1989) discussed in great detail the *Jirel* (a Tibeto-Burman speaking people in Dolakha district) property arrangements that facilitated direct protection of forest

resources through symbolic technology, mutual care and sanctions, and mechanisms for redistribution.

Bajracharya (1981) presented a detailed case study of Pangma village in Sankhuwasabha district and concluded that food shortages have forced people to expand agricultural land at the cost of forest resources. While discussing the environmental perceptions of various groups living in the Arun Basin area of Eastern Nepal, Seeland (1993) argued that the Hindu social structure is more destructive in terms of forest use and management than the Tibeto-Burman social structure, e.g., the *Rai*. McDougal (1979) presented an example from the Hongu valley, a traditional *Rai* settlement area in Eastern Nepal where traditional culture is instrumental in preserving the local forest. Fox (1983) argued that overgrazing is undoubtedly the greatest cause of public land degradation in Nepal. He cited the example of Bhogteni village in Gorkha district, Central Nepal.

Molnar (1981) investigated the dynamics of traditional forest management systems in a number of communities in Nepal. She noted some key factors, such as leadership, available resources, relative economic inequality, benefit sharing, sanctions against users, incorporation of women in management, proximity to markets, and a good working relationship between forestry personnel and the community, and concluded that they contribute to the success or failure of traditional forest management systems.

Messerschmidt (1988) presented 10 case studies on community forestry from different communities and argued that indigenous natural forest resource management systems existed historically in the Nepal Himalayas.

The **third type** of literature deals with forest user groups, i.e., how forests are used and managed by the users themselves. Such literature is the latest addition to forestry research.

In the Community Forestry Management Programme in Nepal, the Nepal-Australia Forestry Project (NAFP) is one of the pioneers, not only in implementing the programme but also in publishing materials on community forestry to date. The NAFP began operating in Nepal on an informal basis in 1966 but started

its programme formally in Sindhupalchowk and Kabhrepalanchowk districts in 1978 (Fisher et al. 1989).

Ingles and Gilmour (1989) presented a case study of Dhulikhel *Ko Thuloban* and noted three types of user group in this community forest who were interested in different aspects of community participation.

Jackson (1989) described the evolution of a process for reorienting forestry field staff in Nepal so that community forestry programmes could be run more effectively than before. Fisher et al. (1989) examined the features of indigenous forest management systems in Sindhupalchowk and Kabhrepalanchowk districts. Fisher (1989),in one of his papers, argued that indigenous forest management organisations are usually of recent origin and are not traditional in the sense of being old. In another paper, Fisher (1990) noted the institutional incompatibility which is causing conflict between the Forest Department and the local forest institutions, thus affecting the smooth functioning of forest management systems. Both papers drew examples from Sindhupalchowk and Kabhrepalanchowk districts.

Gilmour and Fisher (1991) discussed the different aspects of community forestry management systems, indigenous and traditional, and analysed the social and political constraints in managing community forestry in Nepal.

Hobley (1990), in her Ph. D. dissertation, argued that, although the objective of social forestry programmes in Nepal is to help women and the poor, the class and patriarchal structures limit their participation and access to and control over social forestry projects. She cited examples from Tukucha and Banskhara *panchayat* of the NAFP project area.

Mahat et al., in their series of articles (1986a; 1986b; 1987a; 1987b; 1988), argued that deforestation in the middle hills of Nepal is not a recent phenomenon but has a long history. Citing evidence from historical sources and from Kabhrepalanchowk and Sindhupalchowk districts, they stated that the Government's land use policy and subsistence pattern of agriculture were the factors responsible for deforestation in Nepal over the years.

Tamang et al. (1992) collected a series of papers on indigenous management of agriculture and natural resources in Nepal and argued that these indigenous systems existed in Nepal historically, i.e., they reflect genuine people's participation and that they are cost effective also in the context of Nepal.

Chhetri and Pandey (1992) carried out eight detailed case studies of forest user groups in Baitadi and Achham districts in Far-Western Nepal. Shrestha (1993) carried out a detailed longitudinal case study of the *Thakuri* of Diyargaun, Jumla district, showing socioeconomic changes within the group, with reference to nature and the extent of use of natural resources, particularly forests. Campbell et al. (1987) discussed socioeconomic variables regarding forest use and management in 47 communities of Dhading, Kaski, Parbat, and Baglung districts. These studies suggest that people's active participation is a key solution to effective management of common property resources, particularly forests.

Karki et al. (1993) carried out detailed case studies of three villages in the *terai*, one each in Siraha, Saptari, and Udaypur districts, in connection with the Churia Forestry Development Project. The study aimed at understanding the issues regarding forest degradation and improved management through an understanding of the local use patterns and the peoples' resource needs. They noted that poverty is a major factor influencing forest use and management.

Furthermore, Karki et al. (1994) evaluated nine forest user groups in Palpa district and the Phewatal Watershed area and reached some interesting conclusions. The forest user groups in the Palpa area were more effective than those in the Phewatal area, because both internal and external forces play key roles in the effectiveness and functioning of FUGs. However, the Karki et al. (1994) study failed to note that even though both areas are culturally similar, FUGs in Palpa were more effective primarily because of SATA's involvement in the forestry project.

Except for some interesting studies by Bajracharya (1981), Seeland (1993), and McDougal (1979) on the Eastern Hill Region, only a few studies on ecology, environmental management, and community forestry can be added to the above list. Dunsmore

(1988) discussed at length the overall climate, geology, land use, and farming systems in the Arun Basin area (Dhankuta, Sankhuwasabha, and Bhojpur districts). Likewise, Shrestha (1989) noted the biological resources of the Arun Basin area and their diversity. Sizeland (1985) highlighted the community forestry programme conducted in Sankhuwasabha district between 1980-1985 and raised some technical and administrative issues. De Pater (1985), in her report, discussed community forestry programmes such as the *Panchayat* Forest and *Panchayat* Protected Forest programmes conducted in 1979-80 in Ilam district. Foreign aid agencies, such as the Koshi Hills Area Rural Development Project (KHARDEP), have been extending their activities to cover forestry programmes in the Eastern Region over the last one decade or so.

In 1977, KHARDEP started its programme to systematically uplift the socioeconomic conditions of the people of the Eastern Hill Region covering the four hill districts of Koshi Zone, Sankhuwasabha, Bhojpur, Dhankuta, and Terathum. But it is surprising to note that, in its total 13 sectoral programmes, very little emphasis was placed on forest use and management up to 1987. The Koshi Hills Community Forestry Programme (KHCF) began only in late 1987 and developed many subcomponents of the forestry programme in close coordination with the District Forest Offices in the Koshi Hills. The overall objective of the KHCF is to help the people of the Koshi hills to meet their basic requirements for tree products in a sustainable manner. Except for one Project Evaluation Report (Atkins' Land and Water Management 1991) and some Briefing Notes (1993), KHCF has little published material on forestry to date. But the Project Evaluation Report (1991:v) is interesting as it covers three areas under study: user group formation process, assessment of the costs and benefits of the projects, and recommendations for future activities.

A milestone in the field of environmental research on the Eastern Hill Region is the sixteen-volume report (1990) prepared by King Mahendra Trust for Nature Conservation (KMTNC 1991). This report addressed the long-term environmental and socioeconomic impacts that may result from the Arun III project. However, none of these volumes deal directly with community forest user groups or the indigenous forest resource management systems.

In August 1988, the Makalu-Barun Project was started in two hill districts of Eastern Nepal, Sankhuwasabha and Solukhumbu. The Makalu-Barun Project, in its various reports (Project Summary 1990), highlighted the various ethnic/caste groups, culture, economy, and the overall natural resource situation of the project area. But the report hardly shows an interrelationship between man and forest and how forests are managed locally. In fact, it was only in 1993 that two FUG programmes were launched in Tamkhu VDC and two more were started in late 1993. It is still not known how effective the forestry management component of the Makalu-Barun Project will be.

The above-mentioned documents, no doubt, provide excellent accounts of certain selected aspects of forestry in general, but they do not illustrate how different physical, sociocultural, economic, and institutional characteristics affect the process of organising various types of collective action for forestry management programmes in Nepal.

Conceptual Framework of Research

The general thrust of this research rests on two premises: (i) to what extent people participate collectively in the management of common pool resources such as forests? (ii) whether FUG programmes can sustain themselves in future or not considering the present socioeconomic structure of the users? Three major interrelated factors, biophysical, socioeconomic, and institutional, were altogether integrated to analyse the premises - people's participation, collective action, and sustainability.

The key indicators for each factor, the type of questions raised for research, and the conceptual framework of analysis are given in the chart on page 10.

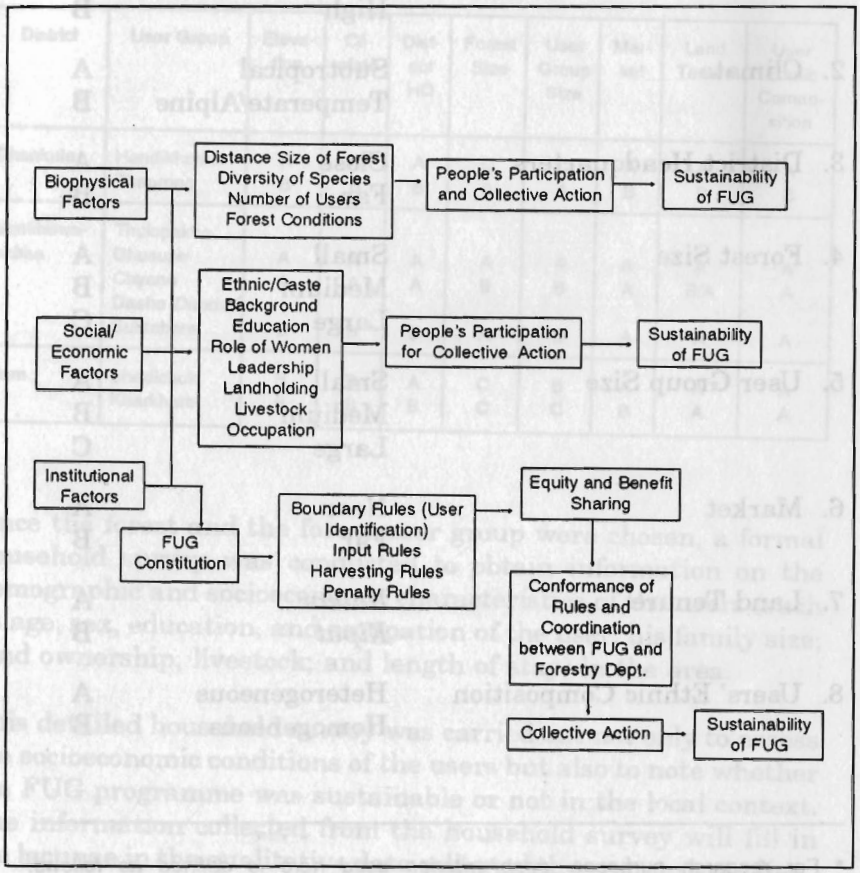
The conceptual framework of the study follows. Figure 1 illustrates the interrelationships among the different factors.

Methodology

Research was conducted in three hill districts of the Eastern Development Region - Dhankuta and Sankhuwasabha in the

Factors	Key Indicators	Basic Questions Raised
1. Biophysical	i. Size of forest; condition of forest; diversity of species; distance of forest; altitude; climate; and regenerative capacity ii. Size of user groups	i. How are size, condition, type of species, distance, altitude, and climate related to the formation and management of FUGs? ii. How do users identify themselves in relation to the forest size and diversity of species? iii. How are forest size and user group size related to each other?
2. Socio-economic	i. Ethnicity/Caste ii. Education iii. Role of Women iv. Leadership v. Systems of land tenure *kipat* and *raikar* vi. Landholdings vii. Livestock viii. Occupation	i. In what way is ethnicity/caste related to FUG formation? ii. How does ethnicity/caste or homogeneous/heterogeneous culture affect the management of FUGs? iii. How is education related to user group dynamics and effective leadership? iv. To what extent are women participating in FUGs? v. Whether incorporating more women in FUGs will enhance the effectiveness of management? vi. In what manner is the local leadership formed and what type of role does leadership play in the management of FUGs? vii. Do the different systems of land tenure play a role in forest management? viii. How are land ownership, livestock, and occupation reflected in equity and benefit sharing? ix. How does the relative economic inequality of users affect forest management?
3. Institutional	i. Local boundary rules ii. Local input rules iii. Local harvesting rules iv. Local penalty rules v. Rules followed/observed vi. Government's forest rules	i. What types of boundary, input, harvesting, and penalty rules are formed in local FUGs? ii. To what extent are these rules observed/followed by the users? iii. What type of conflicts are taking place in local FUGs? iv. How are these conflicts being resolved locally? v. What type of role does the district forest staff play in the formation of FUGs, resolution of local conflicts, and forest management?

Figure 1: Conceptual Framework of Research



Koshi Zone and Ilam in Mechi Zone. These districts were chosen primarily because (i) they represented the Eastern Hills' ecology as a whole (elevation, climate, biodiversity, and accessibility); (ii) they represented the various cultural groups; and (iii) they represented both the *kipat* (communal) and *raikar* (state landlordism or non-communal system) systems of land tenure.

The following criteria with codes A, B, and C were used while selecting the user groups. Each criterion was weighed equally and the effectiveness of the criteria were measured as highly effective (1), effective (2), and less effective (3) (see details in Chapter IV).

1. Elevation	Low/Medium	A
	High	B
2. Climate	Subtropical	A
	Temperate/Alpine	B
3. District Headquarters	Close	A
	Far	B
4. Forest Size	Small	A
	Medium	B
	Large	C
5. User Group Size	Small	A
	Medium	B
	Large	C
6. Market	Near	A
	Far	B
7. Land Tenure	*Raikar*	A
	Kipat	B
8. Users' Ethnic Composition	Heterogeneous	A
	Homogeneous	B

* For research purposes, each criterion used here is defined as follows: Elevation: low = less than 1,219m and high = above 1,219m; District Headquarters: close = within 10km walking distance from a UG and Far = more than 10km walking distance from a UG; Forest Size: small = less than 10 hectares, medium = 10-50 hectares, and large = more than 50 hectares; User Group Size: small = less than 50 user households; Medium = 51-100 user households, and large = more than 100 user households, Market: near = within 10km walking distance from a UG and far = more than 10km walking distance from a UG; Users' Ethnic Composition: Heterogeneous = more than one cultural group and Homogeneous = single cultural group.

Taking the above criteria into account, the following user groups were chosen in the three districts in consultation with the district forest officials (Table 1.1).

Table 1.1: Selection Criteria for User Groups

District	User Group	Elevation	Climate	District HQ	Forest Size	User Group Size	Market	Land Tenure	User Ethnic Composition
Dhankuta	Handikharka	A	A	A	C	C	A	A	A
	Thaprong	B	B	B	A	A	B	B	B
Sankhuwasabha	Thulopakha								
	Dhusune	A	A	A	A	A	A	A	A
	Chyane	A	A	A	B	B	A	B/A	A
	Dashe *Danda*								
	Sukrabare	B	B	B	A	B	A	A	A
Ilam	Bhedichok	B	B	A	C	B	A	A	A
	Kharkhare	B	B	B	C	C	B	A	A

Once the forest and the forest user group were chosen, a formal household survey was conducted to obtain information on the demographic and socioeconomic characteristics of the users (such as age, sex, education, and occupation of the user; his family size; land ownership; livestock; and length of stay) in the area.

This detailed household survey was carried out not only to assess the socioeconomic conditions of the users but also to note whether the FUG programme was sustainable or not in the local context. The information collected from the household survey will fill in the lacunae in the qualitative data collected through case studies.

The sample size varied from 65 per cent to 100 per cent, depending on the heterogeneity of the user group. The sample size increases as the heterogeneity of the group increases. Interviews were conducted with groups of men and women as well as with individuals, depending on the situation.

Key informant interviews provided information on the history and use of forests over the years. Detailed case studies of some of the users were deliberately collected to understand conflicting cases of use, management, and resolution. In all cases, the district forest officials were interviewed in order to understand the problems of forest management as a whole.

An anthropologist/sociologist, a Ranger, and a forest guard constituted a single research team. The breakdown of the time schedule of different researchers is as follows.

The principal investigator visited each FUG site and spent eight to 12 days in each district, depending upon the accessibility, forest size, and user group. The Ranger and the forest guard spent two to four days at each FUG forest site collecting biomass data. The junior anthropologist/sociologist spent one month in each district collecting data on the socioeconomic characteristics, forest use, and management practices of the users.

Chapter 2

FOREST USER MANAGEMENT: A HISTORICAL PERSPECTIVE

Forest Management in Historical Perspective

A broad historical sequence of forest resource use in the Eastern Hill Region of Nepal is given below.

In Nepal, although land and forest resources were managed in the form of *kipat* (communal landownership), *raikar* (state landlordism), *guthi* (lands used for temples and charity), and *birta* (State land grants to priests, military personnel, and the nobility) (Regmi 1963) before 1964, there existed primarily *kipat* and *raikar* systems of land tenure in the Eastern Hill Region. Whether it was the *kipat* system or the *raikar*, both land and forest resources were held under the control of *subba*, *jimawal*, *pagari*, and *thari*, who were not only the land revenue collectors of the Government but also used to maintain law and order at the local level. They were responsible for both the sustainable use of the resource in question as well as its allocation.

Although the *kipat* system was abolished in 1968, it remained an important social institution for preserving the cultural and natural environment in the Eastern Hill Region. *Kipat* was a communal system of land tenure, followed basically by the *Limbu* and *Rai* of Eastern Nepal. *Kipat* included all cultivated lands, as well as uncultivated forests, streams, and rivers, within its boundaries. A *kipat* owner derived rights over *kipat* land by virtue of his membership in a particular lineage of that ethnic group and its location in a particular area. *Kipat* constituted about four per cent of the total arable land in Nepal and almost one-fourth

of the total arable land in the Eastern Hill Region. In Ilam district alone, 39.7 per cent of the total irrigated land was under the *kipat* system up to 1964-65 (Caplan 1970).

In the *kipat* area, the *subba* had absolute power over the land and forest resources under his jurisdiction. A *kipat* holder converting 60 *muri* of *kipat khet** (one *muri* of land=1,369 sq.ft.) into *raikar* and paying a fee of fifty rupees to the Government had had conferred upon him the minor title of *subba* (Regmi 1963). In the Eastern Hill Region, only a *Limbu* or *Rai* could become a *subba* since only they had *kipat* land at their disposal. A *subba* was also given the *nisan* (sword), *nagara* (drum), and *lalmohar* (royal decree) in his name. Once the *subba* was appointed, he would remain in the post until his death, unless he misappropriated land revenue. To facilitate the job, he was assisted by a *pagari* (either a *Rai* or a *Limbu*) or *thari* (*Brahmin*, *Chhetri*, or *Newar*) who was also appointed by the Government after paying 30 *muri* of *khet* and a fee of Rs 50. The villagers had access to forest products, such as timber or poles, for domestic purposes with the formal approval of the *subba* and *thari*. The relationship was symbolised in the annual payment of tribute made by non-*Limbu* and non-*Rai* dependents to their *thari* and by the latter to their *Limbu* headman or *subba*. All the dependents (*raiti*) were obliged to bring gifts such as sugar, curd, and fruits during festivals, such as *Dasain*, to both the *thari* and *subba*. They were also expected to provide five days of unpaid labour annually either to the *thari* or *Limbu subba*, or any kind of physical labour when asked for. The *thari* collected taxes from their dependents on their landholdings and passed these to the *Limbu subba* for submission to the Land Revenue Office (Caplan 1972). But the *kipatiya* had to pay only Rs 6.50 per household, irrespective of the landholding size or the forest area. Both *subba* and *thari* used to protect the forests themselves, either by sending their own household members occasionally to watch the forest or by hiring a *chowkidar* (forest watcher) on an annual contract basis, paying a fixed amount of grain.

In brief, this traditional forest management system helped to protect forest resources in two ways. Firstly, as the forest was

* *Khet* = irrigated rice land

constantly watched under the jurisdiction of the *subba* and *thari*, nobody was allowed to cut timber or use other forest products indiscriminantly. Secondly, both *subba* and *thari* kept land records of all their *raiti*, making *raiti* virtually dependent on them for everything. Nobody was allowed to do anything without consensus and every villager watched another closely to check the use of natural resources. This process worked as a safety valve to protect the forest in the area. This traditional forest management system was strengthened because of other larger socioeconomic processes as well.

i. Up to the first quarter of the 20th century, the population pressure was low, particularly in the hill and mountain regions of Nepal. When population pressure was felt, many people migrated to Assam, Meghalaya, or Manipur to earn cash or to the *terai* for a better livelihood (Caplan 1970 and Dahal 1983). In fact, permanent migration played an important role in preserving forests in the Eastern Hill Region. Because of the bureaucratic landlordism which persisted throughout Nepal's history, there was unequal distribution of land among the people; a few people were controlling a large portion of the land resources and most of the people had to survive on the basis of the little cultivable land available to them. As the forests were controlled by the *subba* and *thari*, it was not possible to expand agricultural land by clearing forests in the hills. Up to 1986, 47 per cent, 36.6 per cent, and 34 per cent of the forests were still preserved in Ilam, Sankhuwasabha, and Dhankuta districts respectively (LRMP 1986). This suggests that the proportion of forest land could be much higher in these districts before 1960 (cf. Bajracharya 1981). As most of the land was under forest cover, the local people had no choice except to migrate permanently elsewhere.

ii. The introduction of the Private Forest Nationalisation Act in 1957 brought all forests under the control of the Government. Many scholars (Bajracharya 1983; Molnar 1981; Haq 1993; Hobley 1989; Gilmore and Fisher 1991)

argue that Nepal's major forest tracts were felled overnight to establish landownership after the enforcement of this Act. On the contrary, Mahat et al. in their series of papers (1986a; 1986b; 1987a;1987b) note that deforestation in the middle hills of Nepal is not a recent phenomenon but has a long history. Our field data on the Eastern Hill Region, particularly the FUG study areas (see Chapter III), suggest that mass deforestation occurred only after 1960, a relatively recent phenomenon, and that the 1957 Forest Act alone was not responsible for this disastrous situation.

In the Eastern Hill Region, the process of deforestation was accelerated after 1960 because of many socioeconomic and political factors. Firstly, when population pressure was felt in this region, and consequently the pressure on subsistence as well as on natural resources, such as forests, increased, many people expanded agricultural land at the cost of forests (Bajracharya 1981 and Caplan 1970). Much of this expansion occurred only after 1960 because after 1957 the forest management system was weak. Secondly, the relative inaccessibility of the Eastern Hill Region up to 1960 provided less opportunity for timber extraction on a large, commercial scale. The development of market centres and road construction gradually increased in this region only after the 1970s, thereby more forest products were required, not only for domestic consumption but also for commercial purposes. Thirdly, forest data on the FUG study areas (see Chapter III for details) demonstrate that the political turmoil during the 1980 referendum, the democratic movement in 1990, the big earthquake in 1988, the construction of the Dharan-Dhankuta highway after 1970, and malpractices of loggers and forestry staff led to massive destruction of forests in this region. Finally, when the users of FUGs in the study areas were asked what they knew about the 1957 Forest Act, virtually all users said they knew very little about it.

In order to reverse this dangerous trend of deforestation, the Community Forestry Programme was recognised officially for the first time in Nepal following the 1978 promulgation of the

Panchayat Forest (PF) and *Panchayat* Protected Forest (PPF). These rules established a framework whereby each *panchayat* could be given official control over the local resources, provided they planted, maintained, and protected forests and implemented a scientific forest management plan prepared by the Forest Division Office (Manandhar 1980). According to Sizelar (1985:15) the *Panchayat* Protected Forest (PPF) and Panchayat Forest (PF) programmes were started in Sankhuwasabha district in 1981/82. Initially, there were 34.6ha of PF and 110ha of PPF, and the area was expanded to 239.8ha of PF and 398ha of PPF by 1984/85. Fifteen *panchayat* areas participated in both PPF and PF programmes. Likewise, de Pater (1985:5) noted that community forestry in Ilam district was started in 1979/80 and that by 1985 it had 73 PF (1,261.1ha) and 54 PPF sites (2,268ha) In Dhankuta, the picture is less clear. When the KHARDEP phase two programme was formulated in 1979, it covered land use, including forest management programmes.

However, this Act also could not function effectively as there was little participation at the local level and the forest rules were simply confined to the file of the *pradhan pancha.* The community forestry programme was limited to afforesting a few patches of barren land here and there. The sensitivity of the village people and their forest product requirements were hardly considered by the village leadership.

A Review of Forest User Group Formation in Sankhuwasabha, Dhankuta, and Ilam Districts

According to the KHDP report (1993:6), only 124 FUGs had been formed in the Koshi Hills (Bhojpur, Dhankuta, Sankhuwasabha and Terathum) by December 1992 but, by November 1993, Dhankuta alone had 91 FUGs and Sankhuwasabha had 44, a very fast growth rate. In the Mechi Hills (Ilam, Panchthar, and Taplejung), the total number of FUGs was still less than 40 by November 1993. Table 2.1 shows the rate of FUG formation in the project area over the last five years. The number of community forest user groups by VDC is given in Table 2.2.

Table 2.1: Formation of User Groups by District (1988-1994)

	District					
Year	Sankhuwasabha	%	Dhankuta	%	Ilam	%
1988-1989	0		1	1.1	0	
1989-1990	0		6	6.6	0	
1990-1991	2	4.6	9	9.9	0	
1991-1992	10	22.7	9	9.9	1	6.7
1992-1993	32	72.7	43	47.2	12	80.0
1993-1994	-		23	25.3	2	13.3
Total	44	100.0	91	100.0	15	100.0

Source: District Forest Office 1993

Table 2.2: Number of FUGs in the Districts by VDC, 1993

Sankhuwasabha		Dhankuta		Ilam	
Name of VDC	No. of FUGs	Name of VDC	No. of FUGs	Name of VCD	No. of FUGs
1. Manakamana	9 (20.5)	1. Dhankuta	12 (13.2)	1. Ilam Muni	2 (13.3)
2. Symbun	5 (11.4)	2. Parawidin	7 (7.7)	2. Barbote	3 (20.0)
3. Pangma	3 (6.8)	3. Rajarani	6 (6.6)	3. Maipokhari	2 (13.3)
4. Chainpur	3 (6.8)	4. Dandabazaar	5 (5.5)	4. Maimajuwa	2 (13.3)
5. Malta	3 (6.8)	5. Murti Dhunga	5 (5.5)	5. Nayabazaar	1 (6.7)
6. Barhabise	3 (6.8)	6. Falate	4 (4.4)	6. Jogmai	1 (6.7)
7. Sibhapokhari	3 (6.80)	7. Belhara	4 (4.4)	7. Santi *Danda*	1 (6.70)
8. Tamku	3 (6.80)	8. Bhedetar	4 (4.4)	8. Sulubung	1 (6.70)
9. Wana	3 (6.80)	9. Maunabudhuk	4 (4.4)	9. Sri Antu	1 (6.7)
10. Tamaphok	2 (4.5)	10. Budhabare	4 (4.4)	10. Gorkhe	1 (6.7)
11. Kharang	1 (2.3)	11. Ankhisalla	3 (3.3)		
12. Pathibhara	1 (2.3)	12. Mahabharat	3 (3.3)		
13. Madi Rambeni	1 (2.3)	13. Tankhuwa	3 (3.3)		
14. Dhupu	1 (2.3)	14. Pakhribas	3 (3.3)		
15. Hatiya	1 (2.3)	15. Chanuwa	3 (3.3)		
16. Num	1 (2.3)	16. Sanne	2 (2.1)		
17. Bala	1 (2.3)	17. Hatikharka	2 (2.1)		
		18. Ghorlekharka	2 (2.1)		
		19. Chintang	2 (2.1)		
		20. Khuwaphok	2 (2.1)		
		21. Budhi Morang	2 (2.1)		
		22. Kurle Tinupa	2 (2.1)		
		23. Leguwa	1 (1.1)		
		24. Jitpur	1 (1.1)		
		25. Muga	1 (1.1)		
		26. Bhirgaun	1 (1.1)		
		27. Teliya	1 (1.1)		
		28. Aahale	1 (1.1)		
Total	44 (100.0)		91 (100.0)		15 (100.0)

Note: Numbers in parentheses refer to percentage.
Source: District Forest Office 1993

The size of community forests by district is given in Table 2.3.

Table 2.3: Size of Community Forests by District, 1993

Size of Forest	District		
	Sankhuwasabha*	Dhankuta*	Ilam*
Less than 5ha	1 (2.3)	4 (4.8)	0
5.1 to 10ha	4 (9.3)	12 (14.3)	1 (6.7)
10.1 to 30ha	16 (37.2)	36 (42.8)	2 (13.3)
30.1 and above ha	22 (51.2)	32 (38.1)	10 (80.0)
Total	43 (100.0)	84 (100.0)	13 (100.0)

* Areas of one forest in Sankhuwasabha, seven forests in Dhankuta, and two forests in Ilam are not available.

Source: District Forest Office 1993.

The proportions of district forest areas (in ha) handed over to user groups are given in Table 2.4.

Table 2.4: Proportions of District Forest Areas (in hectares) Handed Over to User Groups, 1993

District	District Forest Area*	Total FUG Forest Area	Total FUGs	Average Forest Aea by FUG	% Forest Area Handed Over to FUG (in Sept. 1993)
Sankhuwasabha	126,541	2,346	43	54.53	1.9
Dhankuta	30,638	2,327	84	27.70	7.6
Ilam	80,676	1,964	13	151.10	2.4

* LRMP 1986

Source: LRMP 1986 and DFO 1993.

The FUG formation data have some interesting features.

1. After 1991, the rate of FUG formation increased rapidly. Most of these FUGs were formed haphazardly just to meet the target set from above. Most of the FUGs were formed without understanding the forest size, local economy, and culture.

2. In areas where population pressure was high (see Chapter 3), more FUGs were formed. The FUG formation rate was found to be highest within the vicinity of district headquarters where the population pressure was high. For example, Dhankuta municipality area has 12 FUGs (13.2%), Manakamana (district headquarters of Sankhuwasabha) has nine (20.5%), and Ilam has two (13.3%). Although Ilam municipality has only two FUGs, Barbote and Maipokhari are close to Ilam (within a distance of 10km), thus adding five more and numbering seven FUGs altogether or 46.6 per cent of the total FUGs up to 1993. Except for Khandbari, district headquarters such as Dhankuta and Ilam are urban areas also.

3. In areas where government project activities in the agricultural and forest sectors were high, the FUG formation rate was also high. For example, within the KHDP area, the Nepal-UK Forestry Project is located in Dhankuta; the KHDP started its 13 sectoral development programmes, focussing more on Dhankuta than on other districts in the Koshi Hills. As a result, Dhankuta has the highest rate of FUG formation, followed by Sankhuwasabha. Ilam district has the least number of FUGs compared to the other two districts of the project area. Because Ilam district has the highest percentage of forest land than the other districts, even today, the people have not perceived the need for more careful forest management so far.

4. In addition to district headquarters, there were more FUGs in areas where the district forest staff had easy access to motorable roads. In other words, accessibility is one of the main criterion for forming FUGs. In many remote areas far from the district headquarters, there were no FUGs, whether there was pressure on the forest resources or not.

In brief, three major factors, population pressure, proximity to district headquarters, and accessibility (motorable roads), play important roles in FUG formation in the Eastern Hill Region.

In terms of forest size, Ilam has the largest forest size per user group (more than 150ha). In Ilam, it is still not clear how many FUGs are going to be formed to share one forest as many people are still not serious about becoming users. In Dhankuta, since the population pressure is high, more FUGs have been formed in a short period of time. However, forest data indicate that only a fraction of the district's forest is covered by the existing user groups; many more FUGs can be formed within the district without much pressure on forest resources.

Chapter 3

CASE STUDIES OF FOREST USER GROUPS IN SANKHUWASABHA, DHANKUTA, AND ILAM DISTRICTS

The Project Area

Although the Eastern Development Region consists of three zones (Sagarmatha, Koshi, and Mechi) and 16 districts (10 districts in the hills and six districts in the *terai*), only two zones, Koshi and Mechi, were chosen for the purpose of research. These two zones actually fall within the traditional *Limbuwan* area, or the 'land of the *Limbu*'. The *Limbuwan* area is bounded by the Arun River in the west and the Mechi River in the east and consists of six hill districts — Terathum, Dhankuta, and Sankhuwasabha, in Koshi Zone, and Ilam, Panchthar, and Taplejung, in Mechi Zone. These districts cover an 11,640sq.km. area, or approximately eight per cent of the present kingdom of Nepal. The total population of these districts as per the 1991 census is 915,632, or five per cent of the total population.

The materials for this case study were collected in three hill districts of Eastern Nepal - Sankhuwasabha, Dhankuta, and Ilam. In short, they are referred to in this report as the project area (maps 1, 2, and 3).

Physical Characteristics

Detailed land use data on the Eastern Development Region and the project area, based on the LRMP (1986), are given in Table 3.1.

Table 3.1: Land Use Areas in Ilam, Dhankuta, and Sankhuwasabha Districts and the Eastern Development Region (EDR), 1986 (in hectares)

Land Category	Ilam	Dhankuta	Sankhuwa-sabha	EDR
Cultivated Land	44754	33105	32136	838421
	(26.0)	(36.8)	(9.3)	(29.4)
Non-cultivated Inclusions	22803	13711	17662	236711
	(13.3)	(15.2)	(5.0)	(8.3)
Grassland	3398	4067	39256	178080
	(2.0)	(4.5)	(11.4)	(6.2)
Forest Land	80676	30638	126541	948825
	(47.0)	(34.0)	(36.6)	(33.3)
Shrubland	05242	5745	54039	91941
	(8.9)	(6.4)	(15.6)	(6.70)
Other Lands	4852	2754	76425	460148
	(2.0)	(3.1)	(22.1)	(16.1)
Total	171,725	90,020	345,729	2,854,126

Source: LRMP 1986
Annex 1, 1986 pp 380-474 Kenting Earth Sciences Limited.

Out of the total land area (2,854,126ha) in the Eastern Development Region, 33.2 per cent is forest land; followed by cultivated land (29.4%); grassland (6.2%); shrubland (6.7%); non-cultivated inclusions (8.3%); and 16.1 per cent of other land categories. If the different development regions of Nepal are compared in terms of the forest situation, the Eastern Development Region is slightly better than the Western Development Region (only 31.5%) (LRMP 1986). Nevertheless, the percentage of cultivated land is highest in the Eastern Development Region (29.4%) than in the other development regions of Nepal (LRMP 1986). In the project area, Ilam has the highest percentage of forest land (47%), followed by Sankhuwasabha (36.6%) and Dhankuta (34%). In the Eastern Development Region as a whole, Ilam district has the second highest percentage of forest land, just next to Udaypur district (64.3%) (LRMP 1986). On the other hand, the percentage of agricultural land is quite high in Dhankuta (36.8%) and lowest in Sankhuwasabha (9.3%). Sankhuwasabha district is also largely covered by rocks (15.8%) and ice (5.8%). Overall, landslide areas are minimal in all three districts, less than 0.2 per cent of the total land (LRMP 1986).

The type of forest cover, crown density, and maturity class of trees in the project area are given in Tables 3.2 and 3.3.

Table 3.2: Type and Maturity Class of Forest by District, 1986 (in hectares)

Forest Cover*	Area	Maturity Classes**	Area	Forest Cover	Area	Matu-rity Class	Area	Forest Cover	Area	Matu-rity Class	Area
H	24,828.2 (81.0)	I	30,548.5 (99.7)	H	100,409.0 (79.3)	I	92,292.0 (72.9)	H	79,251.3 (98.2)	I	74,970.7 (92.9)
C	601.9 (2.0)	M	89.4 (0.3)	C	6,454.3 (5.1)	M	34,249.2 (27.1)	M	1,124.5 (1.8)	M	5,705.1 (7.1)
M	5,207.8 (17.0)	S		M	19,677.7 (15.6)						

* H = Hardwood, 75% or more of tree species are hardwood
C = Coniferous, 75% or more of tree species are coniferous
M = All other combinations of tree species
S = Shrub

** I = Immature or small timber size
M = Mature to over mature

Note: Numbers in parentheses refer to percentage

Source: LRMP 1986

Some interesting features can be observed in this table.

i. Hardwood species predominate in all three districts: 81.0 per cent in Dhankuta, 79.3 per cent in Sankhuwasabha, and 98.2 per cent in Ilam.

ii. The percentage of immature trees is high in all districts -99.7 per cent in Dhankuta, 92.9 per cent in Ilam, and 72.9 per cent in Sankhuwasabha, suggesting that accessibility plays a major role in preserving mature trees in Sankhuwasabha and Ilam districts. As Dhankuta district has remained as the major administrative centre in the Eastern Hill Region since 1850, most of the big trees were cut down gradually to build basic infrastructure. Furthermore, immature trees require good protection and management so that they can yield sustainable forest products for the people in future.

Table 3.3: Crown Density by District (area in ha), 1986

Forest Crown Density*	Dhankuta	Sankhuwasabha	Ilam
1	0	0	0
2	22,892.8 (74.7)	58,682.5 (46.4)	28,492.2 (35.3)
3	7,404.5 (24.1)	59,518.1 (47.0)	48,857.0 (60.6)
4	340.6 (1.1)	8,340.6 (6.6)	3,326.6 (4.10)
Total	30,637.9	126,541.2	80,675.8

* 1 = less than 10% (non-forest type); 2 = 10-40%; 3 = 40-70%; 4 = greater than 70%

Source: LRMP 1986

Crown density can be defined as the percentage of area covered by tree crowns (LRMP 1986). Almost 75 per cent of the total forest area in Dhankuta district is covered by type 2, but 60.3 per cent and 47.0 per cent of the total forest in Ilam and Sankhuwasabha districts respectively are covered by type 3. Sankhuwasabha district has 6.6 per cent type 4 crown density, the highest in the project area. These data suggest that i) the forest crown density is relatively lower in Dhankuta district than in the other two districts and ii) accessibility and markets are key factors in preserving forests in the Eastern Hill Region, particularly Sankhuwasabha and Ilam, as these districts are less accessible in terms of transportation than Dhankuta.

Demographic and Social Characteristics

The demographic characteristics of the project area (over the last three decades) are given in Table 3.4.

Table 3.4: Demographic Characteristics of the Project Area*

	Districts		
	Ilam	Dhankuta	Sankhuwasabha
1. Population Census			
1961	125,500	88,000	105,400
1971	139,538	107,649	114,313
1981	178,356	129,781	129,414
1991	229,214	146,386	141,903
2. Growth Rates			
1961-1971	1.1	2.3	0.8
1971-1981	2.5	1.9	1.2
1981-1991	2.5	1.2	0.9
3. Sex Ratio			
1991	101.4	97.0	96.0
4. Total Households			
1991	41,450	27,425	26,902
5. Average Household size			
1991	5.5	5.3	5.3
6. Area sq.km.			
1991	1703	891	3480
7. Density			
1981	104.7	145.7	37.2
1991	134.6	164.3	40.8

Source: CBS 1987 and 1991

Except for Ilam district, which follows the population growth pattern of Nepal as a whole, population growth in both Dhankuta and Sankhuwasabha districts is relatively low; not rising beyond 1.2 per cent per annum between the 1981-1991 period. Although the absolute number of the population has not declined in the last two decades, the population growth rate has declined gradually in both Sankhuwasabha and Dhankuta districts in the same period. Ilam has maintained a constant growth rate over the last one decade. Ilam has a normal sex ratio, whereas it is lower in the other two districts, suggesting that male migration is high outside the district.

In terms of area or size, Sankhuwasabha is the biggest and Dhankuta is the smallest district in the sample. But Dhankuta is densely populated as it is not only the headquarters of Koshi Zone and the Eastern Development Region, but also because a number of INGOs, schools, colleges, and hospitals are located in the district. Sankhuwasabha is thinly populated because of its remoteness and large size.

All the districts consist predominantly of hill ranges of medium elevation, often interspersed with deeply cut valleys. The actual forest areas are located between 914 to 1,676m in Dhankuta, 762 to 1,829m in Sankhuwasabha, and above 1,067m in Ilam with climatic conditions ranging from subtropical to temperate and considerable variations in slope and vegetation. Most of Nepal's hill people live at these elevations.

In terms of ethnicity, the whole project area was originally settled to a greater extent by the *Limbu*. The *Limbu* are one of the indigenous groups who have been residing in the area over the last 1,300 years or so (Chemjong 1967). The *Limbu* followed the *kipat* system of land tenure up to 1968 (Caplan 1970). Besides the *Limbu*, other groups such as the *Yakha*, *Athpahariya Rai*, *Majhiya*, and *Bhotia* also held land under the *kipat* tenure system.

Excluding the *Limbu*, the other dominant groups in the project area are *Brahmin*, *Chhetri*, *Rai*, *Tamang*, *Magar*, *Gurung*, *Sherpa*, and untouchables (*Kami*, *Damai*, and *Sarki*). They can be broadly categorised under three groups: (i) the high caste Hindu group, (ii) the ethnic/tribal group, and (iii) untouchables. Based on

the 1991 census, three numerically significant ethnic/caste groups in each category are given in Table 3.5.

Table 3.5: Numerically Significant Groups in the Project Area by Category (1991 Census)

	District					
	Ilam		Dhankuta		Sankhuwa-sabha	
	Popula-tion	%	Popula-tion	%	Popula-tion	%
Total Population	229,214		146,386		141,903	
1. High Caste Hindu Group (only two dominant groups)						
Brahmin	36,599	16.0	10,511	7.2	10,977	7.7
Chhetri	30,565	13.3	29,511	20.2	27,895	9.7
Total	67,164	29.3	40,062	37.4	38,872	37.4
2. Ethnic/tribal group (three dominant groups)						
Rai	56,326	24.6	34,366	23.5	33,600	23.7
Limbu	30,962	13.5	21,026	14.3	-	-
Tamang	15,615	6.8	-	-	11,791	8.3
Magar	-	-	14,032	9.6	-	-
Gurung	-	-	-	-	8,831	6.2
Total	102,903	44.9	69,424	47.4	54,222	38.2
3. Untouchable (all)						
Kami	7,521	3.3	5,025	3.4	6,071	4.3
Sarki	925	0.4	1,918	1.3	1,202	0.8
Damai	3,541	1.5	3,100	2.1	3,150	2.2
	11,987	5.2	10,043	6.8	10,423	7.3

Source: CBS 1991

The first, second, and third language groups in the project area, according to the 1991 census, are as follows (Table 3.6).

Table 3.5 suggests that culturally the high caste Hindu group (*Brahmin* and *Chhetri*) represents almost one-third of the total population in all districts. In terms of ethnicity/tribe, the *Rai* are the major group, followed by the *Limbu*, *Tamang*, *Magar*, and *Gurung*. Untouchables constitute five to seven per cent of the total population. The dominant language is Nepali and it is also the

Table 3.6: First, Second, and Third Language Groups in the Project Area by Number (1991 Census)

	Language Groups by Order			
District	First	Second	Third	Total population
Ilam	Nepali 133,784 (58.4)	*Rai* 33,876 (16.5)	*Limbu* 25,930 (11.3)	229,214
Dhankuta	Nepali 70,076 (47.9)	*Rai* 27,793 (19.0)	*Limbu* 18.969 (13.0)	146,386
Sankhuwasabha	Nepali 77,701 (54.8)	*Rai* 24,926 (17.6)	*Sherpa* 10,808* (7.6)	141,903

* Also includes *Bhotia* population as *Sherpa* speakers

Note: Numbers in parentheses refer to percentages

Source: CBS 1991

lingua franca of all groups. The other dominant languages spoken in the area are *Rai*, *Limbu*, and *Sherpa*. Over the last 200 years or so, the high caste Hindu groups have succeeded in becoming one of the dominant sections of the population, not only in number but also in economic and political power.

Although the original homeland of the *Rai* is said to be *Manjh Kirant* (middle *Kirant* or the districts of Bhojpur, Solukhumbu, Okhaldhunga, Khotan, and Udayapur), they migrated across the Arun or east of the Arun River in large numbers and settled in traditional *Limbuwan* areas such as Dhankuta, Ilam, Panchthar, Taplejung, and Sankhuwasabha. In the project area, the *Rai* are numerically significant, constituting almost one-fourth of the total population. (It should be noted here that the term *Rai* does not refer to a single homogeneous group; within it there are at least 18-20 subgroups, each having its own language, culture, and distinct mode of living. The title *Rai* or *Raya* was given to the local headmen or chiefs by the *Sen Raja* around the 15th century, and this was strictly endorsed by the *Shah Raja* after the conquest of Eastern Nepal in 1774). The *Magar* and *Gurung* are also considered to be migrants in the Eastern Hill Region.

Along with the high caste groups, a lot of untouchables also migrated to the Eastern Hill Region with their technical skills. In other words, these untouchable people have close economic interactions with high caste Hindus and ethnic/tribal groups.

Case Studies of User Groups

The Eastern Hill Region, particularly the project area, not only differs in terms of the history, origin, and formation of forest user groups (FUGs) but also varies in size, function, and structure. This region's unique ethnic composition and migration history, population pressure, climatic variations, and isolation have encouraged the formation of numerous forest user groups. In addition, KHARDEP has also played a crucial role in the formation of many of these user groups. In this Chapter, seven case studies are presented, starting from Dhankuta district, as this district has played multiple roles in the evolution of different types of FUG and management practices in the Eastern Hill Region.

Furthermore, this Chapter presents a detailed household survey of users for two reasons. Firstly, it has been argued elsewhere that poverty is one of the main hindrances in effective forest management in Nepal (Messerschmidt 1988 and Bajracharya 1981). By assessing the land ownership, livestock, and occupation of users, it becomes easier to determine the relative socioeconomic conditions of users within the local context. The extent of users' contributions to forest management can also be assessed. Secondly, ethnicity or culture plays an important role in forest use and management. Ethnicity not only reflects the culture of a group but it is also closely associated with the education, economic status, and leadership status of users at the local level. This helps in understanding to what extent 'collective action' is taking place among different groups regarding forest use and management.

Dhankuta

Dhankuta district is situated in the middle hills of Koshi Zone, between 87.2° longitude and 27.55° latitude. It became one of the most easily accessible hill districts in the Eastern Hill Region after the completion of the 52km Dharan-Dhankuta Highway in 1980.

The district is covered largely by the Churia and the Mahabharat ranges. It is difficult to find large areas of flat land in the district, although the Tamor River plays an important role in irrigation around the river basin areas of the district.

The district as a whole is drier than other eastern hill districts and the climate ranges from subtropical to temperate. The absolute mean temperature recorded between 1980-1989 was 20°C (maximum) and 2°C (minimum) in January and 29.20°C (maximum) and 11.5°C (minimum) in May (CBS 1992:94). The district receives the lowest rainfall in the whole Eastern Hill Region, ranging from 960mm in 1986 to 1,238mm in 1989 (CBS 1992:104).

The biological resources and vegetational diversity of the Arun Basin area (including Dhankuta, Sankhuwasabha, and Bhojpur) have been discussed at length by Shrestha (1989). Similarly, detailed information on the land use pattern of the Arun Basin was given by Dunsmore(1988).

Handikharka FUG

Geographical Location and Settlement

This is one of the biggest FUGs in Dhankuta district, with an area of about 150ha and a total of 224 user households. It adjoins Ward No 3 of Dhankuta municipality and is only three kilometres west of Dhankuta *Bazaar*.

The forest area is bordered by the Dhobi *Khola*[1] in the east, the Patle *Khola* in the west, cultivated land of Atmara village and the Dharan-Dhankuta Highway in the north, and the confluence of the Dhobi *Khola* and Patle *Khola* in the south (see Map 4).

There are five FUG settlements in Handikharka - Atmara, Gothgaun, Patle *Khola*, Sirbani, and Chuwaban. The latter two settlements - Sirbani and Chuwaban - belong to Ward No. 7 of Dhankuta municipality but are located four to six kilometres away

[1] *Khola* = Stream

from the forest area. The other settlements are confined within Ward No 3 of Dhankuta municipality. Atmara and Sirbani settlements are located on a ridge, whereas Chuwaban and Gothgaun are established on slopes. Patle *Khola* village is situated on the banks of the Patle River. Almost all people of the Patle *Khola* area are migrants who settled in this area during the construction of the Dharan-Dhankuta Highway.

History of the Forest and Formation of the FUG

History of the Forest. The history of Handikharka forest can be traced back to more than a century ago; originally it was a Government Forest (*raniban*). At the time of Prithivi Bir Bikram Shah (1881-1911), some members of the royal family migrated to Dhankuta and took over land belonging to the Pokhrel *Brahmin* of Atmara and handed over the Handikharkha forest with a royal decree (*lalmohar*) in their name. Since then, the domination of the Pokhrel *Brahmin* of Atmara over the forest continued up to B.S. 2013 (1957) and outsiders were not allowed to cut timber or collect firewood, grass, fodder, and thatch without their permission. Although the Pokhrel had the legal right to use forest products, they were not permitted to cut valuable timber such as *Khair* (*Acacia catechu*), *sakhuwa*, or *sal* (*Shorea robusta*). The FUG chairman, Gopal Pokhrel, claims that the forest area was well preserved under the Pokhrel. Harka Bahadur Rai, another FUG informant, says that the Pokhrel had protected this forest up to 1957. After the nationalisation of forests by the Government, the Pokhrel *Brahmin* retained control of this forest up to 1960 in the name of the old Royal decree but finally handed it over to the *Panchayat* Government.

Although it is difficult to give an estimate of how many big trees were cut down between 1962 and 1990, the local users claim that from 1960 the District Forest Office, Dhankuta, started giving permission to cut down *sal* and *khair* trees from the forest by paying a fixed amount of royalty. This motivated a lot of people to cut timber, particularly *khair* and *sal* trees, for domestic use as well as for sale, either legally or illegally.

Around 1975, the Dharan-Dhankuta Highway was under construction and this eventually led to increased use of forest

resources in different ways. According to the local people of Atmara and Gothgaun, about three kilometres of forest were cleared from Bakhra *Khola* to Atmara village during the construction period of the Dharan-Dhankuta Highway, which lasted for around five years. About 2,000 construction workers from Bhojpur, Khotang, Okhaldhunga, Solukhumbu, Sankhuwasabha, and Terathum stayed at the Atmara and Gothgaun settlements for about two years. They also used the Handikharka forest extensively to obtain cooking fuel. Some construction workers also stayed on permanently in Atmara, Gothgaun, and Patle *Khola* settlements after the construction period was over. Having no alternative sources of income, these migrants began to sell firewood in Dhankuta *Bazaar* for a living.

Formation of the FUG. The Handikharka FUG owes its origin to a group of local people (from 5 or 6 Pokhrel *Brahmin* households) who were inspired by social service activities and decided to work in a community forestry programme. At the same time, they thought that the protection of Handikharka forest was not possible only through the people of Atmara village. Therefore, they requested the people of neighbouring villages, such as Gothgaun, Patle *Khola*, Sirbani, and Chuwaban, to participate in its use, protection, and management.

In 1991, the group made a humble start by campaigning to plant timber and fruit trees on their private lands. The ERRIC (British Road Project) project provided seedlings and technical help to the villagers. They also passed a rule forbidding the open grazing of livestock during winter. In this way, the local people became enthusiastic and decided to form a committee to use Handikharka forest as a community resource. The District Forest Office, Dhankuta, was impressed by the activities of the local people and agreed to the formation of a formal Handikharka forest committee. In the formation process, about 250 households agreed to become users in Handikharka FUG. In the end, some users thought that it was difficult for them to use the forest products because of the distance. Therefore, when the constitution of Handikharka FUG was signed by the DFO and the Chairman of the FUG, there were 224 user households only. Initially, there was little support from the District Forest Office, except in the preparation of the FUG constitution.

Users' Identification

The Handikharka forest user group is composed of different ethnic/caste groups with different languages, religions, and cultures. The ethnic breakdown of the FUG by household is given in Table 3.7.

Table 3.7: Ethnic/Caste Composition of Handikharka FUG

Ethnic/Caste Groups	Number of Household	Per cent
Athpahariya Rai	62	27.7
Other Rai Groups	47	21.0
Brahmin	37	16.5
Newar	34	15.2
Bhujel	12	5.3
Chhetri	11	4.9
Magar	9	4.0
Limbu	3	1.3
Tamang	2	1.0
Gurung	1	0.9
Kami	2	1.0
Sarki	4	1.8
Total	224	100.0

Source: Survey

The *Rai* (*Athpahariya* and other *Rai*) are the dominant group, constituting 48.7 per cent of the total user households. They are followed by *Brahmin* (16.5%), *Newar* (15.2%), and Bhujel (5.3%). The *Athpahariya Rai* are the indigenous population of Dhankuta municipality and its surrounding areas. The major settlement of the *Athpahariya* is Chuwaban, although they are found in all settlements of the FUG.

Occupations

As in other parts of the country, most of the FUG members are agriculturists. Although a large number of the sampled respondents profess different types of occupation, they primarily engage in agriculture (Table 3.8).

Table 3.8: Types of Occupation of FUG Members

Type of Work	Number of Respondents	Per cent
Wage Labour	40	27.78
Agriculture and Wage Labour	32	22.22
Agricultuure	26	18.05
Agriculture and Services	25	17.37
Tenant-cum-farmer	6	4.17
Agriculture and Carpenter	4	2.78
Agriculture and Mason	3	2.08
Tea-shop	3	2.08
Tea-shop and Agriculture	2	1.39
Services	1	0.69
Business and Agriculture	1	0.69
Services and Wage Labour	1	0.69
Total	144	100.00

Source: Survey

Most of the *Athpahariya* earn their living by agriculture and wage labour. The other *Rai* groups are recent migrants who settled in this area after the construction of the Dharan-Dhankuta Highway. Other groups such as *Limbu*, *Gurung*, and *Tamang* are also recent migrants. As these people do not own land, the men engage in wage labour and the women collect firewood to sell in Dhankuta *Bazaar*. Some of the *Chhetri* and *Newar* migrants have also opened small tea-shops along the side of the Highway, thereby consuming the forest products of Handikharka.

The other large FUG group is *Brahmin*, divided into various clans such as Pokhrel, Dahal, Mishra, and Ghimire. Except for the Ghimire, the other *Brahmin* families are old settlers who have been in the area for more than 200 years. Every *Brahmin* owns some *khet*[2] and *bari*[3], and they engage in agriculture, animal husbandry, and government services as well as playing an active role in village and district politics. Because they are well educated and wealthy, they have become successful leaders at the local village level.

[2] *khet* = irrigated rice land

[3] *bari* = rainfed cultivated land

The *Newar* are also old settlers and live close to market areas like Sirbani. The *Newar* are agriculturists, carpenters, and wage labourers and they are divided into various clans such as Dangol, Shrestha, and Karmacharya.

The Bhujel came to this area along with the Pokhrel *Brahmin* as slaves. After their emanicipation from slavery, they began to live adjacent to the Pokhrel *Brahmin*. They are agriculturists, tenants, sharecroppers, and wage labourers.

Population, and Sex Composition

Out of the total 224 FUG households, 144 households were selected for detailed study. The following table (Table 3.9) shows the total population of the sampled user households by ethnicity and sex.

Table 3.9: Households and Population by Ethnicity and Sex of the Sampled User Households, 1993

Ethnic/Caste Group	Number of House-hold	Male	%	Female	%	Total	%	Average F Size
Athpahariya Rai	31	91	22.30	72	20.05	163	21.26	5.2
Other *Rai* Groups	30	83	20.34	77	21.45	160	20.87	5.3
Brahmin	31	78	19.12	81	22.57	159	20.73	5.1
Newar	14	38	9.31	37	10.31	75	9.78	5.3
Chhetri	10	35	8.58	28	7.80	63	8.21	6.3
Bhujel	9	29	7.11	24	6.69	53	6.91	5.5
Magar	6	21	5.15	12	3.34	33	4.30	5.5
Limbu	3	8	1.96	5	1.39	13	1.69	4.3
Tamang	2	6	1.47	4	1.11	10	1.30	5.0
Gurung	1	3	0.73	3	0.83	6	0.78	6.0
Kami	3	6	1.47	6	1.67	12	1.57	4.0
Sarki	4	10	2.45	10	2.78	20	2.61	5.0
Total	144	408 (53.2%)	100.0	359	100.0 (46.8%)	767	100.0	5.3

Source: Field Survey 1993

The proportion of males is higher than females, i.e., a sex ratio of 113.6. This must be due to the small sample size of many ethnic/caste groups. The average household size is 5.3, which is comparable to Nepal (5.5) and Dhankuta district as a whole (according to the 1991 census).

Education

The literacy rate and the educational level of the users is given below (Table 3.10).

Table 3.10: (a) Literacy Rate of the User Respondents

Category	Total	Per cent
Literate	92	63.9
Illiterate	52	36.1
Total	144	100.0

Table 10: (b) Educational Level of the User Respondents

Level	Total	Per cent
Literate	79	85.9
S.L.C.	8	8.7
Above S.L.C.	5	5.4
Total	92	100.0

Source: Survey

Almost 74 per cent of the total user respondents are literate but 85.9 of them can just write their names and some have completed up to class five. The users who have passed S.L.C. and higher exams are mostly the Pokhrel *Brahmin* of the area.

Landholdings

Land can generally be categorised into two types - *khet* and *bari*. *Khet* is generally found in river basin areas (*bensi*). Two crops can be grown on this type of land - rice is relayed with maize or wheat. *Bari* or dry upland is on the slopes where mostly one crop is grown in a year. Data on the landholdings of FUG members are given in Tables 3.11 and 3.12.

Table 3.11: Total Landholding of the User Respondents by FUG and Ethnic/Caste Group (Handikharka and Thaprong)

Ethnic/ Caste Groups	No. of HH	Total Landholding (in *ropani*)						
		Bari Total	Non-*bari*	*Khet* Total	Non-*khet*	Land-less	Total	Average per family
1. Handikharka								
Brahmin	31	395	3	352	10	1	747 (44.13)	24.09
Athapaha-riya Rai	31	332	5	145	17	-	477 (28.17)	15.38
Other *Rai*	30	12	29	-	30	29	12 (0.70)	0.38
Newar	14	181	4	15	13	3	196 (11.57)	14.00
Chhetri	10	84.2	4	36.5	7	3	120.7 (7.08)	12.07
Bhujel	9	73	3	-	9	2	73 (4.31)	8.11
Magar	6	30	-	-	6	3	30 (1.78)	6.00
Sarki	4	17	-	-	4	-	17 (1.00)	4.25
Kami	3	6	-	-	3	-	6 (0.35)	2
Limbu	3	14	1	-	3	1	14 (0.82)	4.66
Tamang	2	-	2	-	2	2	-	-
Gurung	1	-	1	-	1	1	-	-
Total	144	1144.2	54	548.5	106	45	1692.7	11.75
2. Thaprong FUG								
Limbu	31	351	1	1	30	1	352	11.35

Source: Survey

Table 3.12: Land Owned by the User Respondents (area in *ropani*), 1993

Type of Land				
Landholding Size (*ropani*)	*Bari*	Per cent	*Khet*	Per cent
No Land	54	37.50	106	73.61
1-4	17	11.81	8	5.55
5-9	26	18.05	4	2.78
10-14	19	13.19	5	3.48
15-19	13	9.03	13	9.03
20-24	7	4.87	2	1.39
25-29	1	0.69	3	2.08
30-34	1	0.69	-	
35-39	2	1.39	2	1.39
40-44	1	0.69	1	0.69
45-49	1	0.69	-	
50+	2	1.39	-	
	114	100.00	114	100.00

Source: Survey

Table 3.11 reveals that 45 user households or 31.3 per cent of the user respondents have no land at all; 74 per cent have no *khet*. Out of the total landless, 29 households (64.4%) belong to other *Rai* groups. On an average, a user FUG household owns 11.8 *ropani* of land, out of which the proportion of *bari* is 8.0 *ropani* and *khet* 3.8 *ropani*. On the whole, almost 32 per cent of the total FUG members own only five to 14 *ropani* of *bari* and 5.5 per cent own above 25 *ropani* of land. Only 4.2 per cent own 25 *ropani* and above of *khet*.

If landholdings are considered in terms of land type and ethnicity, land distribution in this area is relatively skewed in favour of high caste groups, i.e., *Brahmin* (24.1 *ropani* per user family or 44% of the land is controlled by 21.5% of the total number of households), indicating that large sections of the sampled households are forced to eke out a minimal subsistence from the agricultural sector.

Livestock

As in other hill areas, animals are kept for milk, meat, ghee, and manure. Cows, oxen, buffaloes, goats, and pigs constitute the main types of livestock raised in this area. The *Rai*, *Magar*, Bhujel, and the untouchables raise all types of livestock, including pigs, whereas the *Brahmin*, *Chhetri*, and *Newar* do not raise pigs. Livestock raising is also related to landholding size. Thus, FUG members keeping a large number of livestock also own large tracts of land. Landless villagers keep few livestock. The total number of livestock by ethnic/caste group is given in Table 3.13.

Table 3.13: Total Number of Livestock by Ethnic/Caste Groups

Ethnic/Caste Group	No. of HH	Cow	Ox	Goat	Buff	Pig	Average
Athpahariya Rai	31	56	35	125	6	44	8.58
Other *Rai*	30	10	8	36	-	17	2.29
Brahmin	31	85	37	73	22	-	7.00
Newar	14	19	24	35	2	-	5.71
Chhetri	10	8	8	19	9	2	4.60
Bhujel	9	23	15	22	5	5	7.70
Magar	6	7	9	20	1	7	7.33
Limbu	3	2	5	8	-	5	6.66
Sarki	4	5	3	3	-	2	3.25
Kami	3	3	-	2	1	3	3.00
Tamang	2	4	2	26	-	2	17.00
Gurung	1	-	-	-	-	-	-
Total	144	222	146	364	46	87	865
Average per HH		1.5	1.0	2.5	0.3	0.6	6.0

Source: Survey

Except for a *Gurung* household, all ethnic/caste groups keep livestock, although the number and type are determined by caste and ethnicity. The average number of livestock per family is six, which is quite large considering the forest size. Among the ethnic

groups, the *Athpahariya Rai* own the largest number of livestock, followed by Bhujel, *Magar*, *Brahmin*, and *Limbu*. The *Brahmin* have a larger number of cows, oxen, and buffaloes than other groups. Goats number the highest out of the livestock raised by all groups - 2.5 animals per household. Out of a total of 87 pigs, 61 pigs (70.1%) are raised only by *Rai*, more than one pig per household.

In brief, the socioeconomic data from Handikharka FUG (Annex A) suggest the following: (1) the average landholding size is small, only 11.8 *ropani* (0.6ha) per user family, and 45 user families (20.1%) are completely landless. The *Brahmin* have the largest landholdings (24.1 *ropani* or 1.2ha) among all groups. (2) The average number of livestock is six animals per user family and more than 99 per cent of user households raise livestock. This means that many users have to bring fodder and bedding materials from the forest regularly for their livestock. (3) A significant proportion of the users (27.8%) is completely dependent on wage labour as an occupation. Having no other sources of income, they are heavily dependent on local forest products for a livelihood. (4) The community is culturally heterogeneous and the literacy level is high (63.9%). Therefore, some ethnic groups, such as the *Brahmin*, are conscious and receptive in the local setting.

Thaprong FUG

Geographical Location and Settlement

Rajarani VDC lies in the southern part of Dhankuta district. It is about four hours' walk from Bhedetar, a bus stop, either from Dharan or Dhankuta. The main *bazaar* - Rajarani - is situated in the valley, whereas other settlements are located on slopes. It is bordered by Mudebas VDC in the east, Mounabudhuk and Dandabazaar VDCs in the west and north, respectively and Morang district in the south. Close to 1,800masl, it has a moderately cool climate even during the summer. In winter, the climate is windy and chilly, hence it is difficult to grow different kinds of trees and vegetables. The sample village, Thaprong, is located in the eastern part in Ward No. 2 of Rajarani VDC. It is about an hour's walk from Rajarani *Bazaar*.

History of the Forest and Formation of the FUG

History of the Forest. All land categories, including the forest in the Thaprong village area, were *kipat* up to 1968 and under the jurisdiction of the *Limbu subba*. As the population pressure was low and the transportation and market network was poor, the demand for forest products was minimal. The local people use forest products primarily for domestic purposes. After 1970, Dandabazaar (about two hours' walk from Thaprong), and after 1980, Rajarani, developed as small, residential-cum-market centres. Thus, the timber of the local forests, e.g., that of Thaprong, were gradually cleared. Perhaps the *Limbu* also wanted to develop their area economically, but this took place at the, cost of the forest resources.

Formation of FUG. After the 80s, the people of Thaprong began to feel that increasing pressure was being exerted on the forest resources. Some of the locally active *Limbu*, e.g., the present chairman and secretary of the FUG, thought that the forest needed protection as overuse would lead to complete destruction. With the initiative of district forest officials (who also helped to design the local FUG constitution), a forest user group was formed in 1992 for the first time. While forming the FUG, all users from Ward No 2 (49 households) were included. During field research, it was found that one user household had migrated to the *terai*, although his name was still in the FUG's register. In brief, the history of community forestry in Thaprong is short.

Users' Identification

The Thaprong village user group consists of 49 user households from two settlements - Thaprong (upper and lower settlements) and Kholaghari (only six households). The forest is scattered and divided into four separate locations - Khola Yamba, Calcutte, Mattelan, and Chyane *Danda*. This is a typical *Limbu* community, and the user group is composed entirely of *Limbu*.

Occupations

Thaprong is basically an agricultural community but agricultural production alone does not meet the basic requirements of the

users. Therefore, most of them subsist by engaging in wage labour (Table 3.14). Both males and females carry goods from Okhare and Dandabazaar to Dharan town. Some of them also buy local fruits and vegetables at low prices in local villages and sell them in Dharan at higher prices. Nevertheless, seven user households (22.6%) earn money from different sources and hence do not participate in the local FUG programme.

Table 3.14: Occupation of the User FUG Respondents

Occupation	Number of Respondents	Per cent
Agriculture	15	16.13
Agri + Wage Labour (local)	19	61.29
Agri + Migrant Labour (to Arab)	3	9.69
Agri + Service	2	6.45
Agri + Army	1	3.22
Agri + Pension	1	3.22
Total	31	100.00

Source: Survey

Population and Sex Composition

Out of the total 49 user households, only 31 households were selected for our sample. This FUG has 169 members with 86 males (50.9%) and 83 females (49.1%) (Table 3.15) a normal sex ratio, and an average household size of 5.5 persons.

Table 3.15: Number of Sampled Population by Sex

Sex	Total population	Per cent	Average HH Size
Male	86	50.89	
Female	83	49.11	
Total	169	100.00	5.43

Source: Survey

Education

Almost half of the user respondents are illiterate (45.2%) (Table 3.16). Those regarded as literate can just write their names. The only user respondent who has passed high school is the executive secretary of the FUG. Out of the total number of female users (3), only one is literate.

Table 3.16: Education of the User Respondents, 1993

Category	Total	Per cent
Literate	17	54.8
Illiterate	14	45.2
Total	31	100.00

Source: Survey

In brief, the socioeconomic data on Thaprong FUG (Annex B) suggest the following: (i) the history of the forest shows that harvesting of forest products increased only after the development of markets and residential clusters in nearby areas; (ii) in terms of owning resources, such as land and livestock, the users are quite poor in this FUG; (iii) as the agricultural production cannot meet their subsistence needs, many users (22%) are engaged in wage labour and other occupations, therefore they have little time to look after the forest; and (iv) the user community is homogeneous and the literacy level is lower (54.8%) than in other FUGs.

Landholdings

The landholding size of the user respondents is given in Table 3.17. One user household is completely landless and only one user owns *khet* with a landholding of one *ropani*. The total land owned is 352 *ropani* (17.9ha), out of which *khet* accounts for only one *ropani* (Table 3.17). The average landholding size per user respondent is 11.4 *ropani* (0.6ha). Almost one-third of the repondents own one to four *ropani* of *bari* and 51.6 per cent own five to 19 *ropani* of land. Only one respondent owns 50 *ropani* of *bari*, and he is an ex-military man. With such small parcels of land, many user households cannot produce sufficient foodgrains

to feed the family. Besides, the land is unfertile and yields hardly 10-15 *pathi* (35 to 52kg) of grain per *ropani*. This situation has forced the users to look for wage labour and other types of work.

Table 3.17: Landholdings of User Respondents

	Number of Respondents			
Size of Land	*Bari*	*Khet*	Total	Per cent
Landless	1	30	1	3.2
1-4	10	1	10	32.3
5-9	5	0	5	16.5
10-14	4	0	4	12.9
15-19	7	0	7	22.6
20-24	1	0	1	3.2
25-29	2	0	2	0.5
30-34	0	0	0	0
35-39	0	0	0	0
40-44	0	0	0	0
45-49	0	0	0	0
50 & above	1	0	1	3.2
Total	31	31	31	100.00

Source: Survey

Livestock

In Thaprong, users keep cows, oxen, water buffaloes, goats, and pigs. Animals are domesticated for three purposes, i.e., meat, manure, and milk products. The types and number of livestock in Thaprong are given in Table 3.18.

Table 3.18: Types and Number of Livestock in Thaprong Village, 1993

Types of Animal	No of HH	No. of Livestock	Per cent	Average
Cow	21	36	24.66	1.16
Ox	15	24	16.43	0.77
Water	16	57	39.04	1.83
Buffaloes	3	4	2.74	0.12
Pig	23	25	17.12	0.80
Total		146	100.0	4.70

Source: Field Survey 1993

The average livestock number per household is 4.7, lower than Handikharka FUG. Since many of the economically active population are engaged in wage labour, they raise a minimum number of livestock, primarily for domestic purposes.

Sankhuwasabha FUGs

Geographical Location and Settlement

Sankhuwasabha district is situated in the middle hills and highlands of Koshi Zone, between 27.10° 27.55° north and 86° 55 and 85° 45 east. Its northern border is covered by snow-clad mountain peaks, such as Mt. Makalu, and adjoins the Tibetan Plateau.

The altitudinal range of the district varies, around 300m at the Arun River just below Tumlingtar to 8,463m, the height of Makalu. Most of the agricultural and human settlements are concentrated between 500m (Tumlingtar) to 2,500m (Kimathanka). The Arun and Sabha rivers drain many parts of the district.

The soil is mostly brown topsoil with yellowish brown in the mid-hills and dark brown in the high mountains.

The district also receives one of the highest levels of rainfall in the Eastern Hill Region, ranging from 1,500mm to 4,000mm per annum (Shrestha 1989). The climate ranges from subtropical to temperate to alpine; temperatures are 0°C in some areas like Kimathanka during winter and up to 35°C in May in Tumlingtar (Dunsmore 1988). The biological diversity, vegetation, and landscape of the Arun Basin (includes Sankhuwasabha) have been discussed in detail by Shrestha (1989) and Dunsmore (1988).

History of the Forests and Formation of the FUGs

History of Thulopakha Dhusune Community Forest. This forest (estimated to be 10ha) is located on a slope facing southeast of Khandbari, 15-20 minutes' walk from the area. This forest was included under the *raikar* system and was under the control of

jimawal up to 1957. Similar to the *talukdari* system, in the Eastern Hill Region, the *jimawal* system also operated where a *Limbu* or *Rai* held the position of *subba* or *subhangi* (Regmi 1963). The *jimawal* were responsible for collecting the land revenue and looking after the forests. Without their permission, nobody was allowed to cut a single tree. The local people say that the forest was well preserved not only because its use was well controlled but also because the demand for forest products was low.

Formation of the FUG. When Khandbari started developing as a market in 1965, the local people started using timber from this forest. In 1975, Khandbari became the headquarters of the district and the demand for timber naturally increased in order to build infrastructure for various complexes. This forest was also used extensively by the local people at the time of the referendum in 1980 and during the people's movement of 1990. As a result, the forest resources were depleted drastically and reduced to bush with a few patches of trees. In brief, the rapid population increase in Khandbari Bazaar not only led to an increase in house construction but also in the demand for firewood for sale in the market area. Considering this dangerous state of affairs, the local people, particularly some *Brahmin* and *Newar* families, formed a group with the help of district forest officials and this later developed into a forestry user group in 1991. At first, the user group had 37 members only but seven more members were added; there were 43 members in September 1993.

History of Chyane Dashe *Danda* Community Forest. This forest (estimated to be 50ha) is located in Ward No 1 of Pangma VDC, four to five kilometres northeast of Khandbari. Originally this forest was also under the *kipat* tenure system and the jurisdiction of the *Rai jimawal*. Formerly, the *Rai* used to bury their dead here and the forest thus came to be known as *Chyane* (cremation area) *danda* (hillock). Later, the *Rai* migrated elsewhere and the *Brahmin* obtained a *dastakhat* (signature) from the Rana Prime Minister, Chandra Shumshere (1900-1930), and the land came under the *raikar* category. After this, the forest was named Chyane Dashe *Danda*. Before 1957, the forest was quite dense and was inhabited by tigers, leopards, and bears.

Formation of the FUG. Along with the development of Khandbari as a market town and the district headquarters, the development of Manebhanjhyang as a small market centre in Pangma, and the political turmoil during the 1980 referendum as well as the democratic movement in 1990, a large amount of timber was cut from this forest area. The local people, particularly some *Brahmin*, *Chhetri*, and *Newar* families, realised that if this forest was not protected, they would face a severe shortage of forest products. Thus, with the help of the district forest officials, who helped to design the FUG constitution, the Chyane Dashe *Danda* FUG was formed in 1991 (B.S. 2049/1/7). When the user group was formed, there were only 62 user families but, in September 1993, the user number increased to 72. This FUG started implementing a detailed forest management plan in 1992.

History of Sukrabare Community Forest. This is a forest (estimated to be 10ha) located in Siddhapokhari VDC, but its products are shared by users from both Siddhapokhari and Chainpur VDCs. Originally included in the *kipat* tenure system, it was transformed into *raikar* by a Dangi *Chhetri* from this area who was *jimawal* up to 1957. Part of this forest area was also the *guthi* of the Siddhakali temple. Therefore, some big trees are still protected in the temple area.

Formation of the FUG. As Chainpur (1.5 hours' walk from Sukrabare) was originally the headquarters of the district, the timber from this forest was used to develop Chainpur as a big market centre. Many *Newar* businessmen built houses by using wood and stones. Siddhapokhari Bazaar (about one hour's walk from Sukrabare) was established around 1983-84 and timber from this forest was used to make new houses in the area. To minimise this continuing depletion of the forest, the present Chairman, a *Newar* (who himself lives in Ward No 9 of Chainpur VDC), participated actively in developing this forest into a community forest. Further efforts were made by the district forest staff who not only helped in designing the constitution but also collected the names of the users themselves, without consulting the local people. It is because of this that the names of 78 users were listed when the FUG was formed in 1992. But when the names of all the field users were checked, five users were found to be residing in other settlements and hence were not the real users of this FUG.

Users' Identification

Out of the total 43, 72, and 73 users in Thulopakha, Chyane Dashe *Danda*, and Sukrabare FUGs respectively, 27 (62.8%), 47 (65.3%), and 53 (72.6%) users were selected in the respective FUGs. The ethnic/caste composition data indicate (Table 3.19) that Chyane Dashe *Danda* has a more heterogeneous ethnic composition than the other two FUGs. The *Brahmin-Chhetri* group is dominant in all FUGs; 44.4 per cent in Thulopakha, 57.1 per cent in Chyane, and 60.3 per cent in Sukrabare. The percentage of the *Newar* group in Thulopakha is significant (44.4%) because most of the users are from Khandbari, a market centre dominated by the *Newar* community. The untouchables constitute a fairly good proportion; 7.4 per cent in Thulopakha, 10.2 per cent in Chyane, and 22.7 per cent in Sukrabare. The *Kami*, however, are not well represented in the FUGs as their number is low in these areas. Suprisingly, although this is a *Limbuwan* area, there were no *Limbu* members in these FUGs.

Table 3.19: Ethnic/Caste Compostion of User Respondents by FUG, 1993

	Number of Households by FUG					
Ethnicity	Thulopakha Dhusune		Chyane Dashe *Danda*		Sukrabare	
Brahmin	10	(37.0)	10	(20.4)	4	(7.5)
Chhetri	2	(7.40)	18	(36.7)	28	(52.8)
Newar	12	(44.40)	3	(6.1)	4	(7.5)
Rai	1	(3.7)	0		3	(5.7)
Gurung	0		7	(14.3)	0	
Tamang	0		4	(8.2)	0	
Sherpa	0		2	(4.1)	2	(3.8)
Damai	1	(3.7)	4	(8.2)	0	
Sarki	1	(3.7)	1	(2.0)	11	(20.8)
Kami	0		0		1	(1.90
Total	27	(99.9)	49	(100.0)	53	(100.0)

Source: Survey

Occupations

According to Table 3.20, 63.8 per cent of the user respondents in Chyane and 75.5 per cent in Sukrabare are completely dependent

on agriculture. However, the users of Thulopakha have diverse occupations; almost 70 per cent of the respondents are engaged in some other occupation besides agriculture. Many of the user respondents (33.3%) are businessmen. A good many user respondents in all FUGs are employed in government offices, therefore they can play an important role in forest use, protection, and management.

Table 3.20: Occupation of the User Respondents by FUG, 1993

Occupation	Number of FUGs					
	Thulopakha Dhusune		Chyane Dashe *Danda*		Sukrabare	
Agriculture	8	(29.6)	30	(63.8)	40	(75.5)
Business + Agri	9	(33.3)	1	(2.1)	1	(1.9)
Service + Agri	7	(25.9)	9	(19.1)	7	(13.2)
Occupational Work + Agri	2	(7.4)	1	(2.10)	0	
Labour + Agri	0		6	(12.8)	5	(9.4)
Contractor	1	(3.7)	0		0	
Total	27	(99.9)	47	(99.9)	53	(100.0)

Note: Two households from Chyane Dashe *Danda* FUG have migrated to Biratnagar

Source: Survey

Population and Sex Composition

Although the representation of females is considered to be essential in any FUG, there is minimal female participation in all user groups. The data show (Table 3.21) that female membership is only 18.5 per cent in Thulopakha, 10.2 per cent in Chyane, and 5.7 per cent in Sukrabare. On the whole, our sample is close to 100 per cent of the total female user respondents in all FUGs. The age data show that almost 60 per cent of the user respondents in all FUGs are middle-aged and above, i.e., above 40 years (Table 3.22). This suggests that the users are quite mature and responsible people, with a good knowledge of the situation in the forestry sector (at least three decades long). In Chyane and Sukrabare, almost 40 per cent of the respondents are 50 years old and above.

Table 3.21: Sex Composition of the User Respondents by FUG, 1993

Sex	No. of Households by FUG					
	Thulopakha Dhusune		Chyane Dashe *Danda*		Sukrabare	
Male	22	(81.5)	44	(89.8)	50	(94.3)
Female	5	(18.5)	5	(10.2)	3	(5.7)
Total	27	(100.0)	49	(100.0)	53	(100.0)

Source: Survey

Table 3.22: Age of the User Respondents by FUG, 1993

Age Group	Number of HH by FUG					
	Thulopakha Dhusune		Chyane Dashe *Danda*		Sukrabare	
< 19	0		2	(4.3)	0	
20-29	5	(18.5)	7	(14.9)	10	(18.9)
30-39	6	(22.2)	11	(23.4)	9	(17.0)
40-49	12	(44.4)	8	(17.0)	13	(24.50
50-59	4	(14.8)	9	(19.1)	9	(17.00
60-69	0		10	(21.3)	4	(7.5)
70+	0		0		8	(15.1)
Total	27	(99.9)	47	(100.0)	53	(100.0)

Source: Survey

Education

The literacy rate and educational level of the user respondents are given in Tables 3.23 and 3.24.

Table 3.23: Literacy Rate of the User Respondents by FUG, 1993

Literacy Category	FUG					
	Thulopakha Dhusune		Chyane *Danda*		Sukrabare	
Literate	27	(100.0)	34	(72.3)	37	(69.8)
Illiterate	0	(00.0)	13	(27.7)	16	(30.2)
Total	27	(100.0)	47	(100.0)	53	(100.00)

Source: Survey

Table 3.24: Educational Level of the User Respondents by FUG, 1993

Educational Level	FUG					
	Thulopakha Dhusune		Chyane *Danda*		Sukrabare	
class 1 to 5	9	(33.3)	18	(52.9)	22	(59.5)
class 6 to 8	0	(0.00	0	(0.0)	2	(5.4)
class 8 to 10	2	(7.4)	4	(11.8)	10	(27.0)
SLC pass	10	(37.0)	8	(23.5)	0	(0.0)
I.A. & above	6	(22.2)	4	(11.80	3	(8.1)
Total	27	(100.00)	34	(100.0)	37	(100.00)

Source: Survey

The literacy data suggest that almost 70 per cent of the total respondents are literate in all FUGs. The literacy rate is 100 per cent in Thulopakha as most of the users are from the Khandbari *Bazaar* area, the district headquarters. Many of them are businessmen. In Thulopakha, the educational level is high - 67 per cent of the respondents have passed class seven and above-whereas it is only 47 per cent for Chyane Dashe *Danda* and 40.5 per cent for Sukrabare.

Landholdings

In all FUGs, the average landholding size per user household is well above 21 *ropani* (19.65 *ropani* = 1ha) (Tables 3.25a, 3.25b, and 3.26). Landless user respondents are almost non-existent. In the case of Thulopakha, although most of the *Newar* are migrant businessmen, they own some land in the area, at least a kitchen garden. Unlike in other areas, there are more *khet* holdings than *bari* in all FUGs. *Khet* constitutes 56.9 per cent of the total land in Thulopakha, 77.3 per cent in Chyane, and 59.2 per cent in Sukrabare respectively.

Table 3.25a: *Khet* Holdings of the User Respondents by FUG, 1993

Khet Landholding (*ropani*)	Thulopakha		Chyane *Danda*		Sukrabare	
Landless	8	(29.6)	12	(24.5)	12	(22.6)
1-10	3	(11.1)	8	(16.3)	14	(26.4)
10.1-20	6	(22.2)	14	(28.5)	21	(39.6)
20.1-30	5	(18.5)	4	(8.2)	1	(1.9)
30.1-40	3	(11.1)	4	(8.2)	3	(5.7)
40.1+	2	(7.4)	7	(14.3)	2	(3.8)
Total	27	(99.9)	49	(100.0)	53	(100.0)

Source: Survey

Table 3.25b: *Bari* Holdings of the User Respondents by FUG, 1993

	Number of Households by FUG					
Bari Landholding (*ropani*)	Thulopakha		Chyane *Danda*		Sukrabare	
Landless	15	(55.6)	8	(16.3)	1	(1.9)
1-10	11	(40.7)	36	(73.5)	38	(71.7)
10.1-20	0		3	(6.1)	12	(22.6)
20.1-30	0		1	(2.0)	1	(1.9)
30.1-40	1	(3.7)	1	(2.0)	0	
40.1+	0		0		1	(1.9)
Total	27	(100.0)	49	(99.9)	53	(100.0)

Source: Survey

Table 3.26: Total Landholdings of the User Respondents by FUG, 1993

	Thulopakha Dhusune			Chyane Dashe *Danda*			Sukrabare		
Type of Land	Land-holding	Number of House-holds	Ave-rage Land	Land-holding	Numb er of House -holds	Ave-rage Land	Land-holding	Numb er of House -holds	Ave-rage Land
Khet	511 (86.9)	27	18.9	911 (77.3)	49	18.6	677 (59.2)	53	12.8
Bari	77 (13.1)	27	2.9	268 (22.7)	49	5.5	467 (40.8)	53	8.8
Total	588(100.0)	27	21.8	1179(100.0)	49	24.1	1144(100.0)	53	21.6

Source: Survey

Livestock

The animals raised include cows, oxen, goats, and buffaloes. Sheep and pigs are not raised at all in Thulopakha and Sukrabare, whereas in Chyane sheep and pigs account for one each in the total (Table 3.27). More goats are raised than other livestock by the users in all FUGs. They account for 43.2 per cent of the livestock population in Thulopakha, 41.9 per cent in Chyane, and 49.5 per cent in Sukrabare. Cows come next and the different types of livestock are raised for milk and milk products, manure, and meat. Livestock are an immediate source of cash also. Male goats are sacrificed in large numbers during festivals such as *Dasain*.

Table 3.27: Types and Number of Livestock Owned by the User Respondents by FUG, 1993

	FUG					
	Thulopakha Dhusune		Chyane Dashe *Danda*		Sukrabare	
	Average					
Types of Livestock	Number of Livestock	Number of Households	Number of Livestock	Number of House-holds	Number of Livestock	Number of House-holds
Cow	29 (39.2)	14 (2.1)	62 (22.2)	29	98 (23.0)	44
Ox	11 (14.9)	5 (2.2)	62 (22.2)	30	95 (22.3)	39
Goat	32 (43.2)	11 (2.9)	117 (41.9)	32	211 (49.5)	50
Buffalo	2 (2.7)	1 (2.0)	36 (12.9)	16	22 (5.2)	11
Sheep	0	0	1 (0.4)	1	0	
Pig	0	0	1 (0.4)	1	0	
Total	74(100.0)		279 (100.0)		279(100.0)	426(100.0)

Source: Survey

In brief, the socioeconomic data on Thulopakha Dhusune (Annex C), Chyane Dashe *Danda* (Annex D), and Sukrabare (Annex E) suggest the following. (i) The history of the forest shows that all forests were managed by *jimawal* up to 1957,

adequately preserving the local forest products. But along with the population growth and establishment of market centres, more and more forest products were used from the neighbouring forest areas. This process was accelerated after 1960 because of the political changes during different periods. Some forests, e.g., Thulopakha, virtually turned into shrubland. (ii) The average amount of land owned by the users is reasonable; more than 21.5 *ropani* (1.1ha) in all FUGs. On the other hand, apart from in Sukrabare, the average livestock ownership level is low (less than six). Not a single user is landless in the area. Moreover, in all FUGs, more than one-fourth of the users is engaged in other occupations (such as business and other services) along with agriculture. These facts suggest that many users can contribute to forest management with little economic constraint. (iii) All user communities are heterogeneous with a relatively good educational background, suggesting that many users will be receptive to programmes in forest management training in the future.

Ilam

Geographical Location and Settlement

Ilam district is located between 26° 4' to 27° 8' latitude and 87° to 88° 10' longitude. The landform consists of high and low mountains. The northern section of the district is covered by the Mahabharat *Lekh* and the southern part by the Churia Hills. Most of the human settlements lie on the slopes of these two hill ranges. As the altitudes of the Churia Hills and the Mahabharat *Lekh* vary, the climate also varies in these regions. The climate is subtropical in the Churia Range and temperate to alpine in the Mahabharat Range. Different types of vegetation are noted in these mountain ranges.

The climate is hot and humid during the rainy season. The absolute mean temperature recorded between the 1980-1989 period was 21°C (maximum) and 3.8° (minimum) in January and 30.6°C (maximum) and 14.8° (minimum) in June (CBS 1992:96). Ilam also receives one of the highest levels of rainfall in the Eastern Hill Region; 1,714mm in 1986, 2,542 in 1987, and 2,132mm in 1989 (CBS 1992:104).

Bhedichok FUG and Kharkhare FUGs

History of the Forests and Formation of the FUGs

History of Bhedichok Community Forest. The history of Bhedichok forest (estimated to be 200ha) is complex. Some local people claim that it was a part of the *kipat* land of the *Limbu*, whereas others claim that it was the *subhangi* (land grant to a *Limbu subba* by the King as his personal property) of a *Limbu subba* who later sold his ownership rights to three groups of *Brahmin* families - Niraula, Bhattarai, and Ghimire - who were *thari* (land revenue collectors) in the area. Mr. Mitra Lal Bhattarai claims that his father, the late Shiva Bhakta Bhattarai (*thari*), purchased a portion of this forest land from the *Limbu subba* in B.S. 1980 (1923). Other *thari* also purchased different portions of the forest area from the *Limbu subba* around the same time. Up to 1957, this forest was under their jurisdiction and without their permission nobody could cut a single tree. The forest was thus well preserved.

This is considered to be one of the oldest forests in Ilam district and is located in the midst of the beautiful Maipokhari Hindu shrine. As the name signifies, it was a dwelling place for sheep (Bhedichok). After 1957, timber from this forest was felled gradually to develop Ilam *Bazaar* as a town. In 1962, some enthusiastic local people brought *chap* (*Michelia champaca*), *dhupi* (*Cryptomeria* sp), and *patle* (*Castanopsis hystrix*) seedlings from Darjeeling and planted them around the Maipokhari area. Today one can enjoy the scenic beauty of big *dhupi* trees around Maipokhari. In 1978, when the *Panchayat* Forest and *Panchayat* Protected Forest systems were introduced, this forest was part of the *Panchayat* Protected Forest of the Maipokhari *panchayat*. During this period, about 50ha of land were afforested.

Formation of the FUG. In 1986, the *pradhan pancha* of Maipokhari *panchayat*, a Duwal *Brahmin*, formed a forest committee of seven members under his chairmanship to protect the forest. As the *panchayat* members were responsible for protecting the forest, this forest was encroached upon several times for political reasons. Timber cutting from this forest gathered further momentum when a big earthquake shook Ilam

district in 1988 and timber for constructing schools and private buildings had to be supplied from this forest. The District Forest Office gave a royalty to the contractors to cut 60 big *patle katus* trees, but the local people claim that many more trees were cut than was actually permitted. During the mass movement of 1990, timber was cut again in the name of overthrowing the *Panchayat* regime. In brief, although this forest was a part of the *Panchayat* Protected Forest and two forest watchers were constantly employed between 1982-1990, its condition deteriorated gradually over the years. The keen enthusiasm of some of the *Gurung*, *Rai*, and *Sunuwar* inhabitants of the area led to the formation of a new FUG committee in 1991 under the chairmanship of a *Gurung*, with nine executive members and 49 users. The chairman claims that all documents of the FUG have been lost by the District Forest Office, but the DFO claims that they are still looking for the file. Nevertheless, this FUG today has 86 users and a constitution to regulate the use of forest products.

History of Kharkhare Community Forest. This is one of the big community forests (estimated 300ha) in Ilam district. The local people say this forest was managed by Bhattarai *Brahmin thari* for the last four generations. Formerly, it was a dense forest with different species of trees. Even today one can see many old trees in this forest area. After 1978, when the *Panchayat* Forest and *Panchayat* Protected Forest systems were introduced, about 100ha of land in this forest were afforested between 1982-1985 and a forest watcher was employed by the District Forest Office to protect the forest. In the mid-1970s, Nayabazaar (30 minutes' walk from the forest) developed as a market town close to the forest area and cardamom, potatoes, green peas, ghee, and other local products were supplied to the people of Manebhanjyang, a market town in India. Therefore, many trees were cut to build local houses.

Formation of the FUG. In 1989/90, a forest committee was formed under the chairmanship of a *Sherpa* but felling of big trees continued. Constant pressure was exerted by the District Forest Office on the local people to form a UG. Finally, a forestry user group committee with 14 executive members was formed in 1992 under the chairmanship of a *Brahmin* whose grandfather was the *thari* of this forest. Initially, there were 102 user households, but

during our field visit in October 1993, two more users were added to the list. A Ranger Office located in Nayabazaar helped in designing the FUG's constitution.

Users' Identification

Out of the total 86 and 104 users respectively in Bhedichok and Kharkhare FUGs, 86 (100.0%) and 64 (61.0 %) users in the respective FUGs were selected (Table 3.28).

Table 3.28: Ethnic/Caste Composition of the User Respondents by FUG, Ilam, 1993

	Bhedechok (Mai Pokhari)		Kharkhare (Nayabazaar)	
Ethnic/Caste Group	Total HH	Per cent	Total HH	Per cent
Brahmin	2	2.3	22	34.4
Chhetri	1	1.2	12	18.8
Newar	0	0.0	1	1.5
Rai	32	37.2	6	9.4
Limbu	1	1.2	6	9.4
Magar	3	3.5	0	0.0
Gurung	30	34.9	0	0.0
Sherpa	2	2.3	13	20.3
Tamang	7	8.1	0	0.0
Sunuwar	6	7.0	3	4.7
Kami	2	2.3	1	1.5
Total	86	100.0	64	100.0

Source: Survey

Both FUGs are mixed communities, consisting of different ethnic groups. But the *Rai* (37.2%) and *Gurung* (34.9) constitute more than 72 per cent of the total user respondents in Bhedichok. The *Brahmin* and *Chhetri* group is insignificant, constituting only 3.5 per cent of the total users. In other words, Hindu caste representation is minimal in Bhedichok. However, *Brahmin* (34.4%) and *Chhetri* (18.8%) account for 53.2 per cent of the total user respondents in Kharkhare, Nayabazaar. The other dominant user group is the *Sherpa*, constituting 20.3 per cent of the total users, followed by the *Rai* (9.4%) and *Limbu* (9.4%). In brief, non-Hindu caste groups constitute almost 46 per cent of the users in Kharkhare FUG.

Occupations

The major occupations of the user respondents are given in Table 3.29.

Table 3.29: Occupations of the User Respondents

Type of Occupation	Bhedichok		Kharkhare (Nayabazaar)	
Agriculture	24	(27.9)	29	(45.3)
Agri + Labour	59	(68.6)	29	(45.3)
Agri + Business	3	(3.5)	4	(6.3)
Agri + Service	0	(0.0)	3	(2.1)
Total	86	(100.0)	64	(100.0)

Note: Numbers in parentheses refer to the percentage

Source: Survey

Every user respondent depends fully on agriculture in Bhedichok, whereas users are engaged in diverse occupations in Kharkhare, Nayabazaar. Some of the users in Kharkhare are teachers (one is the headmaster) in the local high school. Some of the *Sherpa* user respondents in Kharkhare are engaged in business - selling cardamom and vegetables in Indian market towns and also running grocery and cloth shops locally.

Population and Sex Composition

The age/sex structure of the user respondents is given in Table 3.30.

Most of the user respondents are males, above 95 per cent in both FUGs. Female user respondents constitute less than five per cent of the total. More than 55 per cent of the user respondents are 40 years old and above in both FUGs. This suggests that many users have a good knowledge of the local forest situation during the *Panchayat* regime. Similarly, more than 12 per cent of the total user respondents are 60 years and above, and they have knowledge of the forest's history over the last 50 years.

Table 3.30: Age/Sex of the User Respondents

	Bhedichok			Kharkhare (Nayabazaar)		
Age Group	Male	Female	Total	Male	Female	Total
10-19	0	0	0	1	0	1
20-29	8	0	8	3	0	3
30-39	32	0	32	22	0	22
40-49	24	1	25	18	1	19
50-59	9	1	10	11	0	11
60+	9	2	11	8	0	8
Total	82	4	86	63	1	64
% of the Total	95.3	4.7	100.0	98.4	1.6	100.0

Source: Survey

Education

The literacy rate and educational level of the user respondents are given in Tables 3.31 and 3.32.

Table 3.31: Literacy Rate of the User Respondents

Literacy Category	Bhedichok				Kharkhare (Nayabazaar)			
	Male	Female	Total	Per cent	Male	Female	Total	Per cent
Literate	66	1	67	77.9	53	0	53	82.8
Illiterate	16	3	19	22.1	10	1	11	17.2
Total	82	4	86	100.0	63	1	64	100.0

Source: Survey

Table 3.32: Educational Level of the User Respondents

Educational Level	Bhedichok		Kharkhare	
Class 1-5	39	(58.2)	38	(71.7)
Class 6-8	12	(17.9)	6	(11.3)
Class 8-10	10	(14.9)	7	(13.20
S.L.C. pass	5	(7.5)	0	(0.0)
I.A. pass & above	1	(1.5)	2	(3.8)
Total	67	(100.0)	53	(100.0)

Source: Survey

Most of the user respondents are literate - 80 per cent and above in both FUGs. However, females are mostly illiterate. More than 58 per cent of the literate users are either barely literate or have studied up to class five.

Landholdings

In both FUGs, most of the land is *bari* or dry upland. *Khet* accounts for only 1.1 per cent in Bhedichok and 2.3 per cent in Kharkhare (Tables 3.33 and 3.34). Most of the user respondents live above 6,000ft where *khet* is minimal. The *khet* on which paddy is grown is located near the river basin area or *bensi*. However, the average landholding size is better in these FUGs than in the FUGs in other districts. The average landholding size is 35.8 *ropani* (1.8ha) in Bhedichok and 47.9 *ropani* (2.4ha) in Kharkhare. However, most of the uplands are either *kharbari* (thatch fields), or land on which large cardamoms are cultivated[1], or fodder grass (such as *amliso*) lands. Most of these lands actually bring in a good cash income, e.g., large cardamoms are normally grown on swampy marginal lands where no other cereal crops can be grown.

[1] Large cardamoms are cultivated on 82 *ropani* in Bhedichok and on 417 *ropani* in Kharkhare

Table 3.33: Land Type, 1993

Type of Land	Bhedichok Area (in *ropani*)		Kharkhare Area (in *ropani*)	
Khet	35	(1.1)	70	(2.3)
Bari	3048	(98.9)	2998	97.7)
Total	3083	(100.0)	3068	(100.0)
Average per HH	35.8		47.9	

Note: Numbers in parentheses refer to the percentage

Source: Survey

Table 3.34: Ownership of Land

	Kharkhare		Bhedichok	
Land Size (in *ropani*)	*Khet*	*Bari*	*Khet*	*Bari*
Landless	3	3	9	9
< 10	0	4	2	1
10-20	0	5	0	8
20.1-30	1	8	1	15
30.1-40	0	10	0	20
40.1-50	0	5	0	8
50.1-60	1	8	0	8
60+	0	21	0	17
Total	5	64	12	86

Source: Survey

Nevertheless, three user households in Kharkhare and nine households in Bhedichok do not own any land at all. At the same time, 21 households (32.8%) in Kharkhare and 17 households (19.8%) in Bhedichok own more than 60 *ropani* (3.1ha) of land.

Livestock

The number and types of livestock in both FUGs are given in Table 3.35.

Table 3.35: Number and Types of Livestock

Type	Number and Types of Livestock			
	Bhedichok		Kharkhare	
	Number	Average	Number	Average
Cow	107	1.3	114	1.8
Ox	59	0.7	36	0.6
Buffalo	89	1.0	7	0.1
Goat	72	0.8	120	1.9
Pig	37	0.4	8	0.1
Total	364	4.2	285	4.5

Source: Survey

On an average, a user respondent household in Bhedichok owns 4.2 animals and in Kharkhare 4.5 animals. Cows and goats are the most commonly-raised livestock; even landless users raise livestock for milk products, meat, and cash. Large numbers of buffaloes are raised in Bhedichok for milk products.

It is not known whether there has been a decline in the number of livestock owned by FUG members today, but it is obvious that only wealthier FUG members are able to support the fodder needs of a large number of animals. Nevertheless, FUG members have easy access to forests for grazing and fodder. Even today villagers are permitted to graze animals openly, apart from in recently planted areas.

In brief, the history and socioeconomic conditions of users in Bhedichok (Annex F) and Kharkhare (Annex G) FUGs suggest the following. i) When the forests were under the jurisdiction of the *thari*, they were better preserved. Large trees were cut down gradually after 1960 because of the population growth and development of market centres, as well as to fulfill the aspirations of many political groups. ii) The average landholding size of the users is good (more than 1.8ha) in both FUGs; some users also own land on which large cardamoms are cultivated, thereby earning a good income according to local standards. Some users are

also engaged in business and service. These data suggest that many users can contribute financially to the development of FUG programmes, provided that the local leadership is accountable. (iii) The community is heterogeneous. Non-Hindu groups (94%) are predominant in Bhedichok and the proportion of Hindu and non-Hindu groups is almost equal in Kharkhare. The literacy level of the users is also high (more than 79%) in both FUGs, suggesting that many users can participate collectively if serious commitment is shown by the local leaders to FUG development.

Biomass of the Respective Forest Areas

The biomass of the respective forest areas covered in this study denotes (i) the total stock of different tree species in a particular FUG area and (ii) the volume of different species of trees. In biomass calculations, the leaves and branches of trees were excluded. The main purpose of doing this was to observe how dense the forest itself was so that different kinds of tree species and their volume could be noted.

The total stock of different kinds of tree species was noted by plotting a 10m x 10m area. Trees of all sizes were counted. While selecting a plot for the sample, the relative thicknesses of the forest, slope, and elevation were given due consideration. The volume was noted by measuring the girth and height for which a DBH tape was used, and the height was measured with the help of a rope.

Forest Biomass of Dhankuta District

Handikharka Forest

This forest covers 150 hectares and is located in Ward No. 3 of Dhankuta municipality at altitudes ranging from 1,200 to 1,500masl. The forest faces five settlement clusters - Chuwaban and Sirbani in the east, Atmara in the north, and Gothgaun and Patle *Khola* settlements in the west and south. The forest also adjoins the cultivated lands of Atmara, Gothgaun, and Patle *Khola* settlement areas. Within a three to six kilometres' radius of this forest, there are four other UG-forest areas (see Map 2).

This forest can be divided into the main forest area with good timber, the bushy forest area with some wood, patches of barren land and bushes with good grass fodder, and non-forested area with rocks and boulders. The forest has elongated slopes in many places.

This is a mixed type of forest, with both small and large trees of different species. The seedling density is (less than 10" girth) 4,060 trees per hectare, whereas the tree density is (10"+) is 1,460 trees per hectare (see Annex 1). This forest has a large number of good-sized trees with species such as *sallo* (*Pinus* sp), *sal*, *karam* (*Holoptelea integrifolia*), *botdhamiro* (*Lagerstroemia parviflora*), *bhalaya* (*Rhus succedanea*), *amala* (*Phyllanthus emblica*), *hallude*, *jamuno*, *pipri*, *khayar*, *guyelo* (*Callicarpa macrophylla*), *asare* (*Lagerstroemia* sp), etc. However, the dominant species is *sallo*, which accounts for 24.6 per cent of the total species. The timber volume with bark in the 100sq.m. sample area is 4.69 cubic metres, which is low considering the forest size (see Annex 2). As it has species' diversity, and a good number of *khayar* and *sal* trees, many local people want to be users of this forest. Already, this forest has more users than it can sustain, and the number is likely to increase in the future, further aggravating the problem of sustainability.

Thaprong Forest

The Thaprong forest (estimated area seven hectares) is located in Ward No. 2 of Rajarani VDC and the altitude ranges from 1,500 to 1,700masl. The forest is divided into four small patches, ranging from 1.5 to 2.0ha. The forest area faces north-south and each forest patch is encircled by cultivated lands (see Map 5).

The seedling density (less than 10" girth) is 3,275 trees per hectare whereas the tree density (10"+ girth) is 775 trees per hectare (see Annex 3) The dominant tree species are *sallo*, *gurans* (*Rhododendron arboreum*), *mauwa* (*Engelhardtia spicata*), and *uttis* (*Alnus nepalensis*). The volume of trees with bark in the 100sq.m. average sample plot is 5.72cu.m, which is higher than in the Handikharka forest (see Annex 4). Even though this FUG is managed by the homogeneous *Limbu* community, the condition of the forest is poor. Unless this forest is well protected for another

10-15 years, the present users will not be able to sustain themselves on the basis of its products alone.

Forest Biomass of Sankhuwasabha District

The total stock of different kinds of tree species in Chyane Dashe *Danda*, Thulopakha Dhusune, and Sukrabare forests is discussed below.

Sukrabare Forest

The Sukrabare forest (estimated to be 10ha) is located between Sidhapokhari VDC to the west and Sidhakali VDC to the east. Chainpur VDC lies to the southwest of this forest area (see Map 6). The forest is located at 1,600masl. The settlements on three sides, close to the boundary of the forest, have led to encroachment and deforestation. The private forest area with patches of cultivated land close to it has caused deforestation at a slow pace in the area.

The total stock of tree species in this forest is quite low; only two types of tree species were noted -*chilaune* (*Schima wallichii*) and *patle katus* (*Castanopsis hystrix*). *Chilaune* constituted only 4.3 per cent of the total species and the remainder were *patle katus*. As there the trees in the forest are mostly small, density was noted by counting all trees (less than 10" girth and 10"+ girth). The seedling density (less than 10" girth) was 5,000 trees per hectare, whereas the tree density (10"+ girth) was 750 trees per hectare (see Annex 5). Both *chilaune* and *patle katus* are considered to be good timber species locally and are used to make agricultural implements as well as poles and beams for constructing houses. The timber volume on an average in the sample plot (10m x 10m) was only 13.7 cubic metres (see Annex 6). In brief, forest product yields are low and currently the forest cannot sustain users' requirements. Strict protection and management are required for another 10 years for gradual use of forest products.

However, the regenerative capacity of the forest is satisfactory as not only the seedlings but also the soil (mixture of red and loamy type with sand) is good and it is located on the west-south slope, hence it receives enough sunlight.

Chyane Dashe *Danda* Forest

Chyane Dashe *Danda* forest (estimated to be 50ha) is located in Ward No. 1 of Pangma VDC at an altitude ranging from 1,000m to 1,500m. For forest management purposes, it was divided into six plots or blocks. Only blocks 1 and 6 adjoin settlements and cultivated lands. The households located close to the forest area are user household and thus they not only help to protect the forest, but also overuse its products (see Map 7).

This forest has many tree species such as *sal* (*Shorea robusta*), *saj* (*Terminalia alata*), *chilaune*, *patle katus*, *jamuno* (*Syzygium cuminii*), *bot dhamiro* (*Lagerstroemia parviflora*), and others. The seedling density (less than 10" girth) per hectare is 12,900 trees, whereas the tree density (10"+ girth) is 833.3 trees per hectare (see Annex 7). The dominant species is *sal* (81.9%), followed by *saj* (5.6%), and the rest belong to other species. The estimated volume of timber with bark in the 100sq.m. sample area is 19.7 cubic metres (see Annex 8), better than other sample forest areas in Sankhuwasabha district.

The forest faces the southwestern slope, therefore it receives enough sunlight the whole day and the rich soil, as well as the availability of natural water (such as streams), helps the regeneration of young trees. If the present FUG management plan works effectively for the next 5-10 years, the Chyane Dashe *Danda* forest can easily provide forest products to its current users on a sustainable basis.

Thulopakha Dhusune Forest

The Thulopakha forest (estimated to be 10ha) is located in Ward Nos 1 and 3 of Manakamana VDC, although 75 per cent of the total forest lies in Ward No 1 only. The altitude ranges from 700 to 1,000m, and the forest is surrounded by settlements and the district headquarters to the west, north, and south. There are patches of cultivated land to the east, thereby creating serious forest protection problems (see Map 8).

In this forest, most of the tree are young. The seedling density (less than 10" girth) is 13,350 trees per hectare, whereas the tree

density (10"+ girth) is only 350 trees per hectare (see Annex 9). The forest is dominated by species like *sal* (*Shorea robusta*, 50.7%), followed by *patle katus* (35%) and the rest are *saj*, *jamuno*, and others. The volume of timber with bark in the 100sq.m. average sample area is 13.56 cubic metres. This suggests that there are some big trees in this forest also (see Annex 10).

As the forest faces east-south, it receives enough sunlight and the soil is of a loamy type and red brown in colour. Although the slope, elevation, and soil conditions favour good regeneration, this forest is already facing serious deforestation problems. One user has already encroached the forest area (the case is given in detail in Chapter IV). Nevertheless, the FUG has already passed a rule prohibiting timber cutting for the next five years, apart from thinning the trees. If this rule is followed strictly by all users, the forest can meet the needs of its present users on a sustainable basis for some years.

Forest Biomass of Ilam District

Bhedichok Forest

The Bhedichok community forest is situated 10km north of Ilam *Bazaar*, the district headquarters of Ilam district. It is close to Deurali *Bazaar*, a small market area and to Ward Nos 4 and 6 of Maipokhari VDC. The forest is situated around 2,000 to 2,150masl. Deurali *Bazaar* lies to the north, Kakre settlement to the south, Chame *Danda* to the east, and a small stream, Chamere, to the west. The forest area spreads well over 200ha and the users are from six localities - Kakre, Asine, Deorali, Ratmate, Bhalukhop Ahale, and Bhitte. There is a big pond called Maipokhari (covering an area of two hectares) which is considered sacred by the Hindus as well the non-Hindus of this area (see Map 9).

The total stock of different tree species is given in Annex 11. The seedling density (less than 5" girth) is 1,567 trees per hectare, whereas the tree density (5"+ girth) is 1,444 trees per hectare. *Sallo* constitutes almost 55 per cent of the total species, followed by *patle katus*, *jhigane* (*Eurya cerasifolia*), *kharane* (*Symplocos remosissima*), *kholme* (*Symplocos pyrifolia*), etc. The volume of

trees with bark in an average 100sq.m. area is 3.40cu.m. a relatively low amount of timber for such a big forest area (see Annex 12).

The forest faces west-south, hence it receives a good amount of sunlight in the afternoon. The soil is loamy and porous and sandy ochre in content. Beginning with 49 users three years ago, this forest now has 86 user families (almost doubled in three years). The dominant users of this FUG are the *Gurung*, and they are active in local politics also. If these local leaders can play a positive role in forest management, this forest can provide adequate firewood and timber to the users in future without much pressure.

Kharkhare Forest, Nayabazaar

The Kharkhare community forest is located in Ward No 1 of Nayabazaar. It is a day's walk from the district headquarters of Ilam and only four to five hours' walk from Fikal Bazaar. The forest is situated between 1,800-1,900masl and is bordered in the east by Jogmai VDC; the western and southern parts adjoin the new settlements of Nayabazaar, and Pyang VDC is located to the north. The forest area extends over 300ha, 100ha of which constitute a recently forested area. It is also interesting to note that this forest adjoins another UG forest (Jogmai) with 600ha of forest land (see Map 10).

This forest is relatively old and contains many old trees. The seedling density (less than 5" girth) is 5,350 per hectare, whereas the tree density (5"+ girth) is 610 trees per hectare (see Annex 13). The forest has over 20 species of trees and *kharane* constitutes 70 per cent of the total, followed by *asare* and *sallo* trees. The volume of trees with bark in a 100sq.m. average sample area is six cu.m. which is better than the tree volume of Bhedichok FUG (Annex 14).

Politics can be a key factor in destabilisation of this FUG. If there is good management at the local level and support from the District Forest Office, the forest can provide sufficient products for its users.

Chapter 4

FOREST MANAGEMENT ISSUES IN FUGs IN THE EASTERN HILL REGION

Users' Identification

In our study areas, generally those people whose houses were located within walking distance from the forest (normally from 10 minutes to 1.5 hours' walk), or whose land was situated near the forest, even though their houses may be located far away, were included as users. The membership structure is not confined to a single ward, VDC, or district. In the sample, the users are even confined to areas smaller than a ward or VDC (Thulopakha Dhusune, Sankhuwasabha); part of one ward each of two VDCs (Chyane Dashe *Danda*, Sankhuwasabha); part of two wards of two VDCs (Sukrabare, Sankhuwasabha); Nayabazaar, Ilam (three wards of one VDC); Bhedichok, Ilam (three wards of one VDC); Handikharka (parts of Ward Nos 3 and 7 of Dhankuta municipality); and Thaprong (all households of Ward No 2 of one VDC, Dhankuta). The name of the users is clearly noted in the *vidhan* (constitution) signed jointly by the chairman of the users' executive committee and by the DFO of the District Forestry Office. However, several problems were encountered while identifying users, particularly in the way members are included/excluded as users.

Dual Membership of the User

This is the most common problem that was encountered while identifying users. Nowhere in any *vidhan* is it clearly stated that a person can become a member of two or three user groups at a

time, or that members of a household (e.g., the father, son, wife, and husband) can obtain individual membership in two to three forest user groups at the same time. It was observed that, within a radius of five to eight kilometres, a user has access to three to six forests and can become a user of one of the FUGs, considering the availability of forest products. This was observed in Handikharka, Thulopakha Dhusune, and Bhedichok. For example, out of the total of 224 FUG members in Handikharka, 42 possessed dual membership. Even the executive vice-chairman of Handikharka FUG held an executive position in the neighbouring Chuliban FUG also. A user leaves his FUG and joins another because the other forest has more forest products to offer than the one in which he is a member.

The strategy of the wife being the user of one FUG and the husband the user of another FUG will no doubt maximise the use of local forest products, but it raises several practical problems at the local level. (i) For example, a user will not think seriously in terms of developing his/her own FUG as an institution. In fact, a UG forest, which has minimal forest products, requires better management and care than one which is densely forested. (ii) It will also threaten the existing notion of people's collective participation in common property resource management, such as forests, because a user will be interested in maximising economic gains rather than adopting an altruistic approach for a common goal. (iii) It will be difficult to identify real users of FUGs and the extent of forest use as the same person or other members of his family will be users in other FUGs.

Membership in Relation to the Size of the User Forest

FUG membership is not defined according to the forest size. In Thulopakha Dhusune of Sankhuwasabha, the forest size is only 10ha whereas the current users number 43 (only 0.2ha per user household). On the other hand, in Chyane *Danda* (Sankhuwasabha), there are 72 user respondents for 50ha of forest. The user-forest size ratio varies for different user groups. For example, in the Andheri Bhajana FUG (outside the sample area) there are 140 users for 18.75ha of forest whereas there are 112 users for 250ha of forest in Hatiya (see Annex 15). In most

user group forests in Dhankuta, the forest size is small compared to the size of the users (see Annex 16). In contrast, there are less users in Ilam in relation to the forest size. (See Annex 17). As biomass data (such as the volume of wood and availability of firewood and fodder) on most forests in the Eastern Hill Region are not available, it is difficult to show an exact relationship between the optimal number of users and the forest size. FUGs such as Bhedichok and Kharkhare in Ilam district have relatively large forest sizes compared to the number of users, but these FUGs have regulated the use of forest products because these forests contain few forest products (see biomass data on Ilam). Thulopakha Dhusune is another example of 10ha of forest not being adequate for even 43 users because of the small amount of forest products within it. On the other hand, 50ha of forest are adequate for 72 users in Chyane Dashe *Danda* because this forest contains not only diverse species but a relatively greater amount of forest products also. This problem may not be serious at present but may create difficulties in future. If a large number of users from one FUG (where forest products are minimal) want to become users in another FUG (where forest products are abundant), it will affect not only sustainability but forest use and management also.

Migrant and Temporary Settlers as Users

There are many user members in FUGs who are not only landless but also recent settlers. In Handikharka FUG, for example, there are 45 users who are not only landless but who also have settled temporarily in the area in the last two to four years. They are the biggest users of forest resources as they sell firewood regularly in Dhankuta *Bazaar*. They have nothing to lose, and if they get a good opportunity to work elsewhere (as in the Arun III project), they will migrate immediately. Such users are found in many FUGs in the Eastern Hill Region. The FUG constitution does not make any distinction between temporary and permanent settlers as users. But many permanent settlers feel that temporary settlers do not have a long-term interest in protection and conservation of a particular forest as they come and go. At present, there are no problems as such but this may create use, protection, and management problems in the future.

Inaccuracy in the Name of Users

In many FUGs, the names of users are collected haphazardly, whether they live in nearby areas or not. In Sukrabare (Sankhuwasabha), there are many users who are not known to local users. In Chyane, two user families have migrated permanantly to the *terai*. Such permanent migrant users are found in many FUGs but all of them are listed in the local records. In other words, it is difficult to identify users easily.

Sleeping Users

There are many users in our sample who have not even visited the forest in the last two to three years, never attended any FUG meeting, and so far not utilised any forest product. But, at the same time, they pay money to forest watchers, thus claiming the legal right to be users of the forest. Although such users are saving forest products for the time being, they are not sharing their ideas regarding the management, use, and distribution of forest products. For young FUGs to become sustainable, collective efforts are essential.

Users' Right to Leave the FUG

It is not clearly specified in the *vidhan* (constitution) of any FUG that a member loses the right to use the forest if he violates the rules many times and the user has lived close to the forest area for many generations. Similarly, what happens if a user of a particular FUG wants to leave it and join another FUG, or wants to become a multiple user - this is not specified in the *vidhan*. This problem can be observed in all FUGs in the study area.

Relationship with Neighbouring Areas

It is not mentioned in the FUG constitution how neighbourly relations should be maintained regarding forest use and management. Sufficient forestland is still available to many people in all three districts - Dhankuta, Sankhuwasabha, and Ilam. There is not much encroachment, even by non-users, because the availability of forest products has resulted in less pressure and the need for community forestry is not felt. In Ilam,

it was observed that the FUG committee had requested another FUG committee to provide a certain amount of timber (cu. ft.) on payment of royalty to build a school in their community. Nevertheless, the existing FUG constitution has some lacunae regarding relations with neighbouring areas.

i. VDCs are considered to be fundamental units of economic and political development processes in Nepal, but FUGs rarely represent a single VDC; in some areas, e.g., Sukrabare FUG, the forest is located in Siddhapokhari whereas the users are primarily from Siddhapokhari and Chainpur VDCs. Before the formation of this FUG, the people of Ward Nos 1, 2, and 3 of Siddhakali VDC were also using the products from this forest. But the *adhyakcha* of Siddhakali VDC claimed that neither he nor the people of Ward Nos 1, 2, and 3 were consulted while forming the Sukrabare FUG. He queried how Sukrabare FUG could exclude them from using forest products? So far there are no problems because few forest products are available. Once the forest starts regenerating naturally, benefit-sharing conflicts might occur among people in the neighbouring areas.

ii. Finally, some people living close to FUG areas have not become users because the products of another forest are available to them without much cost and effort. This was observed in Chyane Dashe *Danda* as well as in Kharkhare. Unless all the neighbouring areas closely integrate their efforts to develop FUG programmes, opportunists will keep encroaching upon forests at their convenience, and the present harmonious relationship among neighbours may be difficult to maintain in future.

Gender and Community Forest Management

It is commonly mentioned in the literature (NAFP 1991; Nepal UK Forestry Project 1989; Danigelis 1993; Molnar 1981; Molnar n.d.; Molnar and Schrieber 1989; Hobley 1990) that women are the major collectors of forest products in Nepal and hence they should be acknowledged as users and managers of forests. It is argued that women know which forest resource to give highest priority to for collection, which will have an impact on

farm/subsistence agriculture, its food value, etc. However, this is only partially true. In the case study areas, not a single woman participated in the FUG programme through self-interest and motivation. A similar observation was made by Karki et al. (1994) in their study of FUGs in central Nepal. In our sample of seven FUGs, with a total of 656 users, only 23 (3.5%) women were recorded as users, (Table 4.1). There is a provision that females should constitute one-third of the users' executive committee. In reality, however, only 2.7 per cent participated in the executive committee. Only Thaprong FUG had slightly more than the required (one-third) female participation. The representation of females, both as users and executive members, is quite low in Ilam; only nine per cent in Bhedichok and 0 per cent in Kharkhare participated in the executive committee. Most women were simply nominated, and they had no idea that they were participating as members of an executive committee. Some women members said that they were there because their husbands or fathers had forced them to participate. There is no doubt that, in all FUG study areas, women spend the most time in collecting firewood and fodder and grazing animals in the forest. So why is the level of female participation low in the study areas? There are several reasons why women are not interested in FUG programmes.

Table 4.1: Participation of Females in the FUG Study Areas, 1993

	Total User Households			Executive Committee		
FUG	Male	Female	Total	Male	Female	Total
Handikharka	220	4	224	12	3	15
Thaprong	45	4	49	6	5	11
Thulopakha Dhusune	41	2	43	9	4	13
Chyane Dashe *Danda*	67	5	72	8	3	11
Sukrabare	75	3	78	10	2	12
Bhedichok	83	3	86	10	1	11
Kharkhare	102	2	104	14	0	14
Total	633	23	656	69	18	87

Source: Field Survey 1993

i. Traditional perceptions of womens' role and obligations and customary practices in family and property relations do not permit women to participate in the public domain. In other words, Nepali culture does not permit women to participate in forestry activities. Forests belong to the public domain in which males participate, whereas women are perceived as belonging to the domestic sphere, i.e., household. According to traditional perceptions, forests are associated with masculinity, demanding roughness, strength, and courage. Forests are symbolised as the dwelling place of evil ghosts, spirits, and wild animals and a shelter for thieves and dacoits. A male normally carries a weapon (anticipating any form of danger) while moving around the forest. Females are considered to be soft and gentle and hence too weak to protect forest resources and manage forestry programmes. A woman is not allowed to travel alone in a dense forest even today and is normally accompanied by men. Moreover, how can a woman watcher protect the forest when males steal firewood? In other words, sometimes muscle power is required to challenge others, and this is not possible for females. Unless this very basic cultural element is withdrawn from Nepali culture, women's participation in forestry programmes will exist only in name.

ii. The Nepali cultural model is strictly hierarchical even today. The position of females is lower than that of males, i.e., if females request male users to attend meetings, probably very few males will attend. As most of the adult females are illiterate, many of them are still unaware of their legal rights or are unable or unwilling to exercise them. Apart from in Pakhribas, Dhankuta, not a single woman ranger was found in the three districts of the Eastern Hill Region. In the course of discussions with a number of females who are on executive committees, all of them said that they could attend the village assembly meeting of the FUG but could not hold higher positions like the chairman or secretary because of domestic problems. They also said that women could not become good forest watchers (*ban heralo*) as it was difficult for them to stay alone in the forest for a long time. Therefore,

there is little incentive or motivation for rural women to participate in forest resource protection or in management of forestry programmes. It is likely that the level of women's participation in forestry programmes will remain low even in the future.

Leadership, Decision Making, Distribution of Benefits, and Conflict Resolution

Although democracy in Nepal is considered to be the fulcrum for change in the economic and political spheres, FUG leadership, however, still operates according to the traditional model. Wealth, the status of a person in the hierarchial social structure, ethnicity, and contacts with the bureaucracy are important factors which strengthen the position of a leader in a particular FUG. The number of members from a particular cultural group in the FUG still plays a minor role in the formation of FUG leadership. The attributes of local leadership (the chairman and the secretary were considered to be functional FUG leaders) in the FUG study areas are presented in Table 4.2.

Table 4.2: Attributes of Leadership in the FUG Study Area, 1993

FUG	Position	Ethnicity/ Caste	Education	Landholding (in *ropani*)	Occupation	Relative Eco. Position among FUG members	Contacts with Govt. people
Handikharka	Chairman	*Brahmin*	Class 10 (eq.)	57	Agri+Priest	Good	Good
	Secretary	*Brahmin*	S.L.C.	16	Agri+Service	Good	Good
Thaprong	Chairman	*Limbu*	Literate	13	Agriculture	Good	Poor
	Secretary	*Limbu*	class 10	51	"	Good	Poor
Thulopakha	Chairman	*Chhetri*	B.A.	30	Govt. Ser.	Good	Good
Dhusune	Secretary	*Brahmin*	S.L.C.	70	Agri+Service	Good	Good
Chyane Dashe	Chairman	*Newar*	Literate	25	Agriculture	Good	Good
Danda	Secretary	*Brahmin*	S.L.C.	20	Agri+Service	Good	Good
Sukrabare	Chairman	*Newar*	class 8	31	Agriculture	Good	Good
	Secretary	*Chhetri*	S.L.C.		Agri+Service	Good	Good
Bhedichok	Chairman	*Gurung*	Literate	45	Agriculture	Good	Good
	Secretary	*Gurung*	Literate	32	"	Good	Poor
Kharkhare	Chariman	*Brahmin*	Literate	65	Agri+Business	Good	Poor
	Secretary	*Rai*	Literate	54	Agri+Business	Good	Poor

Source: Field Survey 1993

The table suggests that the status of a person in the hierarchial social structure and ethnicity are important factors for leadership at the local FUG level. Out of the total (14 positions), seven positions (50%) were filled by *Brahmin/Chhetri*, followed by *Newar* (14.3%), *Gurung* (14.3%), *Limbu* (14.3%), and *Rai* (7.1%). In Thaprong, the leaders were *Limbu* because the entire community was *Limbu*. In Bhedichok, the leaders were *Gurung* because most of the users were *Gurung*; only one *Brahmin* household was represented as a user in this FUG. In brief, the landholdings of all leaders were larger than the users on the whole; some of them were employed in government offices (relatively better off in economic terms in the local context), better educated, and most of them (except in Thaprong) had good contacts with the bureaucracy.

In Handikharka FUG, for example, active leadership was provided by the Pokhrel *Brahmin* who accounted for only 14 households out of the total (224 user households). The *adhyakcha* (chairman) was a rich old Pokhrel *Brahmin* with little education but with good contacts with the government bureaucracy. The Pokhrel *Brahmin* was elected unanimously. Locally, he is an active member, performs priestly services, and recites the *Purana** to his clients, but he does not occupy any other position at the local level. Likewise, the secretary of this FUG is a dynamic young man with high school eduction who works in a government office. In Thaprong, the *adhyakcha* is a traditional *Limbu subba* assisted by a general secretary, a young *Limbu* boy with high school education and relatively well off in the local context. Thaprong's chairman is also the chairman of the executive committee of the local primary school. Both leaders were also selected locally without opposition from other members. In Chyane Dashe *Danda*, the *adhyakcha* is a *Newar*, a relatively well off person. However, the general secretary is a migrant *Brahmin*, associated with the government administration. Likewise, in Thulopakha Dhusune, the *adhyakcha* is a well-to-do *Chhetri*, a B.A. degree holder, and a government employee. The general secretary is a rich young *Brahmin* with high school eduction who is active in local politics. In Kharkhare, Ilam, the *adhyakcha* is a rich *Brahmin* with little

* An important Hindu scripture

education, and in Bhedichok a *Gurung* who is comparatively well off in the local context. All the leaders were elected by consent. In such a situation, the decision-making process is likely to be biased in favour of a particular person or group (see Cases of Conflict Resolution below).

Regarding institutional attributes, all FUGs have a constitution with operational rules for use and management of forest products. These rules, however, differ from one FUG to another according to the size of the forest and the number of users. Some rules as specified in the FUG constitution and the general meetings of the different FUGs of the study area are given in Table 4.3.

Table 4.3: Operational Rules as Specified in the FUGs' Constitutions and General Meetings (Study Areas, 1993)

	Handi-kharka	Thaprong	Thulo-pakha Dhusune	Chyane Dashe *Danda*	Sukrabare	Bhedichok	Kharkhare
1. Boundary Rules							
1 Boundary rule defined	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2 Member-ship is restricted within the FUG	Not specified	Not specified	Not specified	Not specified	Not specified	Not specified	Not specified
2. Input Rules							
1 Member-ship fee	Not necessary	Rs 1 per user	Not necessary	Not necessary	Not necessary	Rs 5 per user	Not necessary
2 Payment in Rs per month	No	No	Rs 20 per month (user HH)	Rs 10 per month (user HH)	No	No	No
3 Watcher to protect forest	Yes (once a month by a user HH)	No	Yes (EF Forest Watcher)	Yes (CF Forest Watcher)	No	Yes (Forest Watcher 80% Govt. 20% CF	Yes (80% Govt. 20% CF)
4 Voluntary labour	Yes (once a year)	Yes (once a year)	Yes (once a year)	Yes (once a year)	Yes (once a year)	Yes (once a year)	Yes (once a year)
3. Harvesting Rules (Benefit-sharing)							
1 Timber for agricultural implements (plough, etc.)	Two pairs free per annum	Not Specified	Not allowed	Rs 5 per piece	Rs 5 per piece	Not specified	2 pairs free

	Handi-kharka	Thaprong	Thulo-pakha Dhusune	Chyane Dashe *Danda*	Sukrabare	Bhedichok	Kharkhare
2 Firewood (*bhari* per annum	40 *bhari* free	20 *bhari* free (pay Rs 1)	Rs 2 per *bhari* while thinning	Rs 2 per *bhari* (up to 100 *bhari*)	Rs 2 per *bhari* (up to 10 *bhari*)	Rs 5 per *bhari* (up to 10 *bhari*)	.50 paisa per *bhari* (up to 50 *bhari*)
3 Fodder: grass, tree fodder	Free	Free	Not allowed currently	Grass free, tree fodder (.25 per *bhari*)	Not allowed	Rs 30 for 12 months	Grass fodder free Tree fodder Rs 1 per month
4 Timber for domestic use	50 cu.ft. (half of the govt. rate)	No fixed quota	Not allowed for 10 years	50 cu.ft. (half of the govt. rate)	Not allowed currently	Not allowed currently	New house: 100 cu.ft repair: 50 cu.ft half of govt. rate
5 Other (bedding free for animals, leaves)	Free	Free	Not allowed currently	Free	Free	Not specified	Free
6 Hunting	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed
7 Charcoal making	Not allowed	Not specified	Not specified	Not specified	Not specified	Not specified	15 *bhari* Rs 1 per *bhari*
8 Grazing animals	Allowed except for recently planted area	Allowed	Not allowed	Allowed except for recently planted area	Allowed	Not allowed	Allowed except for recently planted area
4. Penalty Rules							
1 Agri. implements	Extra timber, good market prices			Rs 50 per piece	Rs 50 per piece		1st time: Rs 5 per piece, 2nd time: Rs 20
2 Firewood	Each *bhari* extra market price, *bhari* seized	Penalty not decided		Rs 10-25 per *bhari*	Extra *bhari* Rs 10 bundle	Forest regulations will apply	1st time: Rs 5 per *bhari*, 2nd time: Rs 50 per *bhari*
3 Fodder			Not specified	No penalty	Rs 10 per *bhari*	If money is not paid, not allowed	Tree fodder: Rs 2-5 per *bhari* in other months
4 Timber	Good market prices, timber seized	Rs 500-1,000 depending on timber type	Rs 500-5,000 depending on timber type	According to the law	According to the law	Rs 500-5-- per wood	Send to the DFO for action

	Handi-kharka	Thaprong	Thulo-pakha Dhusune	Chyane Dashe *Danda*	Sukrabare	Bhedichok	Kharkhare
5 Other	No penalty so far	No penal-ty so far	Rs 10-25	No penalty	No penalty	No penalty	Sent to DFO (no facilities next time)
6 Hunting	"	"	No law	According to the law	No law	No law	
7 Charcoal making	"	"	"	No Law	According to Law		
8 Grazing animals	First time: goat: Rs 1 cow: Rs 2 buff: Rs 10 2nd time: goat: Rs 2 cow: Rs 4 buff: Rs 20	No penalty	No law cow: Rs 10 goat: Rs 5 first time: double, second time: horse: Rs 100	Goat: Rs 10 cow/buff: 10	No penalty	1st time: Rs 50, 2nd time: Rs 75	First time: no penalty 2nd time: 100 per animal
9 Fire	Not allowed, sent to DFO	Not allowed, sent to DFO	Not allowed, sent to DFO	Not allowed (according to the law)	According to the law	According to the law	According to the law

Source: Survey

In general, these rules can be broadly categorised into four types: (i) boundary rules (whether a user group forest has a fixed boundary or not and whether a user can cross the forest boundary to become the user of another forest); (ii) input rules (the type and amount of resources required by each user to contribute to the FUG programme); (iii) harvesting rules (how the benefits, are shared by users); and (iv) penalty rules (to punish the rule breakers) (Tang 1989:38-42).

In general, these rules cover most points, i.e., what the user can or cannot do, the inputs required by him, to what extent he will share benefits, and in what conditions he will be punished. There are, however, some gaps in these rules also. In the boundary rule, for example, the user's boundary is not defined. It is because of this that a user has to become a multiple user at the same time, depending upon the availability of forest resources. The harvesting rules are designed as if all forest products (i.e., firewood, fodder, and timber) were available in a forest at the same time. The penalty rules are not clear in some FUGs. It is not stated in the constitution of some FUGs whether the membership of a user who has violated the FUG rules many times will be suspended or cancelled, etc.

In addition, some of the operational rules that are common in all FUGs are given below.

i. All user households of a forest user group are members of the general assembly. The general assembly is held at least twice a year. Two-thirds' majority must be present to pass a resolution.

ii. Normally an 11 to 15 member executive committee is formed to run the FUG's day-to-day activities. Females must constitute one-third of the members of the executive committee. These members are chosen at the general assembly. The term of an executive member normally lasts for two years. However, the general assembly has the right to dismiss any executive member, if he/she does not obey the constitution. The general assembly passes operational rules and resolutions that are implemented by the executive committee.

iii. Decisions are carried by a majority vote of the executive. Every member has the right to give his/her personal opinion in each case.

iv. It is also illustrated clearly in the constitution how much firewood and fodder a user can collect and during which months of the year. Similarly, depending upon the forest size and quality, timber can be cut (both high quality and low quality) if a house has to be constructed, etc. A user's need is determined by the executive committee.

The amount of firewood and fodder that can be collected from a particular forest depends upon the forest quality and size of each FUG. These benefits vary from one FUG to another. In Thulopakha Dhusune, for example, the forest is only in the bush stage; most of the big trees have already been cut. Therefore, the FUG has passed a rule prohibiting the use of any forest product for another 10 years. In the case of firewood, they are permitted to thin the forest every year during winter. The amount of firewood collected is shared equally among all members of the FUG. In Chyane Dashe *Danda*, separate plots have been allocated

(six separate plots, including the demonstration plot) for the distribution of firewood and timber to users. A user family can collect up to 100 bundles (1 bundle=25-35kg) of firewood. Even animals are allowed to graze in some parts of the forest area. In Handikharka, only 40 bundles of firewood can be collected in one year per user family. But dry and rotten small twigs, fodder, and *sal* leaves can be collected throughout the year. Excluding the recently afforested area, livestock can graze in this forest also. In Thaprong, users can collect dry twigs and fodder without charge, and no permission is required to cut timber for house construction. In Ilam, forest rules are stricter in Bhedichok, whereas they are flexible in Kharkhare; users only watch other users to check whether they cut big pieces of timber or not. The users said that dry firewood and fodder however can be collected throughout the year without charge, although the operational rules do not permit them to do so.

The question of benefit-sharing of forest products, particularly firewood and fodder, is not restricted to the users, but the use rate depends upon the size and availability of forest products. In Thulopakha Dhusune, restrictions are severe because forest products are limited. In Handikharka, regulated use of all kinds of forest products is allowed. In brief, the current practices of sharing forest products and payment of revenue by users are based on an egalitarian system. But this system cannot be justified if dependency on forest products and family needs vary (Chandra and Poffenberger 1989).

To what extent these operational rules are being observed or followed in the FUG study areas is given in Table 4.4.

The table suggests that most users follow the operational rules. Except for Handikharka FUG, where some users have become multiple users at the same time, users of other FUGs have not crossed their respective forest boundaries. However, it can be concluded that boundary rules will not be followed by many users in the study areas. For example, in FUGs such as Thulopakha and Sukrabare, the amount of forest products is minimal and hence cannot be shared by all users. If the users of one FUG become members of other different FUGs to collect forest products, collective efforts to develop local FUGs will be seriously hampered.

Table 4.4: Operational Rules Being Followed by FUG Members (as Stated in Table 4.3) (Study Area, 1993)

Boundary Rules	Handikharka	Thaprong	Thulopakha	Chyane Dashe	Sukrabare	Bhedichok	Kharkhare
1.2	45 users have taken dual membership	None	None	None	None	None	None
2. Input Rules							
2.1			One person has not paid	None			
2.2	1-2 HH so far violated		CF Watcher	None		None	None
2.3	Nobody violated	Nobody violated	Nobody violated	Nobody violated	Nobody violated	Nobody violated	Nobody violated
3. Harvesting Rules							
3.1	One case of rule violation	Followed	Followed	Followed	Followed	Followed	Followed
3.2	Some cases of rule violation	"	"	"	"	"	"
3.3	Followed	"	"	"	"	"	"
3.4	Some cases of rule violation	"	Some cases of rule violation	"	"	Some cases of rule violation	Some cases of rule violation
3.5	Followed	Followed	Followed	Followed	Followed	Followed	Followed
3.6	Observed	Observed	Observed	Observed	Observed	Observed	Observed
3.7	"	"	"	"	"	"	"
3.8	Some cases of rule violation	"	"	"	"	"	Not Observed
4. Penalty Rules							
4.1	-	-	-	-	-	-	-
4.2	Some cases of not paying penalty	None	None	None	None	None	None
4.3	None	None	None	None	None	None	None

Boundary Rules	Handikharka	Thaprong	Thulopakha	Chyane Dashe	Sukrabare	Bhedichok	Khar-khare
4.4	Some cases of not paying penalty	Followed	Some cases of not paying penalty	Followed	Followed	Followed	Followed
4.5	-	No penalty	No penalty	No penalty	No penalty	No penalty	No penalty
4.6	-	"	"	"	"	"	"
4.7	-	"	"	"	"	"	"
4.8	Only some followed	"	"	"	"	"	"
4.9	Followed	Followed	Followed	Followed	Followed	Followed	Followed

Source: Survey

Except for Handikharka, Thulopakha, and Chyane, users' inputs are minimal in other FUGs, and thus these rules are being followed without much tension.

Except for timber harvesting, rules are relaxed in most FUGs. Even though the firewood quota is fixed, some users collect more firewood than the amount fixed by the rules. In the local context, it is difficult to check which user is collecting how many forest products at what time and on which date. In some FUGs, such as Thulopakha, harvesting rules are very strict because the availability of forest products is minimal. Therefore, the users have no choice except to follow the rules. As many users of this FUG are businessmen in Khandbari and do not own much livestock, they purchase the required forest products from the market itself. Furthermore, there are no big conflicts regarding the sharing of forest products in other FUGs, because all the users are not collecting their quota of forest products for the time being. In Handikharka, for example, only 50 per cent of the users are harvesting forest products from their quota; the rest either use forest products collected from another FUG (because it is near by) or use their own trees. In Sukrabare and Kharkhare, more than 50 per cent of the users collect firewood and fodder from their own farm forests. Except for a few types of birds, wild animals are almost non-existent in all the UG forest areas. Therefore, there is not a single case of violation of this particular rule.

Regarding penalty rules, when the need arises minor fines are paid by all users without too much complaint. In Handikharka FUG, minor fines are paid by the users for offences such as letting goats graze in newly planted areas, etc. Such fines hardly exceed 10 to 15 rupees, depending upon the number of goats. Similarly, a *Newar* user paid Rs 57 as a fine for cutting more than the permitted number of poles of *sal* wood. But when the fine exceeds Rs 100, users are hesistant to pay. There are cases in which users have not paid their fines to the committee, and their cases have been brought up at the District Forest Office. Some complicated case studies of rule violators who have not paid their fines are given in the following paragraphs. One interesting case took place in Handikharka FUG and it is still unresolved.

Case 1

A case was filed against a Bhujel couple (Dil Bahadur Bhujel and his wife) in the District Forest Office, Dhankuta, on *Bhadra* 27, 2050 (1993) by the chairman of Handikharka FUG. The total fine to be paid by the couple for different offences was as follows.

1. Sold 470 bundles of extra firewood (Rs 35 per bundle)	16,450.00
2. Did not participate in the afforestation programme on the set date (once only)	35.00
3. Did not guard the forest in their turn on 2050/4/12 and 2050/5/2 (two days)	70.00
Total fine	16,555.00

At first, the couple was fined by the chairman of the executive committee of the FUG but they could not pay the fine because of poverty. Eventually, the case was discussed in the local executive committee, and there was serious oppostion by some executive member's because they wanted the fine to be lowered. But the chairman put forward the case to the District Forest Office when the fine was not paid. When research for the case study was being conducted, the case was pending in the office of the District Forest Officer. The DFO is the supremo, or the single-bench judge, who

settles such disputes. The interesting ramifications of this case are given below.

i. How can a poor couple like the Bhujel, who meet their basic needs by selling firewood, afford to pay such a large amount of money in fines? It is difficult to believe that the chairman would have fined a Pokhrel *Brahmin* for a similar type of offence. Due to these reasons, the case has already been taken up by the local, United Marxist Leninist (UML) Party leaders.

ii. If the DFO or the judge dismisses this case or levies a minor fine, many user families who are dependent on selling firewood will be tempted to cut wood from the forest. The FUG chairman may be disappointed and may not participate in the FUG programme in future. Others who disagree with the chairman may not cooperate in other FUG programmes.

iii. The user still enjoys his user's right in the forest and he has not even been suspended from UG membership.

Case 2

Another interesting case occurred in Thulopakha Dhusune FUG of Sankhuwasabha district. The user not only started clearing the FUG forest located close to his house but gradually also started planting fruit, such as pineapples and papayas, in the area. The executive committee warned him several times not to do so, but he did not listen and the executive committee filed a case against him in the District Forest Office. The District Forest Office, with the help of the local FUG members, fined him Rs 12,966, but the user refused to accept the resolution and the case was moved to the Appeal Court in Biratnagar. The legal issues were not resolved at the time of the field research. This case also has several implications.

i. As a cadastral survey has not yet been carried out in this area, a person can claim a part of the forest as his own private land or private forest. Normally, when forest land is cleared, a person can always bribe government officials to measure the forest land area as part of his own land. This type of

encroachment is part of the larger process of becoming a landowner in Nepal (Bajracharya 1981).

ii. If the court favours the client, the user, this will be a challenge to the verdict of the District Forest Office as well as to the role of FUGs in future forest protection and management.

iii. If any user violates a forest regulation and is not punished locally, he will be motivated to go to court rather than to solve his problem at the local level.

Case 3

Another interesting case took place in Kharkhare FUG of Ilam district. Three users, a *Thakuri*, a *Brahmin*, and a Ghising *Sherpa* were fined for logging timber illegally from the Kharkahare forest area. As all of them did not obey the verdict of the chairman and members of the executive committee, they were summoned by the District Forest Office at the request of the FUG executive committee. They agreed to pay fines of Rs 3,700, Rs 2,500, and Rs 888 respectively in front of the DFO but, apart from the *Sherpa*, the fines had not been paid when research for this report was being conducted. This case also has several ramifications.

i. After the verdict from the District Forest Office, the case was taken up by two political groups; one person was backed by the Congress Party and the other by the UML Party. Although both of them were affluent in the local context, they considered the fine to be a form of political revenge against them by the chairman *adhyakcha*. The *Sherpa*, however, was not active in local politics and had no choice but to pay the fine.

ii. Some users can easily challenge the functioning of local FUGs by aligning themselves with political parties to resolve conflicts and protect their interests.

These three cases have some interesting structural features. Firstly, conflict still occurs at the local level in the traditional

model, i.e., between rich and poor or between high caste and low caste. Secondly, the local FUG leadership is not able to resolve a conflict that involves a penalty of more than Rs 1,000. Thirdly, many users do not respect the verdict of the local leadership and expect a third person from outside the village to solve the conflict. Finally, local politics plays a key role in making FUG leadership ineffective at the local level.

Annual and Executive Meetings

The number of regular annual users' assembly meetings and the executive meetings of FUGs held in the FUG study areas in 1992/93 are given in Table 4.5.

Table 4.5: Number of Meetings Conducted by FUGs 1992/93

	Handi-kharka	Thap-rong	Thulo-pakha Dhusune	Chyane	Sukrabare	Bhedichok	Khar-khare
1. Users' assembly meetings							
1.1 Number of meetings to be conducted in a year (as noted in the constitution)	2	2	2	2	2	1	2
1.2 Actual meetings conducted	2	1	1	2	1	1	1
2. Executive meetings							
2.1 Number of meetings to be conducted in a year (as noted in the constitution)	12	4	Not specified	Not specified	Not specified	Not specified	12
2.2 Actual meetings conducted	12	1	4	4	1	4	2
3. Whether the FUG Forest Management Programme has been approved or not	Yes	No	No	Yes	No	No	No

Source: Field Survey 1993

Handikharka, Chyane Dashe, Bhedichok, and Thulopakha FUGs have conducted the annual users' assembly meetings and executive meetings regularly. The agenda for meetings is clearly noted in the FUG constitution. Executive meetings have also taken place in different FUGs according to their convenience and needs. These meetings suggest, to some extent, that collective action is taking place among users for decision-making, although there are some exceptions.

Forest Management Issues: Effectiveness of Some Key Indicators

In this section, the effectiveness of some key indicators of forest management in the FUG study areas, discussed in Chapter I, has been evaluated. While assessing the 'effectiveness' of user group dynamics, indicators such as leadership, rules observed/followed, the process of conflict resolution, whether a forest watcher has been employed or not, the number of meetings conducted by the FUG over the last one year, and whether the FUG management programme has been launched or not, were evaluated carefully. The effectiveness of selected indicators of forest management and their impact in FUG study areas are assessed in Table 4.6.

If altitude and climate are excluded (in all FUGs, they play an unimportant role), Handikharka and Chyane Dashe FUGs are highly effective in terms of forest management, followed by Thulopakha and Bhedichok. The forest management system as a whole is less effective in Thaprong and Kharkhare FUGs; Sukrabare FUG being the least effective. The data further suggest that indicators such as proximity to district headquarters and the market, forest size and diversity, and heterogeneous community structure and dynamic leadership play more important roles in forest management than other indicators. The role of some of these indicators in forest management in the study areas is discussed below.

Altitude and Climate

In the FUG study areas, altitudinal and climatic factors played a minor role in forest management, although they affected the diversity of tree species. Furthermore, the regenerative capacity

Table 4.6: Effectiveness of Forest Management in FUGs by Selected Indicators, 1993

Indicators*	FUGs						
	Handi-kharka	Thap-rong	Thulo-pakha	Chyane	Sukra-bare	Bhedi-chok	Kharkhare
1. Altitude							
- 900-4000 (A)	2		2	2			
- 4000 + (B)		2			2	2	2
2. Climate							
- Subtropical (A)	2		2	2			
- Temperate (B)		2			2	2	2
3. District Headquarters							
- Within 10km distance (A)	1		1	1		2	
- More than 10km distance (B)		3			3		3
4. Market							
- Within 10km distance (A)	1		1	1		2	
- More than 10km distance (B)		3			3		3
5. Forest Size and Biodiversity							
- Less than 10ha (A)		2	3		3		
- 10-50ha (B)				1			
- 50+ha (C)	1					1	1
6. User Group Size							
- Less than 30 User HH (A)							
- 31-100 User HH (B)		2	1	1	2	1	
- 101+ User HH (C)	1						2
7. Land Tenure							
- *Raikar* (A)	1		1		2	1	2
- *Kipat* (B)		2		1			
8. Community							
- Homogeneous (A)		2					
- Heterogeneous (B)	1		1	1	2	1	1
9. Leadership							
- Dynamic (A)	1		1	1		1	
- Slow (B)		2			2		2
Total (excluding Altitude and Climate)	1=7 2=0 3=0	1=0 2=10 3=6	1=6 2=0 3=3	1=7 2=0 3=0	1=0 2=8 3=9	1=5 2=4 3=0	1=2 2=6 3=6
	7	16	9	7	17	9	14

Source: Survey

* Altitude: Plays a role in FUG management = 1; Plays little role in FUG management = 2 Climate: Plays a role in FUG management = 1; Plays little role n FUG management = 2 For District Headquarters, Market, Forest Size, Biodiversity, User Group Size, Land Tenure, Community, and Leadership: Highly Effective = 1; Effective = 2; Less Effective = 3; Lowest Score = highly effective; high score relatively less and less effective

of species is higher in subtropical than in temperate FUG areas (see Biomass Section). Similarly, big trees were better preserved in high altitude FUG areas because of the lack of transportation facilities. However, the forest management system was the same in Bhedichok (high altitude and temperate climate) and Thulopakha (low altitude and subtropical climate).

***Kipat** vs **Raikar** and Homogeneous vs Heterogeneous Groups*

The hypothesis that the traditional *kipat* system was highly effective in managing common property resources, such as forests, is only partially true (Sharma et al. 1991; Seeland 1993; McDougal 1979; Caplan 1970). Similarly, the belief that a culture which has a high degree of social stratification is more destructive in terms of forest use and management than an egalitarian structure is also not entirely true (Seeland 1993). In the mid-hill region, where ethnic groups such as the *Tamang*, *Gurung*, *Rai*, *Limbu*, *Brahmin*, and *Chhetri* live, forest conditions are mixed; in some places forests are heavily deforested and in others they are well protected. In Thaprong FUG, for example, only patches of forest remain today, although it was part of a larger *kipat* management system up to 1968. The Handikharka and Kharkhare forests still have good forest cover, although these forests were managed under the *raikar* tenure system under *Brahmin* leadership. In the northern part of Sankhuwasabha, forests are still well protected not because there are egalitarian groups, such as the *Sherpa* and *Bhotia*, but because the population pressure is low and there has been little infrastructural development over the years. Many old, big trees were observed in the high altitude areas of Sankhuwasabha and Ilam because of the areas' relative inaccessibility. A comparatively greater abundance of forest resources was also noticed in the northern Himalayan region, although there is less rainfall (cf. Poffenberger 1989). This is because the forests have remained untouched for a long period because of the minimal population pressure and lack of market infrastructure. In lower elevation areas where the population pressure is high, and there is a good market network, forests have been destroyed gradually. Due to these pressures, more and more FUGs have evolved in these areas in recent years.

There is no evidence that a forest controlled by a homogeneous community is better managed than one controlled by a heterogeneous community. Even within homogeneous groups, e.g., in Thaprong (it is difficult to find a homogeneous community in one settlement), there is lack of cooperation among users who are rich (recruits in the Indian and British armies) and other users. The users of such FUGs are also unable to generate funds for forest management, e.g., forest watchers, or to make a rule that user households should guard the forest in turns. The forest is therefore left open to all users. In the context of the Eastern Hill Nepali society in general, a mixed community manages forest resources better than a homogeneous one. As many groups are involved in the management of each FUG and they constantly watch each others' activities, there are less chances of rule violation because other users also follow suit. In a heterogeneous community, monopoly of resource use, allocation, and distribution are seriously questioned. As there is minimum opposition in a homogeneous community (as most of them are linked by family ties), chances of violating forest regulations are high. Furthermore, in the Eastern Hill Region, studies have shown that a homogeneous culture is not as innovative and dynamic as a heterogeneous one (Caplan 1970 and Dahal 1983). For example, the *Limbu* of Eastern Nepal, who once controlled a large chunk of *kipat* land, could not utilise it as capital to intensify agricultural practices. Instead, they mortgaged it to immigrant Hindu groups and spent the cash on celebrating festivals, etc. The *Limbu* wanted to maintain the *status quo* regarding the land resources, but the immigrant Hindus utilised their cash as capital and invested it in diversifying and intensifying agriculture, thus becoming more prosperous than the *Limbu* themselves (Caplan 1970 and Dahal 1983).

Headquarters and Market

Indicators such as headquarters and big markets influence not only the formation but also the management of FUGs. Some of the FUGs, such as Thaprong, Sukrabare, and Kharkhare, are not very effective in forest management because they are located at a considerable distance from the district headquarters and market centres. Isolation creates many management problems and makes

FUGs ineffective in the local context. There was little communication between the Thaprong users and the District Forest officials over the previous year. For a Thaprong user, it is difficult to go to the District Forest Office in Dhankuta because it costs him time and money. For District Forest officials, Thaprong is not only remote but also less attractive economically because most users in the area are poor. Although Kharkhare and Sukrabare FUGs are located near the Ranger's Office, there is little communication between them. As there is little supervision from the District Forest Office, forestry staff at the Ranger's Office are not motivated to work in the field and only play their traditional role as protectors. The FUGs located near the District Forest Office are frequently visited by the concerned forestry staff, even from Kathmandu. According to the chairman of Handikharka FUG, their forest was visited several times by many officials from Kathmandu. Thus, the District Forest staff are also concerned and make frequent visits to easily accessible FUGs. Even though Thulopakha has few forest products, the forest is better managed as it is located near the district headquarters and market centres.

In rural communities, the market is not only a place for buying and selling goods but also a place for gathering, interacting, and communicating with each other. Thus, the market centres help the users of one FUG to know how another FUG functions.

Forest Size and Biodiversity

Forest size alone does not play an effective role in FUG management. Small-sized forests, such as Thaprong (7.5ha) and Sukrabare (10ha), and large-sized forests, such as Kharkhare (300ha), are all poorly managed. In contrast, small-sized forests, such as Thulopakha Dhusune (10ha), as well as large forests such as Handikharka (150ha) and Bhedichok (200ha), are better managed. Forest size is linked with biodiversity. Many people are willing to become users of a forest rich with biodiversity and thus help to manage the FUG programmes. Handikharka, Chyane, and Bhedichok FUGs are examples. Forests, such as Kharkhare, with a relatively large number of species, are poorly managed because of the large size as well as ineffective leadership.

User Number

User number alone is also not linked systematically to effective mangagement of FUGs. Small forests with a medium number of users, such as Thaprong and Sukrabare, are poorly managed, whereas Thulopakha is better managed. Likewise, a large forest with many users (such as Handikharka) is managed effectively. In reality, a particular FUG is formed without considering whether the forest products are sufficient. This has not created problems so far, as many users do not collect forest resources from FUGs in which they are users. For example, in Thulopakha and Handikharka, many users buy forest products from the market, whereas in Kharkhare, Sukrabare, and Thaprong, many users grow trees for firewood and fodder.

Leadership

Leadership is the most important indicator determining the effective management of FUGs. Handikharka and Chyane Dashe FUGs are well managed because of dynamic leadership. Even though there are few forest products in Thulopakha, it is well managed because of effective leadership, whereas, in FUGs such as Sukrabare, Kharkhare, and Thaprong, leadership is not very effective at the local level.

The Government's Forest Policy and the Role of District Forest Institutions

The transfer of forest ownership from the Department of Forests to FUGs, in many cases, is haphazard and not related to the demands and aspirations of the people. Therefore, why rapid extension of the FUG formation process is taking place is not clear (Table 21). Sometimes, forests worth Rs 10 million are simply handed over to FUGs, without seriously considering the forest size and the capability of the local community. It is not at all possible for the existing staff of District Forest offices to provide regular technical assistance to the burgeoning FUGs. In Dhankuta district alone, there were 91 FUGs as of September 1993, and many of them were hardly one to three years old. Many of these FUGs needed utmost protection and guidance on a regular basis, sometimes to resolve a local conflict or to manage the available

forest resources effectively. There were only 10 staff members in the whole of Dhankuta district who were supposed to provide daily forestry services to the people and assist the FUGs. In some FUGs, such as Kharkhare, it was even difficult to resolve a conflict without the presence of a district forest official because of the social and economic interrelationships among the local people. The District Forest Office and its officials are indifferent to or in some cases even negative regarding FUGs due to the following reasons.

i. In the Eastern Hill Region, most forest officials are not local, and many technical officials, such as rangers and junior rangers, are people from the *terai* and they are less sensitive to the hill culture and hill forests. In Dhankuta, Sankhuwasabha, or Ilam, the rangers are mostly from the *terai*, and since they have a different culture they have nothing to lose as they come and go and have little emotional attachment to the area. Many anthropological studies have shown that gaining access and developing a working relationship with the local people on the part of outsiders (government employees, researchers, etc) involves a good understanding of local cultures (Berreman 1972 and Caplan 1970).

ii. Generally, the forest officials and users do not trust each other at all. Historically, there used to be little communication between forest staff and the people, because the former played the role of police officers who are regarded as 'rude' and 'impolite' in Nepali culture. It is because of this that the users, the people, always ignored forest staff when they visited their villages. They are considered to be 'trouble makers'. When all their financial and social power was suddenly taken away from them and handed over to the FUGs, the forest staff were certainly not pleased. According to the new community forestry programme, they have to play the role of 'social foresters' and treat the people as friends, and, of course, provide services free of charge (Forestry Master Plan 1988 and Eighth Plan 1992:225). In brief, it will be naive to assume from the top (i.e., from the centre) that there is close interaction between the users and the District Forest Office staff. Such an interaction will not take place without radical

changes on both sides. In other words, the local people must be convinced that the forest staff are friends who can help them. Similarly, the forest staff should not treat the local people as if they are ignorant and have no understanding of forestry problems. This will seriously affect the development of young FUGs in the Eastern Hill Region and the Government's ambitious target of handing over forests to the local users will hardly materialise.

iii. As mentioned above, the Forest Department staffs' capacity to work with 'user groups' to formulate community forestry plans, even on the technical side, is questionable. At the district level, a District Forest Office supervises two to five Range offices headed by rangers who are responsible for all forestry operations and who have administrative and judicial authority with respect to forest regulations. Rangers' duties are further divided into beats, each under the charge of an assistant ranger (KHDP Report 1993). In the whole operation, there are hardly 10-12 staff members to supervise the activities. In other words, there is an acute shortage of technical staff in District Forest offices who can provide necessary services to the local FUGs. Not only have many of these rangers little technical training, but also even those that are trained have not updated their knowledge for a long time. During field research for this report, it was found that many of them had little idea about biomass, different types of forest species, etc. The DFO had little time to look after the forest himself. In brief, unless the Government sincerely commits itself to solving forestry problems, many FUGs in the Eastern Hill Region will simply collapse due to lack of coordination.

iv. The users' uncertainty regarding the Government's forest policies is obvious; they are not clear to many user groups. Many users still believe that the forest has been given to them only temporarily by the Government and, once it becomes dense, it will be snatched away from them without reason. This ambivalent attitude of the Government is clearly reflected in the recent Government Forest Act (1992).

v. The recent 'Government Forest Act 2049' (1992:221-222) in Section 5 (Clauses 25-30) discusses community forestry

management laws, and there are several gaps; some of them are discussed below.

Clause 26, Sub-clause 2, Amendment in Management. "*If any amendment in the original management plan of CF has deleterious effects on the environment, the District Forest Officer, after receiving the amendment, will notify the users within 30 days not to amend the original plan and it is the duty of the users to follows his instructions.*"

Two gaps in the law are that (i) the clause does not specify the conditions that can bring about deleterious effects on the environment and (ii) the District Forest Officer plays a major role in making the final decision.

Clause 27: Community Forest Can Be Taken Back

"*If the CF cannot work according to its management plan or performs activities causing deleterious effects on the environment, or does not follow this Act, the District Forest Officer can cancel the registration of such a CF and it can be taken back by the District Forest Office. But, before making such a decision, the CF will be given an opportunity to defend its case.*

If the CF does not abide by the decision made by the District Forest Officer, the case can go to the Regional Forest Director and his decision will be final."

There are several gaps in this law also. Firstly, the management plans of many sampled CFs are ambitious, for example, that they will control soil erosion. The law does not state a specific time period within which a CF must perform certain activities. In some FUGs, they are developing programmes, e.g., agroforestry (in Handikharka), that require clearing a part of the forest. In such a situation, a conflict of interests can always take place between the CF and the District Forest Office. Without developing an agroforestry programme, some CFs may find it difficult to sustain themselves.

Clause 29: Penalty to the User Who Works against The Management Plan (p 322)

"Any user who works or goes against the forest management plan can be levied [sic] an 'appropriate fine' by the group and collect the principal of the lost property."

The term 'appropriate fine' is also not clear, i.e., a fine deemed proper by the group may not be so to the user, and how the user will settle his case is not clear. Such cases have been noted in Handikharka and Thulopakha Dhusune FUGs.

Section 13: (Miscellaneous) Clause 67: Right of Ownership of Land (forest) Belongs to HMG (p 334)

"As stated in this Act, the land ownership rights of CFs, Contract Forests, and Religious Forests belong to HMG."

In other words, users can keep a tract of forest land for their use with the permission of the Government. The users have no right to use their own CF as part of community property such as *raikar*, i.e., it cannot be sold, exchanged, etc.

Clause 68: (p 334) Government Can Use Forests

"Whatever may be stated in the Act elsewhere, in any national priority project, if there is no alternative except to use the forest, provided it does not affect the environment, the Government can give permission to such a project to use a part of the CF, Contract Forest, and Religious Forest."

In brief, although the Government Forest Act does provide user groups with legal authority or recognition regarding the penalisation of a user who breaches the FUG constitution, some of these FUGs are unable to enforce the rules and regulations because of ambiguities in the law. For example, it does not state how a user group is to enforce the law if a user does not pay the fine or does not have the capital to do so. Handikharka, Thulopakha Dhusune, and Kharkhare FUGs are cases in point. Even for a minor problem, when a user does not abide by the local FUG rules, the FUG committee has no choice but to go to the District Forest Division to file a case. A user can always lobby for a favourable decision on his behalf from the District Forest Office by adopting different procedures.

Furthermore, Clauses 26 and 27 are ambiguous in the local context. Phrases such as 'deleterious environmental effects' and 'if the FUG cannot work according to the management plan' can be interpreted in different ways. Likewise, 'right of ownership of land' (Clause 67) and 'the government can use CF, Religious Forest, and Contract Forest' (Clause 68) put users in an insecure position. If users come to know about these laws, many FUGs may simply stop functioning.

Under such circumstances, how can FUGs be effective in managing forest resources locally? This reflects the lacunae in the Government's forest policy and provides evidence of inadequate collaboration between users and the Government.

Issues of Sustainable Community Forestry

The idea of sustainable community forestry sounds wonderful, but how the local resource base and culture can sustain a forestry programme in practice is crucial. Some key factors leading towards the sustainability/ unsustainability of the FUGs under study are discussed below.

Population Pressure

Population pressure is one of the principal determining factors leading to the unsustainable management of forests. Some user groups have been formed close to the district headquarters where population pressure is high. While forming a forest user group, to what extent a sustainable yield of forest products is required for users is often not calculated. In the FUG study areas, such as Thulopakha, Thaprong, and Sukrabare, UG forests are smaller in size and their yields are low in relation to the number of users. Currently these forests are not sustainable in terms of meeting local users' needs. It has already been discussed in Chapter III that the population is increasing by more than two per cent per annum in all three districts. Most of the VDCs also have a growth pattern similar to that of the district as a whole. Forest product yields cannot be increased in a short period of time. In such a situation, along with a sustainable increase in forest products, the population growth must be stabilised also. Otherwise, there is a risk that the forests may disappear.

Furthermore, population pressure also creates the need for income from outside sources for subsistence. As less land resources are available for production, farmers may be forced to move elsewhere. This is taking place in Thaprong FUG where some users are going to the Arab states as wage labourers. In Handikharka, landless users are ready to move to the Arun III Project site when work starts. In brief, many users may not depend upon local forest resources and this may hamper effective management of FUGs.

Basic Needs

Apart from in Ilam, over 60 per cent of the sampled users have less than one hectare of land. In Dhankuta, an average user household owns scarcely half a hectare of land. These landholdings can barely provide half the staple food requirements of the users who are increasingly dependent upon income from off-farm activities. There is a short-term or immediate need for products from public lands, such as forests, or regular wage labour jobs for such families. In Handikharka, there are 45 landless families who collect and sell firewood from the forest to fulfill their basic needs. In such a situation, it is difficult to bear the cost of unproductive forests.

Users' adjustment mechanisms include extension of farming to marginal or forest areas, and this can have a destructive effect on the natural environment, particularly on forests. This is the most common problem throughout Nepal and more so in the Thulopakha Dhusune, Chyane Dashe, and Bhedichok FUG areas. In some forests (not covered by our sample), it was noticed that right in the middle of the Government's forest area, encroachers had started cultivating seasonal and cash crops.

In brief, many of the sampled users did not produce enough food to meet their subsistence needs. Poverty is preventing users from acting collectively to protect common pool resources, e.g., forests. This will affect forest sustainability and the management programmes of FUGs.

Sources of Funds for Management

The sources of funds for all forest user groups are either local taxes or sale of forest products. To maintain the FUG office, minor expenses, such as files, foolscap paper, envelopes, and pads, are borne by the DFO. Such expenses hardly exceed 200 to 500 rupees per annum. In the case of Ilam district, the District Forest Office used to pay a small salary (Rs 500 per month) to forest watchers, but this practice ceased from this fiscal year. In Dhankuta and Sankhuwasabha districts, some FUGs have employed their own forest watchers at 700 to 900 rupees per month. In Chyane Dashe *Danda*, a user household pays Rs 10 per month (because the user group is large), whereas in Thulopakha a user household pays Rs 20 per month. In Sukrabare, users are not able to collect cash for forest watchers, hence the forest is left to the mercy of users. In Handikharka, a user household sends one member to watch the forest as the turn of a user household normally comes only after a month. The above data suggest that some users are quite enthusiastic about forest management and some are not. This enthusiasm may not last as many forests, that are currently under FUG control, are in a poor condition. The development and regeneration of many of these forests require physical inputs (for weeding and fencing) as well as investments for buying seedlings and planting them. In fact, the maximum returns from some of these forests can be obtained only after a minimum period of 10-15 years. For example, in Thulopakha Dhusune, mostly young *sal* trees, hardly two to five years old, grow. Normally these *sal* trees will take another 50-60 years to mature. In other words, the users have to bear the immediate burden of forest management, whereas the benefits will accrue only in the distant future (Atkins 1991).

On the other hand, not a single FUG has a fixed annual budget to run its programme. In fact, very little income is generated from selling forest products in any of the FUGs. In Handikharka, apart from minor fines (not exceeding Rs 500 per annum), the FUG committee does not charge any money for fodder and firewood (a fixed quota is supplied). Timber sales have not yet started. In Thaprong, apart from charging one rupee for fodder and firewood (for a fixed quota), they have no other sources of income. Thulopakha and Sukrabare FUGs do not sell any forest products

at all. In Chyane Dashe, some users have not even given their monthly contribution towards the forest watcher's pay. It is only in Bhedichok (Ilam) that the FUG committee collected Rs 1,734 from selling firewood and Rs 1,230 for fodder from its users in 1992/1993. In Kharkhare, apart from a fine for illegal timber felling (fine = Rs 888 in 1992/1993), there was no other source of income.

In brief, many FUGs in the sample may not be able to sustain themselves on the basis of their resources alone in the near future.

Market Economy

As the market economy network expands, there is also the possibility of a higher extraction rate for forest products for immediate cash. In remote FUG areas, e.g., Kharkhare in Ilam, where the market network is yet to develop, numerous large trees were observed. The question of sustainability arises whenever there are opportunities to sell forest products, either legally or illegally. It has already been mentioned in Chapter III that the percentage of immature trees ranges from 99.7 per cent in Dhankuta and 92.9 per cent in Ilam to 72.9 per cent in Sankhuwasabha. Sankhuwasabha district is less accessible in terms of transport and the development of the market infrastructure is minimal. This has helped to protect a large number of mature trees in the district. Dhankuta district has not only remained an important administrative centre throughout history, but it has also remained an important market centre for the people of the Eastern Hill Region. This has caused serious depletion of mature trees in the district.

Dependency Syndrome

Two types of dependency syndrome can be observed in the FUG study areas: (i) the dependency syndrome within the local culture, i.e., cultural and economic domination by one group over another or a system of patronage and (ii) the external dependency syndrome for resources. The former indirectly affects the sustenance and development of FUGs, whereas the latter affects them directly.

As the Hindu caste structure is the basis of the village social structure, the high-caste Hindu groups (e.g., *Brahmin* and *Chhetri*) consider themselves culturally superior to the other groups, especially the untouchables or occupational caste groups (such as *Kami*, *Sarki*, and *Damai*) who are placed at the bottom of the Hindu caste hierarchy. Other groups, such as the *Newar*, *Limbu*, *Rai*, *Magar*, and *Gurung*, occupy the middle position between these two extremes. At the local level, the high-caste groups are big landowners and are better educated; they work as government employees and also play a key role in local politics (see Chapter III). Many low-caste groups (in some cases even *Rai*, *Limbu*, *Magar*, and *Gurung*) are dependent economically upon high-caste groups as they provide loans and other support when the need arises. Moreover, some occupational caste groups, such as the *Kami* and *Damai*, provide services under the traditional Indian *jajamani* system, locally called *bali* (services provided by the occupational castes to the high castes). In lieu of their services, these untouchable groups are provided with grain on an annual contract basis. In the FUG study areas, a number of *Kami* and *Damai* users were found working under the *bali* system and thus were economically dependent on the high-caste groups. In such cases, it is difficult to expect such users to hold independent opinions against high-caste groups in FUG development programmes. Even in FUGs such as Handikharka, where the majority are *Rai* users, they have little say in the decision-making process of the FUG as high-caste groups such as the Pokhrel *Brahmin* dominate the politics and economics of the area. Such cases are found in all FUGs and this affects the collective participation of users in FUG development programmes.

The issue of sustainability also brings about the external dependency syndrome; if external resources are suddenly withdrawn from the forestry programme, most community forest user groups will collapse immediately. It is, therefore, not possible to manage many FUGs effectively through domestic resources alone. The support of the Koshi Hills Area Development Project to forestry programmes has been quite substantial over the last 15 years or so. In 1992-93, it started working as a separate unit within KHARDEP, as the Nepal-UK Forestry Project. In 1993-94, the contribution of the Nepal-UK Forestry Project was close to 25 per cent of the total budget of the Dhankuta and Sankhuwasabha

districts. In the total budget of Ilam district for 1993-94, external financial aid was much higher - close to 90 per cent (Table 4.7).

Table 4.7: Annual Budget of the District Forest Office under Study, 1993/94

Year	District	Total Budget	Financial Aid	
1993-94	Dhankuta	54,55,000.0	1,323,000.0	Nepal-UK Forestry Project
	Sankhuwasabha	4,000,000.0	999,400.0	Nepal-UK Forestry Project
	Ilam	1,700,000.0	1,319,730 + 112,000	World Bank DANIDA

Source: District Forest Office 1993

Financial aid includes strengthening silviculture, management training, and extension of district forest staff and FUG members, FUG networking workshops and FUG field tours within the home district, developing agroforestry programmes, paying the cost of nursery seedlings for FUGs, and paying travel and daily allowances to the DOF staff for field trips within the district and outside. In brief, the issue of FUG sustainability is closely linked to internal as well as external factors. It is not easy to tackle these issues within a short period of time.

Chapter 5

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Using the common theory of 'people's participation', this report examines the existing structure and functioning of FUGs in the Eastern Hill Region of Nepal. Seven case studies of FUGs located in three hill districts - Sankhuwasabha, Dhankuta, and Ilam - were used to examine how the various biophysical, sociocultural, economic, and institutional attributes are related to the performance of FUGs and their long-term sustainability. The major findings of this study are as follows (Tables 5.1, 5.2, and 5.3).

1. Proximity to district headquarters, population pressure, and government forestry programmes are closely associated with the formation of FUGs in the districts under study. All three factors have altogether contributed to the formation of the highest number of FUGs in Dhankuta district. Ilam district has the lowest number of FUGs as the area under forest cover is larger and thus there is no immediate pressure for the formation of FUGs.

2. Considering the population pressure, development of market centres, and migration factors, deforestation in the Eastern Hill Region is primarily a recent phenomenon. Its severity increased only after 1960 because of the changes in the Government's forest policy, which were accentuated by changes in the political structure over the years. The 1957 Forest Act alone was not responsible for heavy timber felling.

3. Physical attributes of forests, such as size and species' diversity, are linked not only to the effective management of forests but also to the identification of users and the increasing/decreasing number of users in the FUG study areas. Handikharka, Chyane Dashe *Danda*, and Bhedichok FUGs are relatively better managed because of their size and species' diversity. The number of users is highest in Handikharka because of the diversity of its tree species, and this has attracted a large number of users from other neighbouring areas - Kaino Ghari, Sirbani, and Chuliban. When there is an option to become users in different forests, users participate in different FUGs for future security in supplies of forest products rather than building an institutionally strong FUG. The forest size affects the delivery of forest products and limits the flow of forest products at any one time. It is because of this reason that many users want to participate in different FUGs, i.e., to obtain a variety of forest products. The exception, however, is Thulopakha Dhusune which is small in size, and also contains a minimal number of forest products, but which is better managed because of its dynamic leadership and its proximity to the district headquarters. Although Kharkhare forest is large and contains a fair number of species, it is poorly managed because of its large size and ineffective leadership.

   A user normally weighs the benefits and costs and, at the same time, considers whether becoming a permanent user or a multiple user is more beneficial. This is again an attempt to obtain benefits in the local context. For example, there are a lot of users in Handikharka at present who are not using forest products but who have become users because of the biodiversity of Handikharka forest. Therefore, users become users in the real sense only when they are assured that a particular forest yields good forest products. Similarly, in Thulopakha, there are a lot of users who contribute to FUG development and, instead of obtaining forest products from the FUG, buy them from the market. This is also a long-term calculation of economic benefits in the sense that, if they do not need forest products today, they may need them tommorrow.

Users know very well from which forest they can collect fodder, firewood, or timber. It is difficult to obtain all three forest products from one forest at the same time.

4. Sociocultural and economic attributes also play key roles in the effective management of FUGs. In FUGs in which people are better educated, or where there are many government employees, the community forestry programme is progressing gradually; the users hold discussions and sometimes seriously disagree on issues, e.g., how the FUG should perform and conduct its activities. A typical example of this is Handikharka in Dhankuta and Thulopakha Dhusune in Sankhuwasabha.

   Apart from Thaprong FUG, all FUGs are comprised of mixed communities with different languages, religions, and cultures. Nevertheless, this does not hamper communications among the users and they cooperate fully with one another in respect to forestry management. Although there is a slight problem regarding migrants in Handikharka FUG, they are not discriminated against in benefit-sharing, even though they are newcomers. The resource-poor and untouchable groups are not disadvantaged in terms of access to forest products or participation in the general assembly. In other words, there is no discrimination regarding access to forest resources - whether rich or poor, high or low caste. Low-caste users are found in all FUGs and they are not considered to be obstacles/hindrances to the effective management of FUGs.

   Nevertheless, ethnicity and cultural variables do play important roles in the formation of local leadership in all FUGs. Some members come from elite cultural groups. Ethnicity is also related to education and income, which are fundamental assets for obtaining a leading position in FUGs.

   Futhermore, cultural variables are important in the context of forming a majority or acquiring strength within the community. The ethnic majority not only helps to develop local leadership but also to form alliances in case

of any dispute that may arise within the community or outside. In Handikharka FUG, a few Pokhrel *Brahmin* dominate the decision-making process in the FUG because of their wealth, education, and bureaucratic contacts. There is also a communal feeling in the sense that they protect their group members in cases of conflict. This feeling, however, is not directly expressed in all FUGs.

5. The gender issue, particularly the role of women in FUG management, was acknowledged by all FUGs. In practice, however, women are considered weak and are discouraged from being active members of FUGs. Locally, there is no evidence that women's participation will enhance collective action and effective management of FUGs.

6. Even though there is relative economic inequality among various cultural groups and the heirarchical Hindu caste model is the basis of the social structure, there is no discrimination at all regarding benefit-sharing among groups. In other words, the traditional cultural and economic structures are not barriers to ensuring an equitable share of benefits and forest products among users.

7. Active leadership at the local level, proximity to district headquarters and big markets, forest size and biodiversity, and population pressure were identified as the key factors for effective management of forests in FUG study areas. Altitude and climate have minimal roles to play in forest management, although the quantity of fuel use may vary with altitude. But the data suggest that more mature trees are found at high altitudes and areas where access is difficult. Heterogeneous (mixed) communities are better than homogeneous ones in forest management because of the dynamism and innovativeness of different cultural groups. Study of the *kipat* system of land tenure does not necessarily indicate that forests were better preserved under it over the years than under the *raikar* system.

8. All FUGs have a *vidhan* (constitution) with operational rules for use and management of forest resources. These, however, differ from one FUG to another, according to the

size of the forest and the number of users. The institutional aspects of many FUGs are fairly good in terms of rule conformance and management procedures. Rules against overgrazing and unregulated fuelwood and fodder collection are quite effective. There is occasional violation of rules due to poverty, the government's ambiguous forest policy, and political cliques and factions within the community.

9. A good working relationship between the district forest staff and FUGs is sadly lacking even today. Operating and maintaining an FUG frequently requires coordination among its users and the district forest officials, but district officials clearly have divergent interests, preferences, and aspirations and lack both incentive and capability to help FUGs. Many officials feel that it is a programme designed from the top and backed by donor agencies. It was noticed that many rangers were ignorant of the latest developments in the forestry sector and were unaware of even the names of different tree species; they had no knowledge whatsoever of biomass. Most officials do not expect to be in a particular area for a long period of time, because of bureaucratic hassles within the Forestry Department which transfers DFOs constantly. If a particular DFO was more social and genuinely intended to help the users, it was noticed that the bureaucracy did not like it, and he was soon transferred elsewhere. Many forest officials do not spend time and energy on supervising the FUG programme because incentives of any kind are lacking.

10. The issue of sustainability also brings about internal and external dependency syndromes. Because of the relatively poor resource base of the users, FUGs such as Thaprong and Sukrabare may not be able to sustain themselves in the future. Even at present some forests, such as Thulopakha and Sukrabare, are not supplying sufficient forest products to their users. These forests require strict protection and management and internal as well as external resources for support. Without developing an agroforestry programme, many FUGs will not be able to

sustain themselves within the limitations of their resource base. Furthermore, cultural and economic domination by one group over another indirectly affects collective action among users, resulting in unsustainable forest use and management. Rapid population growth and development of market centres in the FUG study areas in recent years are creating an increasing demand for forest products, thereby depleting the local forest resources and making them more unsustainable.

Finally, some common attributes of users in the Eastern Hill Region regarding collective participation in the protection of common pool resources, e.g., forests, are listed in the following paragraphs.

i. The extent of the users' dependence on forests also affects collective action and participation in forest management. There are many landless users who keep a minimum number of livestock but use forest products, such as firewood, regularly to meet their basic needs. In other words, these users depend on forests as a major source of income for subsistence. Their participation in collective action is primarily motivated by their desire for immediate benefits. These resource-poor users have proved to be good forest guards as their labour is available at any time compared to other users who have more resources at their disposal. The type of choice available to users plays a key role in increasing their interest in collective action in FUGs. On the other hand, there are users who have simply become users and pretend to be participating collectively (such as the users in Handikharka and Thulopakha Dhusune), considering that they may not be permitted to use forest products in the future.

Apart from in Handikharka where there are a number of landless users, the income variance of users as such is not a significant variable for collective action programmes in FUGs. No doubt income on the whole is the most important factor influencing collective efforts and long-term sustainability of all FUGs, but the income variance of users *per se* does not hamper collective efforts.

ii. With respect to sociocultural and economic components, cultural factors, such as language, caste, and religion, are not major barriers for short-term or long-term cooperation among users for collective activities. In fact, it is rather ironic that today national politics play a more important role than sociocultural attributes at the local level when conflicts take place between users. There is a clearly visible polarisation and the users align with one particular political group or the other, irrespective of their cultural values. This has dangerous implications for the development and sustainability of FUGs and collective action by users at the village level in the Eastern Hill Region.

iii. Nepali society in general is status-ridden. The social status of a person is very important because it is rewarding in the wider social, economic, and political contexts. Hence, even at the village level, some people take active interest in bringing a development package programme, e.g., FUG programmes, not only for social status but also to protect their own interests as well. A position such as 'chairman' or 'secretary' is socially recognised, provides the legitimacy required to contact and interact with the bureaucracy, and yields unseen economic gains within and beyond the local level. Therefore, many FUGs in the Eastern Development Region were formed by such people and many users participate collectively only because of them.

Recommendations

Monitoring Socioeconomic Attributes

The future of FUGs, to a great extent, depends upon the sociocultural characteristics of the user groups themselves. Physical and community attributes create the environment within which users make choices and take action for their welfare and to improve their living standards (Tang 1989). In other words, monitoring of trends in forest use, allocation, and distribution; income of users; and intergroup relations should take place on a

regular basis in order to counter runaway processes within the system. Activities could be monitored by the users' executive committee by preparing a list of users with the following information: annual consumption of forest products (amount of fodder, firewood, and timber), categorisation of rich and poor farmers in terms of landholdings and livestock and intergroup relations (who is dependent on whom socially and economically). This information must be updated every year, and for this a training programme will be required for one or two enthusiastic members of the executive committee. This does not cost much at the local level.

Users' Identification Must Be Clearly Defined

Users are not clearly identified in many FUGs. Many FUGs deliver forest products to as many users as possible, or to those who require them, without considering the forest size and the availability of products. The boundary within which any FUG member operates is most essential not only for the long-term sustainability of the FUG but also to identify the real users at the local level also. This is necessary as it limits the number of users to a level at which the demand for forest products does not exceed supply. Furthermore, collective action cannot take place if more users are added every year. Temporary settlers should not be given full responsibility for forest protection as they have little attachment to the local area.

User Membership Must Be Restricted within a Single FUG

A person can become a user in any number of FUGs, depending upon his family size, need for forest products, political aspirations, etc. This system discourages a user from becoming loyal to a particular FUG and thus makes it difficult to develop the FUG as a sustainable institution in the future. If user membership is restricted to a single FUG, the user has no choice except to develop his own FUG as an institution. This system may create problems for some users as their forest may contain insufficient forest products for immediate use. Such users, if they wish, can be permitted to become users of a neighbouring FUG with the consent of both FUGs, but dual membership should be restricted to a certain time period, e.g., for a certain number of years only.

The FUG Boundary Must be Coterminous with the Political Boundary of an Area

The community forestry plan has overlooked the fact that the Village Development Committee (VDC) is the basic political unit. The inhabitants of a VDC will not permit their resources to be used by the people of other VDCs for nothing. Sukrabare FUG in Sankhuwasabha is a case in point in which gradual tension is being created between users of two VDCs. There has been no direct conflict so far because this FUG's forest contains few forest products. In Nepal, a person is identified on the basis of an area or village, which is defined by a political boundary, and thus he is morally committed to develop his own area. Unless users are integrated within a definite political boundary, not only will neighbourly relations be disturbed but serious challenges will arise regarding forest resource management issues at the local level, particularly when the forest area becomes dense.

Data on Biomass Necessary before Forming FUGs

As there is a lack of biomass data (such as the total stock of different species, their volume, and the availability of firewood and fodder) on most forests in the Eastern Hill Region, it cannot be clearly stated which forest is sufficient for how many users. Most FUGs were formed without considering whether the quantity of forest products was adequate and this must be given due priority while forming FUGs.

Benefit-sharing Should Be Channelised based on the Relative Economic Status of Users

Agriculture is the main economic basis for all users in the study areas. Landholding size and the number of livestock raised by a user greatly influence the pattern of forest use. A user with a large landholding and many livestock definitely uses more forest products than a user who keeps fewer livestock and has less land. This process does not ensure equitable distribution of the benefits of forest products. The problems of equity and benefit-sharing should be channelised based on the relative economic status of users.

Motivate Women for FUG Development Programmes

Although women are directly involved in collecting firewood and fodder in the Eastern Hill Region, they are discouraged from participating in the local FUG programme for sociocultural reasons. The participation of women in the FUG development programme can be increased gradually by understanding and using the local cultural norms. (i) Women from the cultural groups participating in the FUG programme who are more relaxed and used to mixing with men in their day-to-day lives, e.g., *Sherpa*, *Tamang*, *Rai*, and *Limbu*, should be encouraged. (ii) The District Forest Office should organise more forestry training programmes for women with lucrative cash incentives. This type of training must be provided by women rangers and foresters. The cash incentive will not only motivate women but also their husbands who will, in turn, encourage the women to participate in the forestry programme. (iii) The District Forest Office must have a good number of female rangers and foresters since their frequent visits to different FUGs may encourage more women to participate in the local FUG programmes.

Develop the Agroforestry Programme to Meet the Basic Needs of Users

Although the major purpose of FUGs is to meet both the present and future needs of its users for basic forest products, FUG management plans must incorporate measures to combat the problem of local poverty by making FUGs more sustainable in the future. The agroforesty programme, which has been introduced in Handikharka FUG, may be a short-term as well as a long-term solution to the problems of users who cannot fulfill their basic needs. But this requires careful programming backed by sufficient financial inputs, which most FUGs lack today. It also requires commitment from HMG as well as from donor agencies so that an appropriate and effective package may be developed to help resource-poor farmers.

Increase the Efficiency of Wood Use

In several FUG areas, there are many trees that are not only mature but are also rotten and such trees can be used for firewood

and timber extraction. Slightly more flexible rules for cutting such trees should be included in the management plan. This would solve the short-term needs of users for firewood and timber and would also provide immediate employment to many local, resource-poor farmers.

Close Coordination between the District Forest Offices and FUGs is Essential

There is little integration of local and national management systems in forestry programmes in Nepal. It is not easy for the Forest Department staff to be more supportive to users, as not only frequent training of district forest officials but also knowledge of the local sociocultural system are required.

Develop Institutional Capability

One of the most serious constraints to the development of FUGs as stable institutions is that many FUGs are weak in terms of leadership, resource allocation, distribution, and strict enforcement of their own rules as specified in the FUG constitution. Without strong technical and financial support from the District Forest Office for some years to come, FUGs will remain weak institutions at the local level.

Some Clauses of the Recent Government Forest Act (1992) should be Modified According to Local Needs

Some FUGs are unable to enforce rules and regulations because of the ambiguous law, for example, Clause 29 - '*Penalty given to the user who works against the Management Plan*'. If a user does not pay the fine or does not have the capital to do so, how will the case be settled? Furthermore, Clause 27 - '*Community Forest can be taken back*' and Clause 68 - '*Government can use Community Forest, Religious Forest, and Contract Forest*' make users insecure. Unless some of the clauses are modified, local people may not feel assured that the forests have been handed over to them for protection, use, and management.

Table 5.1: Some Social, Physical, and Institutional Attributes of FUGs in Sankhuwasabha District, 1993

FUGs	Thulopakha Dhusune	Chyane Dashe *Danda*	Sukrabare
1. Size of User Group			
Total User HHs	43	72	73
Population	267	432	454
Average HH Size	6.2	6.0	6.2
2. Community	Heterogeneous (mixed)	Heterogeneous (mixed)	Heterogeneous (mixed)
Dominant Groups	*Brahmin Newar Chhetri*	*Chhetri Brahmin Rai Tamang Damai*	*Chhetri Sarki Brahmin Newar*
Literacy Rate	100.0	72.3	69.8
3. Landholdings (*ropani*)	21.8	24.1	21.6
(Average per HH)			
Khet	18.9	18.6	12.8
Bari	2.9	8.5	8.8
Livestock (average)	2.7	5.7	8.0
Occupation			
Agricultural and Other	96.3	100.0	100.0
Other	3.7		
4. Physical (biological)			
Area under Forest	10	50	10
Altitude (metres)	700-1,000m	1,000-1,500m	1,600-1,800m
Slope	West-south	West-south	East-south
Regeneration Type	High	High	High
Tree Density	350	833	750
Seedling Density	13,350	12,900	5,000

FUGs	Thulopakha Dhusune	Chyane Dashe *Danda*	Sukrabare
Soil Type	Ochre-brown (loamy)	Ochre-brown (loamy)	Ochre-brown (loamy)
Soil Condition	Good	Good	Good
Institutional Management Type	Traditional	Traditional	Traditional
Under *Kipat/Raikar* System	*Raikar (Thari)*	*Kipat/Raikar Subba/Thari*	*Raikar Subba/Thari*
Organisational Structure	Formal	Formal	Formal
Decision-making Process	Users' Exe. Comm./User HHs	Users' Exe. Comm./User HHs	Users' Exe. Comm./User HHs
Current Leadership	Dynamic	Dynamic	Weak
Inputs	Rs 20 per m. voluntary rabour	Rs 10 per m. voluntary labour	No voluntary labour
Forest Watchers	Yes	Yes	No
Penalty for Violators	Yes	No	No
Access to Forest	Controlled/regulated	Regulated	Regulated/open
Distribution of Forest Products	Equal	Equal	Equal

Source: Survey

Table 5.2: Some Social, Physical, and Institutional Attributes of FUGs in Dhankuta District, 1993

FUGs	Handikharka	Thaprong
1. Size of User Group		
Total User HHs	224	49
Population	1,187	265
Average HH Size	5.3	5.4
2. Community	Heterogeneous (mixed)	Homogeneous

FUGs	Handikharka	Thaprong
Dominant Groups	*Rai* *Brahmin* *Newar* Bhujel *Chhetri* *Magar*	*Limbu*
Literacy Rate	63.9	54.8
Religious Faith	50% Hindu 50% Non-Hindu	Non-Hindu
3. Landholdings (*ropani*)		11.4
(Average per HH)	11.8	
Khet	3.8	0.0
Bari	8.0	11.4
Other		
Livestock (average)	6.0	4.7
Occupation		
Agriculture	18.0	16.0
Wage Labour	27.8	0.0
Agricultural and Other	54.2	84.0
4. Physical (biological)		
Area under Forest	150.0	7.5
Altitude (metres)	1,200-1,500m	1,500-1,700m
Slope	West-south	North-south
Regeneration Type	Medium	Medium
Tree Density	1,460	775
Seedling Density	4,060	3,275
Soil Type	Ochre-brown (loamy)	Ochre-brown (loamy)
Soil Condition	Good	Good
Institutional Management Type	Traditional	*Kipat*

FUGs	Handikharka	Thaprong
Management History	*Subba/Thari* from 3-4 generations	*Subba/Thari* from 3-4 generations
Kipat/Raikar	*Raikar*	*Kipat*
Organisational Structure	Formal	Formal
Nature of Access	Regulated	Regulated/open
Decision-making Process	Users' Exe. Comm./User HHs	Users' Exe. Comm./User HHs
Current Leadership	Active	Weak
Inputs	Voluntary contribution, 1 Member per Month (forest watcher)	Voluntary contribution - none
Forest Watchers	Yes	No
Penalty for Violators	Regular	None
Distribution of Forest Products	Equal	Equal

Source: Survey

Table 5.3: Some Social, Physical, and Institutional Attributes of FUGs in Ilam District, 1993

FUGs	Bhedichok	Kharkhare
1. Size of User Group		
Total User HHs	86	104
Population	514	514
Average HH Size	6.0	5.7
2. Community	Heterogeneous (mixed)	Heterogeneous (mixed)
Dominant Groups	*Gurung* *Rai* *Sherpa* *Tamang* *Brahmin* *Chhetri* *Sunuwar*	*Brahmin* *Chhetri* *Sherpa* *Newar* *Rai*

FUGs	Bhedichok	Kharkhare
Literacy Rate	77.9	82.2
Religious Faith	5.8% Hindu 94.2% Non-Hindu	56.8% Hindu 43.7% Non-Hindu
3. Landholdings (*ropani*)		
(Average per HH)	35.8	47.9
Khet	0.4	1.1
Bari	35.4	40.8
Other		
Livestock (average)	4.2	4.5
Occupation		
Agriculture	27.8	45.3
Agricultural and Other	72.2	54.7
4. Physical (biological)		
Area under Forest	200.0	300.0
Altitude (metres)	2,000-2,150m	1,800-1,900m
Slope	West-south	East-south
Regeneration Type	Medium	Medium
Tree Density	1,567	610
Seedling Density	1,444	5,350
Soil Type	Ochre-brown	Ochre-brown
Soil Condition	Good	Good
Institutional Management Type	Traditional	Traditional
Management history	Can be traced from *Subba/Thari* (3-4 generations)	Can be traced from *Subba/Thari* (3-4 generations)
Kipat/Raikar	*Raikar*	*Raikar*
Nature of Access	Regulated	Regulated/open

FUGs	Bhedichok	Kharkhare
Decision-making Channel	Users' Exe. Comm./User HHs	Users' Exe. Comm./User HHs
Leadership	Active	Weak
Forest Watchers	Yes	Yes
Penalty for Violators	Yes	Yes
Distribution of Forest Resources	Equal	Equal

Source: Survey

Plate 1: Salleri forest of Dhankuta *Bazaar*

Plate 2: Central part of the Sukrabare forest

Plate 3: A user's house close to the FUG's forest

Plate 4: A Southern view of Bhedichok forest

Plate 5: A part of the users' village close to the FUG's Office

Plate 6: Central part of the Chyane forest

Plate 7: South-eastern part of the forest of Thulopakha Dhusune

Plate 8: A way towards Kharkhare forest

Annex - A

Socioeconomic Characteristics of the User Respondents in Handikharka Community Forest, Dhankuta Municipality, Ward No 3, Dhankuta (1993)

Name of the User	Age	Family Size			Education	Occupation	Land (in *ropani*)			Number of Animals Owned					
		M	F	Total			*Bari*	*Khet*	Total	Cow	Ox	Goat	Buff.	Pig	Total
1. Chhata Prasad Ghimire	36	3	2	5	10	A+S	7	10	17	1	-	-	1	-	2
2. Gauri Kumar Atree	40	4	3	7	SLC	A	16	-	16	3	2	-	-	-	5
3. Gopal Guragain	45	4	3	7	IA	A+Pol	10	3	13	1	-	10	-	-	11
4. Krishna Kumari Dangol	41	3	3	6	Lit.	A+C	12	-	12	-	2	-	-	-	2
5. Chandra Bdr. Shrestha	50	5	5	10	"	A	6	15	21	3	4	9	-	-	16
6. Janga Bdr. Rai	36	2	2	4	"	A+WL	5	-	5	-	2	-	-	-	2
7. Bal Bdr. Rai	30	3	2	5	"	"	10	-	10	2	2	-	2	-	6
8. Kurpha Lal Rai	64	3	3	6	Illit.	A	64	-	64	2	2	-	-	2	6
9. Gyan Bdr. Rai	36	3	4	7	Lit.	A+WL	15	-	15	-	2	-	-	-	2
10. Arumaya Rai (Member)	32	-	1	1	"	A	6	-	6	-	-	-	-	1	1
11. Sai Bdr. Rai	42	5	3	8	"	A+WL	15	-	15	2	2	-	-	3	7
12. Jaya Bdr. Rai	40	2	2	4	"	A+M	10	-	10	2	-	6	-	9	17
13. Ayee Bdr. Rai	26	2	2	4	"	A+WL	15	-	15	2	-	3	-	9	14
14. Mohan Bdr. Rai	40	3	1	4	Illit.	A+M	22	-	22	1	2	-	-	-	3
15. Gam Bdr. Rai	35	1	5	6	"	A+WL	10	-	10	1	-	-	-	-	1
16. Raiti Lal Rai	30	3	1	4	Lit.	A+WL	2	-	2	2	-	-	-	2	4
17. Dal Bdr. Ale	72	2	2	4	Illit.	A	10	-	10	-	2	2	-	2	6
18. Durga Man Ale	49	5	2	7	SLC	A+S	15	-	15	-	2	4	-	-	6
19. Santa Man Dangol	43	3	3	6	Lit.	A+C	20	-	20	7	10	-	-	-	17
20. Ujwal Shrestha	25	1	2	3	"	A+M	15	-	15	1	-	-	-	-	1
21. Debiman Dangol	60	1	1	2	"	A	15	-	15	1	2	4	-	-	7
22. Kashi Ram Dangol	22	1	2	3	"	A+C	12	-	12	-	-	2	-	-	2
23. Purna Kumar Dangol	40	4	1	5	"	A+C	1	-	1	1	-	3	-	-	4

Name of the User	Age	Family Size			Education	Occupation	Land (in *ropani*)			Number of Animals Owned					
		M	F	Total			*Bari*	*Khet*	Total	Cow	Ox	Goat	Buff.	Pig	Total
24. Tek Raj Dangol (Vice-chairman)	39	3	4	7	I.A.	A	50	in Terai	50	3	2	7	-	-	12
25. Tilak Khadka	48	4	3	7	Lit.	S+A	4	2	6	-	-	-	-	-	-
26. Bir Bdr. Shrestha	41	4	3	7	Illit.	Tea Shop	-	-	-	-	-	-	1	-	1
27. Krishna Bdr. Bhattarai	50	4	1	5	Lit.	"+A	4	-	4	-	-	8	1	-	9
28. Narayan P. Adhikari	75	3	4	7	"	B+A	- 15	1 -	-	-	-	-	1		1
29. Usha Guragain (Member)	34	2	2	4	"	A+S	7 3	10 -	2	5	2	-	9		16
30. Sushil P. Mishra	36	3	2	5	"	"	5	-	5	1	3	-	1	-	5
31. Govinda P. Dahal	41	3	3	6	"	A	5	15	20	1	-	-	2	-	3
32. Raj Bdr. Rai	47	1	2	3	Illit.	L	-	-	-	-	-	-	-	-	-
33. Bal Jit Rai	55	6	5	11	"	L	-	-	-	1	-	6	-	-	7
34. Dhan Bdr. Shrestha	32	2	2	4	Lit.	L	-	-	-	-	-	-	-	-	-
35. Bhakta Bdr. Neupane	44	2	3	5	"	S	-	-	-	-	-	1	1	-	2
36. Dilli Rai	38	1	2	3	"	WL	-	-	-	-	-	-	-	1	1
37. Dilli Ser Rai	36	3	2	5	"	"	-	-	-	-	-	-	-	2	2
38. Kumar Rai (B)	50	3	3	6	Illit.	"	-	-	-	1	-	1	-	2	4
39. Raj Kumar Rai	20	1	1	2	Lit.	WL	-	-	-	-	-	-	-	-	-
40. Nara Bdr. Rai	40	4	3	7	Illit.	"	-	-	-	-	-	5	-	1	6
41. Surya Rai	32	1	3	4	"	A+L	-	2	2	1	2	-	-	1	4
42. Pukha Bdr. Rai	55	3	1	4	"	"	-	2	2	-	2	2	-	-	4
43. Manahang Rai	50	3	2	5	Lit.	S+A	-	10	10	2	-	3	-	1	6
44. Dal Bdr. Magar	35	3	2	5	Illit.	WL	-	-	-	-	2	8	-	-	10
45. Dil Kumar Rai	38	2	4	6	"	"	-	-	-	1	2	-	-	3	6
46. Padam Bdr. Pradhan	50	2	2	4	"	"	-	-	-	-	-	-	-	-	-
47. Man Kumar Rai	52	3	2	5	"	"	-	-	-	-	-	-	-	1	1
48. Kumar Rai (A)	28	4	3	7	"	"	-	-	-	-	-	-	-	1	1
49. Karma Jit Rai	40	3	3	6	"	"	-	-	-	1	2	-	-	1	4
50. Man Prakash Khadka	45	2	5	7	Lit.	A+S	45	-	4	5	1	-	-	-	- 1
51. Padam Bdr. Rai	60	8	3	11	Illit.	WL	-	-	-	-	-	-	-	-	-
52. Baishak Man Rai	65	5	-	5	"	A+WL	13	3	16	2	-	7	-	-	9
53. Punte Rai	30	4	1	5	"	WL+A	-	4	4	3	3	5	-	1	12
54. Pakher Man Rai	72	3	2	5	"	"	2	13	15	1	2	-	-	-	3
55. Bir Bdr. Rai	27	3	1	4	"	"	-	1	1	1	1	-	-	1	3

Name of the User	Age	Family Size			Education	Occupation	Land (in *ropani*)			Number of Animals Owned					
		M	F	Total			*Bari*	*Khet*	Total	Cow	Ox	Goat	Buff.	Pig	Total
56. Jib Nath Bhandari	41	3	1	4	Lit.	A+S	-	23	23	1	2	6	2	-	11
57. Om Raj Pokhrel	46	3	1	4	"	A	-	16	16	-	2	-	1	-	3
58. Khadga Bdr. Rai	33	3	2	5	"	WL	-	-	-	-	-	2	-	1	3
59. Pampha Bdr. Rai	70	2	1	3	Illit.	A+WL	6	4	10	-	-	3	1	4	8
60. Man Bdr. Rai	65	4	1	5	"	A	8	16	24	1	2	22	1	3	29
61. Jug Bdr. Rai	86	4	2	6	"	A+WL	6	25	31	1	2	2	1	2	8
62. Krit Bdr. Rai	65	5	4	9	"	A	9	16	25	4	2	30	4	4	44
63. Jangi Ser Rai	41	3	2	5	Lit.	A+S	10	16	26	4	2	6	-	3	15
64. Gopal Rai	24	2	3	5	"	A	10	16	26	1	2	8	1	2	14
65. Subha Singh Rai	45	1	4	5	"	WL	-	-	-	-	-	1	-	1	2
66. Chandra Bdr. Rai	40	2	5	7	"	WL	-	-	-	-	2	5	-	1	8
67. Ram Bdr. Adhikari	34	2	2	4	"	"	-	-	-	-	-	3	-	-	3
68. Ram Bdr. Rai	28	5	4	9	"	A+WL	20	-	20	1	-	-	1	2	4
69. Harka Bdr. Rai	32	1	4	5	"	"	2	5	7	-	-	3	-	1	4
70. Dil Kumar Rai	35	3	2	5	Illit.	WL	-	-	-	-	-	5	-	1	6
71. Ganesh Kumar Rai	45	3	3	6	"	"	-	-	-	-	-	-	-	1	1
72. Om Bdr. Basnet	43	3	2	5	SLC	A+WL	8	-	8	-	-	3	1	-	4
73. Chandra Kanta Misra	46	3	4	7	Lit.	A	10	18	28	-	2	2	2	-	6
74. Rudra P. Dahal	39	4	1	5	"	A	6	16	22	-	2	2	2	-	6
75. Rajesh Neupane	31	2	4	6	"	A+WL	3	-	3	1	2	8	2	-	13
76. Ram Bdr. Tamang	50	3	2	5	Illit.	WL+AH	-	-	-	-	-	20	-	1	21
77. Raj Bdr. Rai	21	4	1	5	Lit.	A+WL	4	-	4	1	2	2	1	2	8
78. Uddhav Katuwal	23	8	8	16	Lit.	A+AH	4	18	22	1	2	2	4	-	9
79. Padam Bdr. Limbu	74	1	1	2	"	A	-	-	-	-	2	2	-	1	5
80. Billi Rai	26	2	2	4	"	WL	-	-	-	-	-	-	-	1	1
81. Ram Kumar Rai	28	2	2	4	"	"	-	-	-	2	-	2	-	1	5
82. Laxman Bhujel	33	3	1	4	"	W+TL	-	-	-	-	2	3	-	1	6
83. Kamal Bhujel	27	3	2	5	"	T	-	-	-	1	2	3	-	1	7
84. Krishna P. Dahal	47	2	3	5	"	A+S	6	-	6	2	2	4	-	-	8
85. Jit Bdr. Limbu	40	3	1	4	"	A+WL	4	-	4	1	2	4	-	2	9
86. Krishna Kumar Rai	43	1	4	5	Illit.	WL	-	-	-	1	2	4	-	1	8
87. Harka Bdr. Bhujel	34	2	2	4	"	WL+A	2	-	2	5	2	5	-	2	14
88. Dik Bdr. Kami	39	2	2	4	"	WL	2	-	2	-	-	-	-	-	-
89. Birsha Bdr. Kami	35	2	1	3	"	"	2	-	2	2	-	2	1	1	6

Name of the User	Age	Family Size			Education	Occupation	Land (in *ropani*)			Number of Animals Owned					
		M	F	Total			*Bari*	*Khet*	Total	Cow	Ox	Goat	Buff.	Pig	Total
90. Janga Bdr. Kami	30	2	3	5	"	"	2	-	2	1	-	-	-	2	3
91. Lila Nath Mishra	35	4	6	10	IA	A+S	5	11	16	4	2	3	-	-	9
92. L.B. Rai	57	4	5	9	Lit.	WL	-	-	-	-	-	-	-	-	-
93. Narayan Bhujel	22	4	4	8	"	A+AH +WL	6	-	6	5	2	3	2	1	13
94. Ganesh Neupane	24	2	2	4	"	WL	-	-	-	1	-	3	1	-	5
95. Om Bdr. Raya	40	5	2	7	"	A+WL	19	-	19	6	2	5	1	-	14
96. Chhatra P. Mishra	35	2	2	4	SLC	A+T	8	-	8	2	-	3	2	-	7
97. Dambar Bdr. Bisankhe	52	3	4	7	Illit.	WL+A	5	-	5	3	-	3	-	2	8
98. Damodar Mishra	24	2	3	5	Lit.	A+AH	5	-	5	2	-	3	2	-	7
99. Bhakta Bdr. Magar	51	4	3	7	"	A+S	5	-	5	3	2	2	1	5	13
100. Yogendra Dahal	31	3	2	5	"	A+AH	5	-	5	3	2	2	1	-	8
101. Birsha Maya Rai	40	3	1	4	Illit.	A+WL	8	-	8	2	2	2	1	-	7
102. Dambar Ddr. Magar	41	4	1	5	"	WL	-	-	-	4	-	3	-	2	9
103. Bishnu K. Shrestha (Member)	30	2	2	4	Lit.	A	25	-	25	-	2	4	-	-	6
104. Mukunda Pokhrel	26	3	1	4	BA	A+S	25	15	40	4	1	2	-	-	7
105. Kashi Nath Pokhrel	58	5	3	8	IA	A+S	35	22	57	3	2	-	-	-	5
106. Min P. Pokhrel	64	3	3	6	Lit.	A+S	40	35	75	3	2	4	1	-	10
107. Shiva P. Pokhrel	64	4	4	8	Lit.	A+S	20	40	60	8	-	-	-	-	8
108. Gokul Pokhrel	40	2	3	7	SLC	A+S	30	35	65	5	2	-	1	-	8
109. Ambika P. Pokhrel	70	4	4	8	Lit.	A+S	35	25	60	3	2	-	1	-	5
110. Prem C. Pokhrel	57	2	1	3	"	A+S	16	9	25	5	2	3	-	-	10
111. Krishna P. Pokhrel	49	6	2	8	SLC	A+S	17	17	34	3	2	-	1	-	6
112. Narayan Ghimire	46	2	3	5	"	A+S	10	-	10	3	-	4	-	-	7
113. Santa Bdr. Bhujel	60	4	1	5	Illit.	A+S	15	-	15	4	1	2	-	-	7
114. Sun Bdr. Rokka (Member)	38	4	3	7	"	A+WL	4	-	4	-	1	-	-	-	1
115. Ram Bdr. Sunuwar	42	3	3	6	"	WL	-	-	-	2	-	4	-	1	7
116. Gopal Pokhrel	61	1	3	4	Lit.	A	32	25	57	4	2	3	-	-	9
117. Rupak Adhikari	28	2	1	3	"	Tea Shop	-	-	-	-	-	-	-	2	2
118. Ratna Bdr. Shrestha	50	4	3	7	"	-	-	-	-	-	-	-	-	-	-
119. Shambhu Bhujel	38	3	3	6	Illit.	A	7	-	7	2	2	4	-	-	8
120. Toya Nath Pokhrel	60	-	2	2	Lit.	A	14	7	21	-	1	2	-	-	3
121. Som Bdr. Rokka	36	2	2	4	Illit.	A	4	-	4	2	2	-	-	-	4

Name of the User	Age	Family Size			Education	Occupation	Land (in *ropani*)			Number of Animals Owned					
		M	F	Total			*Bari*	*Khet*	Total	Cow	Ox	Goat	Buff.	Pig	Total
122. Hem C. Ghimire	26	1	-	1	Lit.	A+Stu	6	-	6	-	-	-	-	-	-
123. Yakal Bdr. Limbu	40	4	3	7	"	A+S	10	-	10	1	1	2	-	2	6
124. Chankhi Ram Rai	24	1	-	1	"	WL	-	-	-	-	-	-	-	-	-
125. Dal Bdr. Tamang	56	3	2	5	Illit.	WL+T	-	-	-	4	2	6	-	1	13
126. Harka Bdr. Rai	59	4	3	7	"	A	20	12	32	6	2	3	1	1	13
127. Khadga Bdr. Rana	30	3	2	5	Lit.	WL	-	-	-	-	-	-	-	-	-
128. Dal Bdr. Gurung	48	3	3	6	Illit.	"	-	-	-	-	-	-	-	-	-
129. Purna Bdr. Rai	37	2	2	4	Lit.	S+WL	-	-	-	-	-	-	-	-	-
130. Janga Bdr. Shrestha	53	3	4	7	"	A	25	-	25	3	2	6	1	-	12
131. Tulsi Guragain	29	2	2	4	"	A+WL	6	-	6	1	-	2	-	-	3
132. Sanu Rai	36	2	3	5	Illit.	WL	-	-	-	-	-	1	-	2	3
133. Rudra P. Ojha	24	1	-	1	Lit.	A+Stu	8	-	8	-	-	-	-	-	-
134. Dil Bdr. Bhujel	42	3	4	7	"	A+WL	9	-	9	1	-	2	-	-	3
135. Kausa Bdr. Rai	69	3	2	5	Illit.	A+S	14	-	14	6	2	5	1	2	16
136. Karna Lal Rai	45	4	2	6	"	A+WL	10	-	10	2	2	2	-	1	7
137. Maiti Lal Rai	33	3	4	7	Lit.	A+WL	12	-	12	1	2	3	-	1	7
138. Harka Bdr. Rai	39	2	4	6	Illit.	A+WL	16	-	16	2	1	2	-	1	6
139. Mani Kumar Rai	46	3	2	5	"	WL	-	-	-	-	-	-	-	-	-
140. Deepak Rokka	27	1	1	2	"	A+S	4	-	4	-	-	-	-	-	-
141. Kanchan Bdr. Rai	48	3	1	4	Lit.	WL	-	-	-	-	-	6	-	-	6
142. Lal Bdr. Bhujel	67	3	4	7	Illit.	A+T	18	-	18	2	2	3	2	-	9
143. Shanti Rai	39	2	2	4	"	WL	-	-	-	-	-	-	-	1	1
144. Bhadra Nath Pokhrel	71	1	2	3	Lit.	A	19	8	27	3	2	-	-	-	5

A = Agriculture, S = Service, WL = Wage Labour, L = Labour, B = Business, C = Carpentry, Pol = Politics

Annex - B

Socioeconomic Characteristics of the Users Respondents in Thaprong Community Forest, Rajarani VDC, Ward No. 2, Dhankuta (1993)

User's Name	Age	Family Size			Edu-cation	Occu-pation	Land (in *ropani*)			Number of Animals Owned					
		M	F	To-tal			*Bari*	*Khet*	To-tal	Cow	Ox	Goat	Buff	Pig	To-tal
1. Asrani Limbu	56	-	2	2	Illit.	A+ WL	9	-	9	-	-	-	-	1	1
2. Aujahang Limbu	51	3	4	7	Lit.	A+ WL	16	16	-	-	-	-	-	-	-
3. Gandsh Bdr. Limbu	30	5	4	9	Lit.	A+ WL	18	-	18	-	2	-	2	1	5
4. Lok Bdr. Limbu	24	3	2	5	Lit.	A	51	-	51	1	2	-	-	-	3
5. Jit Bdr. Limbu	34	4	1	5	Illit.	A+ WL	3	-	3	2	-	1	-	1	4
6. Harka Bdr. Limbu	64	3	3	6	Illit.	A+ WL	5	-	5	-	-	-	-	-	-
7. Shuka Bdr. Limbu (Chairman)	51	4	3	7	Lit.	A+S	13	-	13	2	1	6	-	1	10
8. Budha Bdr. Limbu	23	2	2	4	Lit.	A+ WL	3	-	3	1	-	1	-	1	3
9. Maitra Bdr. Limbu	45	4	3	7	Illit.	A+ WL	9	-	9	2	-	-	-	1	3
10. Bishnu Kumari Limbu	25	6	2	8	Lit.	A+ WL	4	-	4	2	-	2	-	-	4
11. Budha Rani Limbu	40	2	9	11	Illit.	A+ WL	4	-	4	3	-	-	-	-	3
12. Harka Sher Limbu	64	2	2	4	Illit.	A+ WL	12	-	12	1	1	1	-	1	4
13. Dil Bdr. Limbu	59	4	3	7	Illit.	A+ WL	14	-	14	1	2	7	-	1	11
14. Aash Bdr. Limbu	49	1	-	1	Illit.	A	14	-	14	-	-	-	-	-	-
15. Yogendra Limbu	26	1	2	3	SLC	A	25	-	25	3	2	3	-	1	9
16. Maindhoj Limbu	63	1	3	4	Lit.	A+S	15	-	15	-	2	-	-	1	3

User's Name	Age	Family Size			Edu-cation	Occu-pation	Land (in *ropani*)			Number of Animals Owned					
		M	F	To-tal			*Bari*	*Khet*	To-tal	Cow	Ox	Goat	Buff	Pig	To-tal
17. Raj Kumar Limbu	35	3	3	6	Lit.	Mig to Arab	-	-	-	-	-	-	-	-	-
18. Jhagar Singh Limbu	57	2	2	4	Lit.	A+p	15	-	15	-	-	-	-	-	-
19. Ujar Singh Limbu	48	3	2	5	"	A+ WL	15	-	15	1	1	-	-	1	3
20. Dal Bdr. Limbu	50	3	5	8	"	A+ WL	15	-	15	2	1	-	-	1	4
21. Kirliman Limbu	30	3	1	4	"	A+ WL	1	-	1	3	-	1	-	2	6
22. Sher Bdr. Limbu (Migrated to Baharain)	36	3	2	5	"	A+S	1	-	1	-	-	-	-	1	1
23. Pancha Bir Limbu (Migrated to Arab)	40	3	3	6	"	A	3	-	3	2	1	4	-	1	8
24. Dil Bir Limbu	23	1	2	3	"	A+S	25	-	25	2	2	-	-	2	6
25. Dhan Sher Limbu	67	3	4	7	"	A+ WL	16	-	16	2	2	6	-	1	11
26. Tirtha Bdr. Limbu	60	2	1	3	Illit.	A+ WL	7	-	7	1	2	2	-	1	6
27. Bhartiman Limbu	64	2	1	3	"	"	7	-	7	2	-	1	-	1	4
28. Khadga Bdr. Limbu	51	6	5	11	"	"	24	1	25	1	1	8	1	1	12
29. Krishna Bdr. Limbu	41	5	3	8	"	"	3	-	3	1	2	11	1	1	16
30. Ash Bdr. Limbu	36	2	3	5	"	"	1	-	1	1	-	2	-	1	4
31. Ash Maya Limbu	58	-	1	1	"	A	3	-	3	-	-	1	-	1	2

A = Agriculture, S = Service, WL = Wage Labour, L = Labour

Annex - C

Socioeconomic Characteristics of the User Respondents in Thulopakha Dhusune Community Forest, Manakamana-1, Sankhuwasabha District (1993)

Name of the User	Age	Family size		Edu-cation	Occu-pation	*Khet* Land in *ropani*	*Bari* Land in *hal*	Number of Animals			
		M	F					Cow	Ox	Goat	Buff
1. Durga P. Khanal	40	3	2	Lit.	A+J	0	*ghaderi*	2	2	0	0
2. Moti Shresth	25	6	5	S.L.C	S+B	0	*ghaderi*	0	0	0	0
3. Jaya Devi Thapa	34	3	2	I.A.	Contra	25 MP	0	1	0	0	0
4. Kamal Bardiwa	21	3	4	8 pass Tailor	0	*ghaderi*	0	0	0	0	
5. Bhim Kumari Khanal	40	3	1	Lit.	Hotel+A	15 MP	"	0	0	0	0
6. Puspa B. Shrestha	36	3	2	S.L.C	Busi-ness	1 MB	2	1	0	0	0
7. Dipendra Shakya	49	3	3	I.A.	"	15 PB	1	0	0	2	0
8. Dambar B. Shrestha	50	4	2	Lit.	"	0	*ghaderi*	0	0	0	0
9. Madan Bhimire	46	3	3	A+Busi	70	3	*ropani*	3	0	0	0
10. Chakra B. Chamrakar	28	3	6	S.L.C	Sho+A	2 MB	2 PB	1	2	0	0
11. Monohar Ghardle	40	3	1	B.Ed	Ser-vice	0	*ghaderi*	0	0	1	0
12. Raj Kumar Shrestha	33	2	5	S.L.C	Busi-ness	15 PB	0	0	0	0	0
13. Indra Kisan Dahal		4	1	"		30	40 *ropani*	0	0	0	2
14. Kul B. Shrestha	60	7	9	Lit.	Agr..	44 MP		6	4	5	0
15. Lok Bihwal Karki	2	5	B. A	Service	30	0		3	0	1	0
16. Netra P. Adhikari	41	3	2	Lit.	"	18 PB	0	1	2	0	0

Name of the User	Age	Family size		Edu-cation	Occu-pation	*Khet* Land in *ropani*	*Bari* Land in *hal*	Number of Animals			
		M	F					Cow	Ox	Goat	Buff
17. Ekraj Adhikari	68	4	1	Lit.	"	2 PB	0	1	0	0	0
18. Shyam Sundar Udas	40	2	2	S.L.C	Busi. +Ser	60	0	0	0	0	0
19. Mithu Shrestha	40	4	4	Lit.	Hotel	0	*ghaderi*	0	0	3	0
20. Dhana B. Shrestha	36	4	2	S.L.C	Service	10 PB	1	0	0	10	0
21. Manoj Shrestha	26	3	1	S.L.C	Busi-ness	2 MB	1	2	0	1	0
22. Atma Ram Gautam	50	2	2	B.A.		0	*ghaderi*	3	0	2	0
23. Padma Kumari Rai	35	2	2	S.L.C	Service	0	*ghaderi*	0	0	0	0
24. Tika Paudel	32	4	1	S.L.C	Agr.	30	3 *ropani*	1	0	0	0
25. Kuldip Pathak	48	3	3	Lit.	Agr. 11 MP	1	3	0	4	0	
26. Narendra Shakya	21	3	4	I.A.	Photo	10 PB	5 MP	0	0	2	0
27. Tumla Shrestha	41	4	2	Lit.	Agr. 30 PB	4	1	1	1	0	

MP = *muri* Production
MB = *muri biu*
PB = *pathi biu*

Annex - D

Socioeconomic Characteristics of the User Respondents, Chyane Dhase *Danda* Community Forest, Pangma VDC, Ward No - 1, Sankhuwasabha District (1993)

Name of HH Head	Age	Family Size		Education	Occupation	*Khet* Land in *ropani*	*Bari* Land in *hal*	Number of Animals Owned			
		M	F					Cow	Ox	Goat	Buff
1. Bir B. Khadka	50	2	5	Lit.	Agr.	60	10	2	2	7	3
2. Jaya B. Khadka	59	1	7	Illit.	"	20	4	0	2	5	0
3. Sar Dhwoj Tamang	46	5	4	Lit.	Labour		*ghaderi*	0	0	0	0
4. Laxman Chamrakar	63	2	5	Illit.	Agr.	14 PB	3	0	2	0	0
5. Bir B. Damai	45	2	3	Illit.	Lab+ Agr.	0	1	1	0	0	0
6. Dambar B. Ghale	36	3	2	S.L.C	Service	15	10	2	2	0	0
7. Chandra K. Gurung	19	2	2	10 pass	Agr.	2 MB	3	1	2	2	0
8. Surya P. Chapagain	50	4	3	S.L.C	Service	35 PB	2	5	2	5	0
9. Pos Raj Chapagain	34	3	2	S.L.C	Service	29 PB	2	1	0	2	0
10. Surty K. Baral	20	2	1	S.L.C	Student	15 PB	1	0	0	0	0
11. Desh B. Budhathoki	28	2	1	10 pass	Agr.	8 PB	1	0	2	2	0
12. Kaji Man Darji	25	4	2	5 pass	Agr.+ Lab	0	2	0	2	0	0
13. Nara B. Gurung	70	6	3	Illit.	Agr.	50 PB	3	1	2	3	1
14. Gyanendra B. Khadka	40	2	4	Lit.	Agr.	12 PB	2	5	2	8	3
15. Tul B. Thapa	50	4	3	"	"	6 MB	5	2	2	5	0
16. Dal B. Tamang	38	4	2	Illit.	Labour	0	1	0	0	0	0

Name of HH Head	Age	Family Size		Education	Occupation	*Khet* Land in *ropani*	*Bari* Land in *hal*	Number of Animals Owned			
		M	F					Cow	Ox	Goat	Buff
17. Ganesh B. Sodari	61	5	5	Illit.	Agr.	40	0	8	2	4	0
18. Dedha Raj Khadka	39	3	2	B.A.	Service			5	0	3	0
19. Tarka B. Shrestha	61	9	7	Illit.	Agr.	30 MB	4 MB	2	0	2	0
20. Maiya Devi Shrestha	44	0	1	Illit.		0	0	1	0	0	0
21. Kirti P. Chapagain	64	2	1	Lit.	Agr.	70 MP	3	0	0	3	1
22. Gita Gurung	24	3	2		Agr.	10 PB	5	0	2	2	0
23. Amrit B. Gurung	52	2	2	Lit.	Agr.	0	*ghaderi*	0	2	0	0
24. Shane Sherpa	36	3	3	Illit.	Hotel	0	*ghaderi*	0	0	0	0
25. Phinju Sherpa	2	1		Lit.	Trekk	0	10	0	0	0	
26. Damodar Chapagain	29	4	2	S.L.C	Service	15 PB	1	1	0	2	0
27. Yog Raj Khadka	45	5	3	I.A.	"	70 MP	7	1	2	2	1
28. Chitra K. Budhathoki	35	1	1	Illit.		0	*ghaderi*	1	0	1	0
29. Hem Raj Khadka	34	2	4	B.Sc	Service	19 PB	2	2	3	2	1
30. Dil B. Tamang	50	4	5	Lit.	Agr.	5 PB	2	2	2	0	0
31. Purna B. Tamang	46	5	5	Lit.	"	3 PB	3	0	2	2	1
32. Babu Ram Darjee		2	1	Lit.		0	1	0	0	0	0
33. Gunja Man Darjee	70	3	1	Illit.	Agr.	0	*ghaderi*	0	0	1	0
34. Lok B. Karki	52	5	4	Lit.	"	15	5	2	3	6	2
35. Ram C. Regmi	52	3	1	S.L.C	"	20	0	0	0	3	0
36. Jaya B. Shrestha				Lit.	"						

Name of HH Head	Age	Family Size		Education	Occupation	*Khet* Land in *ropani*	*Bari* Land in *hal*	Number of Animals Owned			
		M	F					Cow	Ox	Goat	Buff
37. Deva R. Chapagain	Migrated to Biratnagar				50 PB	2					
38. Khem K. Chapagain						2					
39. Ramesh Budhathoki	40	3	3	S.L.C.	Agr.	16	1	1	2	0	1
40. Dil Kumari Bhattarai	19	0	2	10 pass	Agr.	5	1	0	0	0	3
41. Ishwor Ghimire	24	3	3	B.A.	Teaching	40	7	2	2	4	1
42. Harka B. Budhathoki	60	8	3	Lit.	Agr.	25	2	1	2	5	5
43. Hari B. Budhathoki	30	4	5	"	Agr.	18	3	1	2	5	2
44. Gayatri Budhathoki	47	5	2	Illit.	"	21	2	3	2	6	6
45. Bed R. Budhathoki	33	2	5	10 pass	"	22	2	2	2	4	2
46. Bhim B. Budhathoki	60	4	5	Lit.	"	15	3	2	2	4	3
47. Pushpa B. Khatri	27	2	4	S.L.C.	"	50	15	1	2	9	0
48. Raghubir Gurung	67	2	4	Illit.	"	10	1	2	2	2	0
49. Bholaman Gurung	38	4	2	Lit.	"	18	1	0	2	2	0

PB = *pathi biu*
MB = *muri biu*
MP = *mana biu*

Annex - E

Socioeconomic Characteristics of the User Respondents in Sukrabare Community Forest, Siddhapokhari VDC, Ward No 9, and Chainpur Ward No 9, Sankhuwasabha District, 1993

Name of the Users	Gender	Family Size		Age	Education	Occupation	*Khet* Land in pathi	*Bari* Land in *hal*	Number of Animals Owned			
		M	F						Cow	Ox	Goat	Buff
1. Tirtha B. Khatri	M	2	3	41	Lit.	A	20	6	1	4	3	0
2. Jas B. Rai	M	1	2	36	Nine	A	0	0.5	2	3	2	0
3. Ram B. Rai	M	1	3	73	Illit.	"	0	1	3	2	2	0
4. Bir B. Magrati	M	2	3	42	"	"	0	0.5	1	2	4	0
5. Chunda Mani Bhandari	M	4	6	43	Lit.	"	34	4	2	2	10	1
6. Umesh Khadka	M	1	1	22	8 pass Busi.	15	3	4	2	4	0	
7. Krishna B. Kadel	M	3	2	27	"	A	20	3	2	2	2	0
8. Umesh Dangi	M	5	10	39	B.Ed.	Teach	40	5	1	4	10	1
9. Ganga B. Dangi	M	2	2	45	Lit.	A	15	3	2	2	5	0
10. Phaud Singh Dangi	M	2	8	48	Illit.	A	5	2	5	3	9	0
11. Gopal Bhandari	M	3	5	42	"	A	12	5	1	3	5	0
12. Khadgadhwaj Dangi	M	8	5	47	"	A	12	3	6	4	10	0
13. Keshar B. Neupane	M	3	2	74	Lit.	A	0	2	1	2	4	0
14. Maheshwor Dangi	M	1	1	23	8 pass	A	5	1	1	1	2	0
15. Krishna B. Dangi	M	4	2	25	I.A.	A	20	4	6	4	7	3
16. Ram B. Dangi	M	2	2	65	Lit.	A	12	7	2	1	4	0
17. Chandra B. Basnet	M	1	1	90	"	A	20	8	3	0	5	0

Name of the Users	Gender	Family Size		Age	Education	Occupation	*Khet* Land in pathi	*Bari* Land in *hal*	Number of Animals Owned			
		M	F						Cow	Ox	Goat	Buff
18. Lekh Man Rokka	M	2	2	38	"	A	8	1	1	0	4	0
19. Shukra B. Rokka	M	1	4	35	"	L	0	1	0	0	0	0
20. Bhim B. Rokka	M	3	4	25	SLC	Ser	19	2	0	2	2	0
21. Ram B. Raut	M	1	2	60	Lit.	A	10	7	2	0	5	0
22. Chandra B. Shrestha	M	3	3	81	"	A	60	13	5	2	7	2
23. Karna B. Chuhan	M	4	2	59	"	A	10	4	2	0	4	0
24. Khadga B. Dangi	M	7	6	54	"	A	31	7	4	4	4	2
25. Nara B. Khatri	M	5	3	75	"	A	25 R	60 R	2	0	6	0
26. Khangdu Sherpa	F	3	3	50	Illit.	A+ Hou	0	6 R	1	2	2	0
27. Ganga B. Shrestha	M	3	6	51	8 pass	A	19 R	12 R	4	3	7	2
28. Dil B. Magrati (Sarki)	M	1	2	30	Illit.	A	5 R	6 R	1	4	2	0
29. Dil B. Tolangi (Sarki)	M	4	3	45	" "	A	15	5	1	2	2	0
30. Kedar B. Khatri	M	3	1	29	Lit.	A	15 R	16 R	1	0	8	0
31. Chanak B. Rokka	M	1	3	32	Illit.	A+L	0	1	0	0	3	0
32. Devi B. Rai	M	6	1	63	Lit.	A	12	6	4	4	2	3
33. Dhana B. Rokka	M	4	5	43	"	A+S	50	0	1	3	4	0
34. Phurba Sherpa	M	3	1	50	Illit.	A	12	4	2	0	2	0
35. Chitra B. Dangi	M	3	4	45	8 pass	A	15 R	18 R	1	2	2	0
36. Megha Raj Dangi	M	2	6	52	"	S	10	5	3	2	4	3
37. Tek B. Kadel	M	3	3	57	Illit.	A	13	5	3	2	4	0
38. Raj K. Dangi	M	3	3	23	8 pass	A	20	8	2	3	2	1
39. Rita Shrestha	F	8	3	28	7 pass	A+H	13	3	0	2	10	2

Name of the Users	Gender	Family Size		Age	Education	Occupation	*Khet* Land in pathi	*Bari* Land in *hal*	Number of Animals Owned			
		M	F						Cow	Ox	Goat	Buff
40. Nara Man Shrestha	M	2	2	70	Illit.	A	8	2	3	1	2	0
41. Chandra B. Dangi	M	6	4	58	Lit.	A	18	3	1	0	3	0
42. Yagya B. Dangi	M	2	4	24	Eight	A	9	3	1	2	4	0
43. Kul B. Dangi	M	9	6	71	Illit.	A	8	5	2	2	3	0
44. Indra B. Dangi	M	4	3	58	Lit.	A	8	10	2	4	5	2
45. Surya B. Dangi	M	1	1	76	SLC	Blind	8	3	1	1	2	0
46. Ram B. Thapa Chhetry	M	3	6	46	Lit.	T. gar	0	7	1	2	5	0
47. Hari Prasad Nepal	M	2	2	38	"	Hotel	0	1 R	0	0	3	0
48. Tulsi Ram Nepal	M	2	1	28	Six	A+S	4	2	0	0	0	0
49. Nara B. Vishwokarma	M	2	2	60	Illit.	A	0	1	0	2	1	0
50. Narajit Kokka	M	3	3	32	Lit.	S	12	2	0	0	0	0
51. Tek B. Rokka	M	3	2	35	Illit.	A+C	0	2	0	2	2	0
52. Jit B. Rokka	M	5	2	48	Lit.	A+M	0	2	1	1	2	0
53. Durga Devi Dangi	F	1	3	40	Illit.	A+H	10	2	3	0	5	0

Annex - F

Socioeconomic Characteristics of the User Respondents, Bhedichok, Maipokhari, Ilam (1993)

Name of the User	Age	Family Size		Education	Occupation	*Khet* Land in *ropani*	*Bari* Land in *ropani*	Number of Animals Owned				
		M	F					Cow	Ox	Buff	Goat	Pig
1. Tham B. Gurung	62	4	3	Lit.	Agr.+La	-	15	-	-	-	3	-
2. Karna B. Lungeli	45	3	3	"	"	-	10	-	-	-	7	3
3. Ranga B. Gurja	44	3	2	"	"	-	5	-	-	-	-	3
4. Tek N. Paudel	40	3	1	Illit.	Busi+La	-	-	-	-	-	-	-
5. Hang Maya Rai	40	4	1	"	"	-	-	-	-	-	-	-
6. Anne Limbu	55	-	1	"	Agr.+La	2	18	-	-	-	-	1
7. Hyamce Gurung	30	3	1	Lit.	Busi+La	-	40	6	-	-	-	-
8. Indra B. Rai	35	3	1	"	Agr.+La	-	35	-	-	-	-	2
9. Tula B. Rai	40	4	4	"	"	-	45	1	1	-	-	-
10. Tuk B. Gurung	28	1	1	"	"	-	50	1	1	-	-	1
11. Birkha B. Rai	30	2	4	"	"	-	15	-	-	-	-	1
12. Mon B. Rai	50	4	2	"	"	-	-	-	-	-	-	1
13. Bhupal Gurung	35	3	3	Illit.	"	-	-	-	-	-	-	-
14. Tek B. Gurung	46	3	2	Lit.	-	-	65	-	-	-	5	2
15. Jagat Rai	36	2	6	"	-	-	70	4	1	-	-	-
16. Chakra B. Rai	45	8	4	"	Agr.+La	-	85	-	-	3	-	-
17. Bishnu Maya Tamang	61	2	2	Illit.	"	6	15	-	-	3	-	-
18. Tangi Sherpa	30	1	1	"	"	-	20	-	2	2	4	-
19. Dasang Sherpa	70	1	3	"	"	-	60	-	2	1	-	-
20. Mamche Rai	35	3	2	"	"	-	15	2	-	-	-	1
21. Sher Man Rai	45	5	3	"	"	-	50	2	1	-	-	-
22. Nar B. Tamang	60	6	3	"	"	-	34	1	1	-	2	-

Name of the User	Age	Family Size		Education	Occupation	*Khet* Land in *ropani*	*Bari* Land in *ropani*	Number of Animals Owned				
		M	F					Cow	Ox	Buff	Goat	Pig
23. Purna B. Tamang	30	1	1	Lit.	Agr.+La	-	35	-	1	1	3	1
24. Jas B. Tamang	42	4	4	"	"	-	55	2	-	-	-	-
25. Dal B. Tamang	38	4	3	Illit.	"	-	80	1	1	-	-	-
26. Man B. Tamang	55	6	5	"	"	-	22	1	-	-	-	-
27. Jas B. Rai	51	3	5	Lit.	"	-	35	4	2	-	-	2
28. Bhim B. Rai	38	3	1	"	"	-	30	-	-	3	-	2
29. Padam B. Tamang	43	5	1	"	"	-	22	1	-	-	-	-
30. Buddi Man Rai	50	8	2	"	"	-	60	1	2	1	-	-
31. Dorg Man Rai	30	4	3	"	"	-	30	-	-	2	-	2
32. Ash B. Rai	43	5	4	"	"	-	45	-	2	2	-	1
33. Gorj Man Bangdel	71	3	4	"	"	-	25	1	2	1	-	1
34. Danga B. Rana	22	2	2	"	"	-	22	2	2	-	-	-
35. Chandra B. Bangdel	59	4	4	"	"	-	55	4	3	-	-	1
36. Tul B. Rai	48	2	4	"	"	-	33	-	-	2	-	1
37. Jahar Man Rai	33	3	1	"	"	-	20	-	-	2	-	-
38. Bhai Man Rai	55	2	3	Illit.	"	-	70	-	2	1	-	2
39. Tek Dal Khaling	25	1	4	Lit.	"	-	30	-	-	2	-	-
40. Man B. Khaling	45	2	2	"	"	-	30	-	2	2	-	1
41. Dhan Kuo Rai	35	4	4	Illit.	"	-	33	-	-	1	-	1
42. Amrit Man Kami	38	4	3	Lit.	"	-	25	2	-	-	-	1
43. Chaturdhan Kami	40	3	2	"	"	-	28	-	-	1	-	1
44. San B. Rai	35	5	4	Illit.	"	-	80	1	2	2	-	-
45. Man B. Rai	36	2	2	Lit.	"	-	25	2	-	-	-	1
46. Sukra B. Rai	33	2	2	"	"	-	10	2	-	-	-	-
47. Chakra B. Gurung	45	3	4	"	"	-	60	2	2	-	-	-
48. Mem B. Gurung	37	2	3	"	"	-	60	1	-	1	-	-

Name of the User	Age	Family Size		Education	Occupation	*Khet* Land in *ropani*	*Bari* Land in *ropani*	Number of Animals Owned				
		M	F					Cow	Ox	Buff	Goat	Pig
49. Tek B. Gurung	38	4	4	"	"	-	30	2	-	2	-	-
50. Padam B. Gurung	34	4	4	"	"	-	25	2	-	2	-	-
51. Ganesh B. Gurung	47	8	5	"	"	27	58	3	2	4	-	-
52. Bhim B. Gurung	31	3	1	Lit.	"	-	25	1	2	1	-	-
53. Yam B. Gurung	28	2	1	"	"	-	40	1	-	1	-	-
54. Bal Bir Gurung	47	5	3	"	"	-	10	2	1	-	-	-
55. Man B. Gurung	49	4	2	"	"	-	30	2	-	-	-	-
56. Lukdhan Gurung	68	2	4	Illit.	"	-	70	3	2	2	-	-
57. Both B. Gurung	29	1	1	Lit.	Agr.+La	-	30	1	-	1	3	-
58. Yam B. Gurung	26	3	1	"	"	-	35	2	-	1	3	-
59. Amm Thulung	65	1	5	"	"	-	60	2	2	2	-	-
60. Hasta B. Rai	35	3	2	"	"	-	35	-	-	2	-	-
61. Laxman Rai	59	5	5	"	"	-	65	3	2	3	-	2
62. Bhola Man Rai	65	2	2	Illit.	"	-	55	1	-	1	-	1
63. Tek B. Rai	47	8	2	Lit.	"	-	50	1	-	2	-	-
64. Dambar S. Mukhiya	62	4	5	"	"	-	34	1	2	2	2	-
65. Tula B. Ghimire	32	2	2	"	"	-	30	1	-	1	2	-
66. Dal B. Mukhiya	66	2	3	"	"	-	-	2	-	2	-	-
67. Gam B. Mukhiya	34	4	3	"	"	-	-	-	-	2	4	-
68. Im B. Mukhiya	30	2	2	9 pass	"	-	-	-	-	-	-	1
69. Tuk B. Mukhiya	34	4	2	Lit.	"	-	-	2	-	-	2	-
70. Dil B. Gurung	54	2	2	"	"	-	-	1	-	1	2	-
71. Chatra B. Gurung	34	5	2	"	"	-	45	2	-	-	6	-
72. Bhim B. Magar	48	3	2	Lit.	"	-	25	2	-	-	3	-
73. Kirti B. Gurung	33	3	3	"	"	-	44	1	-	2	8	-
74. Ganesh B. Mukhiya	45	4	4	"	"	-	65	3	2	1	3	-

Name of the User	Age	Family Size		Education	Occupation	*Khet* Land in *ropani*	*Bari* Land in *ropani*	Number of Animals Owned				
		M	F					Cow	Ox	Buff	Goat	Pig
75. Hom B. Gurung	38	2	2	"	"	-	70	3	2	2	4	-
76. Bodh Bir Gurung	28	4	3	"	"	-	25	3	2	3	-	-
77. Khadga Bir Gurung	38	3	2	"	"	-	45	1	2	2	3	-
78. Dhan B. Gurung	34	4	1	"	"	-	50	1	-	1	-	-
79. Chandra B. Gurung	41	1	2	"	"	-	70	3	2	-	-	-
80. Dil B. Gurung	41	3	4	"	"	-	35	2	-	4	-	-
81. Rang B. Gurung	48	6	4	"	"	-	45	3	-	1	-	-
82. Deo B. Gurung	30	2	3	"	"	-	32	2	-	-	3	-
83. Lila Maya Gurung	65	2	4	Illit.	"	-	21	1	-	1	-	-
84. Basanta Gurung	48	3	1	Lit.	"	-	22	1	-	1	-	-
85. Man Bir Rai	25	3	4	"	"	-	70	1	2	2	-	-
86. Gauri Lal Rai	55	4	3	Illit.	"	-	35	-	2	4	-	-

Annex - G

Socioeconomic Characteristics of the User Respondents, Kharkare, Nayabazaar, Ilam (1993)

Name of the User	Age	Family Size		Education	Occupation	*Khet* Land in *ropani*	*Bari* Land in *ropani*	Number of Animal Owned				
		M	F					Cow	Ox	Buff.	Goat	Pig
1. Dawa Lama	59	4	2	Illit.	Agri+Bu	-	40	-	-	-	-	-
2. Bashu Dev Paudel	38	2	4	B.Ed	Agri+Ser	50	150	2	2	-	4	-
3. Madan Sherstha	34	2	1	B.Sc	Bu+Ser	-	5	2	-	-	-	-
4. Chabilal Siwakota	46	4	2	Lit.	Agri+Li	-	90	4	-	-	7	-
5. Damber B. Karki	30	2	3	S.L.C	Agri+Bu	20	100	-	-	-	5	-
6. Tsring Muktan	36	3	2	"	"	-	20	-	-	-	-	1
7. Dangi Lama	32	3	3	Lit.	Busi	-	7	-	-	-	-	-
8. Man B. Sunuwar	57	4	4	Illit.	Agri+li	-	8	2	-	-	-	1
9. Indra B. Basnyat	40	5	5	"	"	-	64	4	-	-	2	-
10. Man B. Sunuwar	37	4	2	Lit.	"	-	59	1	-	-	-	-
11. Hari P. Rai	52	4	3	"	"	-	54	-	2	2	3	-
12. Lila B. Adhikari	40	4	3	S.L.C	"	-	60	4	-	-	4	-
13. Tula B. Sunuwar	78	5	2	Illit.	"	-	30	2	2	-	2	-
14. Lok B. Rai	19	1	1	Lit.	"	-	-	1	2	-	-	-
15. Ram Dhan Rai	52	4	1	"	"	-	-	3	-	-	-	-
16. Janga Bir Rai	34	2	4	"	"	-	5	-	-	-	-	1
17. Tasal Man Rai	53	4	1	"	"	-	54	1	2	-	-	-
18. Tara B. Dudhathoki	55	6	3	"	"	-	45	3	2	-	12	-
19. Bhuwan Singh Basnyat	43	3	1	Illit.	"	-	18	1	-	-	4	-
20. Wangdi Lama	50	3	1	Lit.	"	-	25	2	-	-	-	-
21. Lamu Sherpa	30	3	5	"	"	-	75	3	-	-	-	-

Name of the User	Age	Family Size		Education	Occupation	*Khet* Land in *ropani*	*Bari* Land in *ropani*	Number of Animal Owned				
		M	F					Cow	Ox	Buff.	Goat	Pig
22. Dawa Tenging	40	2	5	"	"	-	40	2	-	-	-	-
23. Janga Sherpa	43	6	2	"	"	-	30	2	-	-	-	-
24. Shorki Sherpa	29	2	2	"	"	-	29	1	-	-	4	-
25. Mingma Sherpa	25	2	2	"	"	-	24	2	2	-	-	-
26. Tukti Sherpa	45	6	2	"	"	-	60	3	2	-	-	-
27. Karma Sherpa	42	4	2	"	Agri+Li	-	37	5	2	-	-	-
28. Doorti Sherpa	40	2	2	S.L.C	"	-	22	2	-	-	-	-
29. Tukti Sherpa	43	6	2	Lit.	"	-	28	3	-	-	2	-
30. Kamal Rimal	62	3	1	S.L.C	"	-	88	1	2	-	-	-
31. Santa B. Rai	60	4	1	Illit.	"	-	44	2	2	-	-	-
32. Kedam B. Bhattarai	52	4	5	Lit.	"	-	61	3	2	-	4	-
33. Dan B. Bhattarai	55	5	3	"	"	-	80	1	2	1	10	-
34. Dauga B. Bhattarai	33	2	2	"	"	-	58	-	-	-	3	-
35. Narapati Bhattarai	70	5	2	"	"	-	80	3	2	-	5	-
36. Tika P. Bhattarai	42	2	2	"	"	-	16	2	-	-	2	-
37. Tek P. Bhattarai	30	1	2	S.L.C	"	-	15	1	-	-	3	-
38. Dilli Ram Bhattarai	32	7	3	Lit.	"	-	125	2	2	-	2	-
39. Nanda Lal Bhandari	34	1	6	"	"	-	34	1	-	-	-	-
40. Tej B. Bhandari	45	1	5	"	"	-	58	2	2	-	2	-
41. Kapil Man Bhandari	56	6	3	"	"	-	50	2	-	-	2	-
42. Tanka P. Subedi	45	6	3	Illit.	"	-	35	2	-	-	2	-
43. Shyam P. Adhikari	55	3	2	Lit.	"	-	60	3	-	2	4	-
44. Prati P. Adhikari	42	5	2	"	"	-	56	1	-	-	2	-
45. Gaja Dhan Adhikari	60	5	2	"	"	-	60	3	2	1	3	-

Name of the User	Age	Family Size		Edu-cation	Occu-pation	*Khet* Land in *ropani*	*Bari* Land in *ropani*	Number of Animal Owned				
		M	F					Cow	Ox	Buff.	Goat	Pig
46. Karna B. Limbu	65	5	3	Illit.	"	-	120	3	-	-	-	1
47. Dhan B. Limbu	37	1	6	Lit.	"	-	15	-	-	-	-	1
48. Chandra B. Limbu	31	3	2	"	"	-	100	2	-	-	-	1
49. Jas B. Limbu	62	5	3	Illit.	"	-	100	1	-	1	-	1
50. Shyam B. Limbu	38	1	1	"	"	-	34	-	-	-	-	1
51. Ganga B. Limbu	32	3	1	Lit.	"	-	34	-	-	-	-	-
52. Dal P. Kami	45	1	-	Illit.	"	-	-	1	-	-	-	-
53. Om P. Pokhrel	32	1	2	S.L.C	"	-	10	1	-	-	-	-
54. Bhim P. Pokhrel	32	4	5	"	"	-	21	2	-	-	2	-
55. Indra P. Adhikari	32	3	2	Lit.	"	-	65	2	-	-	3	-
56. Indra B. Adhikari	45	3	2	"	"	-	36	1	-	-	2	-
57. Lok B. Bhattarai	51	3	3	"	"	-	59	3	-	-	9	-
58. Bir B. Bhattarai	48	2	2	"	"	-	30	2	-	-	4	-
59. Chuda M. Bhattarai	65	3	2	"	"	-	65	3	2	-	8	-
60. Narad Bhattarai	38	2	1	"	"	-	40	2	-	-	-	-
61. Bhawani P. Bhattarai	31	2	2	"	"	-	60	2	-	-	-	-
62. Tika Maya Bhattarai	42	1	2	Illit.	"	-	60	2	-	-	-	-
63. Mahendra Bhattarai	23	2	1	"	"	-	30	1	-	-	-	-
64. Khyam P. Bhattarai	35	3	1	Lit.	"	-	20	2	-	-	-	-

Annex - 1

Total Stock of Different Kinds of Tree Species in Sample (10x10m) Handikharka C/F, Dhankuta 1993.

Sample Plot												
	Seedling Density (10-10")						Tree Density (10+")					
Name of Species	1	2	3	4	5	Total	1	2	3	4	5	Total
Sallo	15	12	23			50	4	6	8			18
Bhalayo	3	2	3		3	11	1	1	2		1	5
Sal		24	3		18	45		10	3		9	22
Karam		4		4		13		1		11		12
Bel		2				2		1				1
Bodhangero		6	10	3	5	24		2	3	1	1	7
Amala		3				3		1				1
Pipri		13				13		1				1
Bhakimalio		5				5		1				1
Dabdabe		6				6		1				1
Harro		4				4		1				1
Khayar		7				7		1				1
Halunde		6				6		1				1
Malati		4	3	7		14	1					1
Total	18	98	42	19	26	203	6	28	16	12	11	73

Annex - 2

Volume of Trees, Handikharka FUG (*bhalayo, bel, amala, pipri, bhakiamilo, dabdabe, harro, halunde*, and *malati*)

		Height (in metre)				
dbh	Total Number of Species	10	12	14	16	18
< 121	1					
12		.065				
14		.086	.100			
16			.128			
18		.137	.106			
24		.199	.232	.263	.334	
26				.308		
32				.446		
42						1.070
Total		.487	.566	1.017	.334	1.070=3.474

Pinus roxburghii (Chir Pine)

		Height (in metre)					
dbh	Total Numberof Species	10	12	14	16	18	20
< 12							
12		.061 .073					
14			.098				
24			.277	.324			
28		.311	.373 .436				
30			.497 .569				
32						.72	
36			.540	.710	.820		
38					.900		
40						1.11	
44						1.34	
46							1.62
66	1						
Total		.372	.1361	1.967	2.289	3.17	1.62

Adinia cordifolia (karma)

	Height (in metre)						
dbh	Total Number of Species	10	12	14	16	18	20
< 12	4						
12	2	.059	.069				
14	3	.079	.186				
16	1	.101	.277				
18	3	.126	.148	.169			
20	1	.153					
26	1		.293				
28	1			.385			
Totla	16	.518	.973	.554	= 2.046		

Lagerstroemia parviflora (botdhaino)

	Height (in metre)						
dbh	Total Number of Species	10	12	14	16	18	20
< 12	3						
12		.065					
14		.085					
16							
18		.131					
20							
22		.186					
28							
Total	3	.471 = .471					

Acacia catechu (khair)

	Height (in metre)						
dbh	Total Number of Species	10	12	14	16	18	20
< 12							
12							
14	1		.304				
16							
18							
20							
22							
28				.326			
Total			.304	.326=.430			

Shorea robusta (sal)

	Height (in metre)						
dbh	Total Number of Species	10	12	14	16	18	20
< 12	14						
12	5	.066	.077	.088			
14	8	.089	.104		.132		
16	2		.134	.152			
18	2			.190		.235	
20	6	.175	.204	.232		.287	
22	4	.210		.279	.311	.344	
24	1				.386		
28	1					.544	
29	1						.960
30	1					1.070	
Total	45	.540	.519	.941	.829	2.480	.960=6.269

Annex - 3

Total Stock of Different Kinds of Tree Species in Sample (10x10m), Thaprong C/F, Dhankuta (1993)

Sample Plot										
Seedling Density(0-10")						Tree Density(10+")				
Name of Species	1	2	3	4	Total	1	2	3	4	Total
Uttis	13				13	2				2
Mauwa		14			14		4			4
Siris		4			4		4		3	7
Guyalo		12			12		1			1
Augeri		17	10		27		1	2		3
Bandare		15			15		4			4
Sallo			16	15	31			5	3	8
Chilaune	1		1	14	15				2	2
Total	14	62	27	29	131	2	14	7	8	31

Annex - 4

Volume of Trees, Thaprong FUG, Thaprong CF, Dhankuta Miscellaneous in Hills (*gurans+mauwa+guyalo+angeri+gandhare*)

		Height (in metre)									
dbh	Total Number of Species	10	12	14	16	18	20	22	24	26	28
< 12	5										
12	1	.065									
14	3	.086	.100	.114							
16	3	.110	.128	.181							
18	2				.202						
20	2		.194		.246						
22											
24											
26	1	.271									
28											
30	1			.530							
32											
34	1		.520								
36	3			.650	.730	.800					
38											
40											
42	2			.870	.970						
44											
100	1										8.10
Total		.532	.942	2.345	2.148	.800					810=15.399

Chir Pine (*Pinus roxburghii*), Thaprong CF

dbh	Total Number Species	Height (in metre) 10	12	14	16	18
< 12	11					
14		.082				
16			.127			
22				.247		
28				.436		
32					.720	
40					.990	
46					1.290	1.46
Total	.082	.127	.683	3.683		1.46 =6.035

Uttis (*Alnus nepalensis*), Plot No 1 (10 x 10sq.m.)
Thaprong Kholayauba Forest

dbh	Total Number of Species	Height (in metre) 10	12	14	16	18
< 12	3					
12	1				.113	
14						
22						
28						
32						
40						
44						1.13
Total					.113	1.13=1.243

Chilaune (*Schima wallichii*) Thaprong CF, Dhankuta

		Height (in metre)				
dbh	Total Number of Species	10	12	14	16	18
< 12	1					
12						
14		.079				
16			.121			
28						
32						
40						
44						
Total		.079	.121=0.20			

Annex - 5

Total Stock of Different Kinds of Tree Species in Sukrabare (10x10m) - Siddhapokhari

	Seedling Density (0-10")			Tree Density 10+"		
Species	1	2	Total	1	2	Total
Chilaune	0	1	1	3	1	4
Patle katus	48	51	99	4	7	11
Total	48	52	100	7	8	15

Annex - 6

Sukrabare Community Forest, Siddhapokhari VDC, Sankhuwasabha District (1993)

Species: *Chilaune* (*Schima wallichii*)

	Height (in metres)			
Diameter (in cm)	10	14	26	30
16	.101			
42		.82		
88			5.84	
143				8.50

Total Volume (m^3) = 15.261

Sukrabare Community Forest, Siddhapokhari VDC, Sankhuwasabha, 1993

Species: *Kattus* (Miscellaneous in Hills)

	Height (in metre)					
Diameter (in cm)	10	12	14	16	20	24
12	(2) .13					
14	(1) .086					
36		(3) 1.74				
46			(2) 2.06			
50				(1) 1.34		
64					(1) 2.54	
78						(1) 4.26

Annex - 7

Total Stock of Different Kinds of Tree Species in Chyane Dasha *Danda*, Pangma

Sample plot														
Species	Seedling Density 0 to 10"							Tree Density 10+"						
	1	2	3	4	5	6	Total	1	2	3	4	5	6	Total
Sal	183	32	58	178	43	149	643	3	3	3	9	6	8	32
Chilaune	1	0	1	0	6	1	9	1	1	1	1	1	2	7
Katus	0	10	6	0	12	8	36	0	1	2	0	0	0	3
Botdhairo	1	5	3	0	1	0	10	0	0	1	0	0	0	1
Pipari	0	0	1	0	0	0	1	0	0	0	0	0	0	0
Saj	4	28	9	4	1	0	46	0	0	0	0	0	0	0
Harro	1	0	0	1	0	2	4	0	0	0	0	0	1	1
Jyamuno	1	1	0	0	0	0	2	0	0	0	0	0	0	0
Kyamuno	3	6	6	0	2	4	21	4	1	0	1	0	0	6
Others	0	1	1	0	0	0	2	0	0	0	0	0	0	0
Total	194	83	85	183	65	164	774	8	6	7	11	7	11	50

Annex - 8

Volume Table for Chyane Dashe *Danda* CF, Pangma
Shorea robusta (*sal*)

Volume with bark m^3 (all plots)

	Height (in metre)						
DM CM	10	12	16	20	24	28	30
30	2.27						
35		5.6					
50			4.47				
55			3.44				
65				2.86			
80					15.3		
95						23.64	
100							37.56
Total							95.14

Schima wallichii (*chilaune*)

Volume with Bark m^3

DM CM	10	12	14	16	18	Total
30	0.316					0.316
35		0.48				0.48
45			0.89			0.89
50				1.28		1.28
55				2.94		2.94
60					2.01	2.01
Total						7.916

Lagerstroemia parviflora (botdhairo)

Volume with bark m^3 (all plots)

Height in Metre						
DM CM	10	12	14	16	18	Total
15						
20						
25						
30	0.317					0.317
35						
Total						0.317

Eugenia jambolana (jamun)

Volume with bark m^3

Height (in metre)					
DM CM	10	14	20	28	Total
30	0.98				0.98
45		0.89			0.89
65			2.45		2.45
95				6.71	6.71
Total					11.03

Miscellaneous Hills

Volume with bark m^3

Height (in metre)					
DM CM	10	12	14	18	Total
30	0.35				0.35
35		0.52			0.52
45			0.95		0.95
60				2.07	2.07
Total					3.89

Annex - 9

Total Stock of Different Kinds of Tree Species in Thulopakha Dhusune, Manakamana

Sample Plot						
Species	Seedling Density (0-10")			Tree Density (10+")		
	1	2	Total	1	2	Total
Sal	65	70	135	3	1	4
Chilaune	2	0	2	0	1	1
Katus	0	96	96	0	0	0
Saj	5	5	10	1	0	1
Kyamuna	1	9	10	0	0	0
Harro	4	0	4	0	0	0
Jyamuno	1	6	7	0	1	1
Others	3	0	3	0	0	0
Total	81	186	267	4	3	7

Annex - 10

Volume Table for Thulopakha Dhusune CF

Shorea robusta (*sal*)
Volume with bark m^3

Height (in metre)				
DM CM	10	22	30	Total
30	0.379			0.379
75		8.18		8.18
100			9.39	9.39
Total				17.949

Schima wallicchii (chilaune)
Volume with bark m^3

Height (in metre)					
DM CM	10	12	18	30	Total
20					
40					
70					
100				8.50	8.50
Total					8.50

Eugenia jambolana (jamuno)
Volume with bark m^3

Height (in metre)					
DM CM	10	12	14	16	Total
15					
20					
25					
30	0.326				0.326
Total					0.326

Miscellaneous in Hills

Volume with bark m^3

Height (in metre)					
DM CM	10	12	14	16	Total
15					
20					
25					
30	0.353				0.353
Total					0.353

Total Stock of Different Trees Species, Bhedichok, Ilam (1993)

			A: 0-5" Plot No.										B:5+" Plot No.									
SN	Species	1	2	3	4	5	6	7	8	9	Total	1	2	3	4	5	6	7	8	9	Total	Grand Total
1	*Akhane*	-	-	-	-	2	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2
2	*Asare*	-	-	2	-	3	2	5	-	-	12	-	-	-	-	-	-	-	-	-	-	12
3	*Bajranth*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	1
4	*Bhalayo*	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1	-	-	1	2
5	*Boke Timur*	-	-	2	-	-	-	1	-	-	3	-	-	-	-	-	-	-	-	-	-	3
6	*Chuthrond*	-	-	-	2	-	7	-	-	2	11	-	-	-	-	-	-	-	-	-	-	11
7	*Chimali*	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	1
8	*Dudhilo*	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
9	*Ghurpis*	-	-	-	1	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2
10	*Jhigane*	-	2	1	6	-	3	2	-	6	20	-	-	-	1	-	11	1	-	-	13	33
11	*Kharane*	-	-	13	2	10	-	4	-	13	42	-	1	2	-	2	-	-	-	3	8	50
12	*Khanakpa*	-	-	2	5	-	-	-	-	-	7	-	-	-	-	-	-	-	-	-	-	7
13	*Kholme*	-	-	-	1	-	-	-	-	1	2	-	1	-	-	4	-	-	-	1	6	8
14	*Kesharee*	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	1
15	*Latikath*	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
16	*Lisse*	-	1	1	-	-	-	-	-	-	2	-	-	-	-	-	-	2	-	-	-	
17	*Patle Katus*		5	2	3	-	-	-	-	55	15	-3	33	31	11	11	17	7	-	40	30	45
18	*Pinus patula*	5	-	-	4	5	-	-	4	-	18	34	-	6	-	10	-	-	21	-	71	90
	Total	5	9	24	24	21	12	13	4	29	141	34	5	11	12	18	12	11	21	8	131	273

Annex - 12

Volume of Trees (including Perimeter, Diameter, and Height) in Bhedichok, Ilam (1993)

Plot No 1

SN	Species	Perimeter (IInd)	Diameter (cm)	Height (m)	Volume (m^3)
1	*Pinus patula*	53.34	17.00	6.70	0.072
2	"	55.88	17.80	6.70	0.078
3	"	17.78	5.66	3.75	0.015
4	"	45.72	14.56	6.70	0.055
5	"	38.10	12.13	6.70	0.040
6	"	50.80	16.20	6.40	0.063
7	"	55.88	17.80	7.00	0.082
8	"	45.72	14.56	6.70	0.055
9	"	35.56	11.32	4.90	0.025
10	"	17.78	5.66	3.70	0.008
11	"	20.32	6.47	3.70	0.007
12	"	71.12	22.64	9.14	0.170
13	"	43.18	13.80	8.60	0.067
14	"	48.26	15.36	8.22	0.077
15	"	45.72	14.60	7.70	0.065
16	"	30.48	9.80	5.18	0.020
17	"	17.78	5.70	9.20	0.015
18	"	22.86	7.28	4.00	0.009
19	"	60.96	19.40	9.14	0.134
20	"	27.94	9.00	5.18	0.018
21	"	22.86	7.28	8.00	0.021

SN	Species	Perimeter (IInd)	Diameter (cm)	Height (m)	Volume (m^3)
22	"	38.10	12.13	5.40	0.031
23	"	27.94	8.90	4.60	0.015
24	"	48.26	15.36	6.80	0.062
25	"	30.48	9.80	4.90	0.019
26	"	33.02	10.60	5.48	0.025
27	"	38.10	10.00	6.80	0.041
28	"	50.80	16.20	7.62	0.077
29	"	53.34	16.98	6.70	0.072
30	"	48.26	15.36	6.70	0.063
31	"	27.94	8.89	3.96	0.013
32	"	35.56	11.32	5.49	0.028
33	"	43.18	13.74	6.40	0.047
34	"	53.34	16.98	7.62	0.083
Total					1.682

Plot No 2

Volume of Trees (including Perimeter, Diameter, and Height) in Bhedichok, Ilam (1993)

SN	Species	Perimeter (cm)	Diameter (cm)	Height (m)	Volume (m^3)
1	*Patle Katus*	365.76	116.4	18.3	7.142
2	"	152.40	48.5	10.7	0.909
3	"	132.80	42.0	13.7	0.867
4	*Kholme*	35.56	11.3	4.5	0.030
5	*Kharane*	35.56	11.3	3.6	0.025
	Total				8.973

Plot No 3

Volume of Trees with Perimeter, Diameter, and Height in Bhedichok, Ilam (1993)

SN	Species	Perimeter (cm)	Diameter (cm)	Height (m)	Volume (m^3)
1	*Pinus patula*	17.8	5.7	2.4	0.0013
2	"	30.4	9.8	3.3	0.0120
3	"	25.4	8.0	3.7	0.0098
4	"	17.8	5.7	2.4	0.0033
5	"	20.3	6.4	3.0	0.0053
6	"	17.8	5.7	2.4	0.0033
7	*Kharane*	20.3	6.4	2.8	0.0071
8	"	17.8	5.7	3.0	0.0061
9	*Patle Katus*	20.3	6.4	3.0	0.0075
10	"	68.6	21.9	9.1	0.0183
11	"	40.7	13.0	5.4	0.0453
Total					0.1213

Plot No 4

Volume of Trees (including Perimeter, Diameter, and Height) in Bhedichok, Ilam (1993)

SN	Species	Perimeter (cm)	Diameter (cm)	Height (m)	Volume (m^3)
1	*Patle Katus*	99.0	31.6	7.7	0.314
2	"	17.8	5.7	2.4	0.0051
3	"	58.4	18.7	6.8	0.107
4	"	81.2	25.9	8.0	0.224
5	"	68.6	21.9	6.8	0.144
6	"	58.4	18.7	7.7	0.119
7	"	48.2	15.3	6.0	0.067
8	"	35.6	11.3	5.4	0.035
9	"	38.1	12.1	5.4	0.039
10	"	40.7	13.0	6.0	0.494
11	"	53.3	17.0	6.8	0.089
12	*Jhigane*	38.1	12.1	3.7	0.029
Total					1.666

Plot No 5

Volume of Trees (including Perimeter, Diameter, and Height) in Bhedichok, Ilam (1993)

SN	Species	Perimeter (cm)	Diameter (cm)	Height (m)	Volume (m^3)
1	*Bajranth*	20.32	6.4	1.9	0.00517
2	*Patle Katus*	17.80	5.7	2.4	0.00510
3	*Kholme*	17.80	5.7	2.8	0.00570
4	"	17.80	5.7	2.8	0.00570
5	"	38.10	12.1	3.0	0.02400
6	"	22.90	7.2	4.0	0.01200
7	*Kharane*	20.30	6.4	3.7	0.00890
8	*Pinus patula*	35.60	11.3	5.1	0.02600
9	"	38.10	12.1	6.8	0.04100
10	"	35.60	11.3	5.4	0.02800
11	"	17.80	5.7	2.8	0.00397
12	"	17.80	5.7	2.8	0.00397
13	"	17.80	5.7	3.3	0.00480
14	"	25.40	8.0	4.6	0.01300
15	"	22.90	7.2	3.0	0.00640
16	"	33.00	10.6	4.6	0.02100
17	"	40.7	13.0	6.0	0.03900
18	*Kharane*	17.8	5.7	2.8	0.00570
Total					0.25941

Plot No 6

Volume of Trees (including Perimeter, Diameter, and Height) in Bhedichok, Ilam (1993)

SN	Species	Perimeter (cm)	Diameter (cm)	Height (m)	Volume (m^3)
1	*Patle Katus*	28.0	8.9	3.7	0.0165
2	*Jhigane*	33.0	10.6	3.0	0.0190
3	"	20.9	7.2	2.4	0.0078
4	"	20.3	6.4	2.4	0.0063
5	"	22.9	7.2	3.0	0.0094
6	"	20.3	6.4	2.8	0.0071
7	"	30.4	9.8	4.6	0.0230
8	"	25.4	8.0	3.6	0.0132
9	"	20.3	6.4	3.7	0.0089
10	"	17.8	5.7	2.8	0.0057
11	"	22.9	7.2	3.7	0.0110
12	"	20.3	6.4	3.0	0.0075
Total					0.1354

Plot No 7

Volume of Trees (including Perimeter, Diameter, and Height in Bhedichok, Ilam (1993)

SN	Species	Perimeter (cm)	Diameter (cm)	Height (m)	Volume m^3
1	*Patle Katus*	83.9	26.7	12.1	0.333
2	"	50.9	16.1	9.8	0.110
3	"	101.7	32.3	12.9	0.499
4	"	28.0	8.9	3.7	0.016
5	"	78.8	25.0	12.1	0.025
6	"	17.8	5.7	3.7	0.007
7	"	61.0	19.4	10.7	0.167
8	*Lisse*	86.3	27.6	5.4	0.182
9	"	86.3	27.6	3.7	0.134
10	*Jhigane*	38.1	12.1	5.4	0.039
11	*Bhalayo*	63.6	20.2	10.3	0.174
Total					1.690

Plot No 8

Volume of Trees (including Perimeter, Diameter, and Height in Bhedichok, Ilam (1993)

SN	Species	Perimeter (cm)	Diameter (cm)	Height (m)	Volume m^3
1	*Pinus patula*	22.9	7.2	3.7	0.0082
2	"	17.8	5.7	3.7	0.0054
3	"	17.8	5.7	3.7	0.0054
4	"	20.3	6.4	4.6	0.0086
5	"	20.3	6.4	4.2	0.0077
6	"	20.3	6.4	4.6	0.0086
7	"	17.8	5.7	4.2	0.0063
8	"	22.9	7.2	4.2	0.0095
9	"	33.0	10.6	5.4	0.0250
10	"	68.6	21.9	11.0	0.1980
11	"	45.8	14.6	8.9	0.0770
12	"	35.6	11.3	6.8	0.0363
13	"	50.9	16.1	11.0	0.1170
14	"	22.9	7.2	4.9	0.0114
15	"	22.9	7.2	4.6	0.0110
16	"	28.0	8.9	6.0	0.0210
17	"	25.4	8.0	5.4	0.0150
18	"	25.4	8.0	5.4	0.0150
19	"	38.1	12.1	6.0	0.0350
20	"	28.0	8.9	5.5	0.0188
21	"	30.4	9.8	5.5	0.0220
Total					0.6622

Plot No 9

Volume of Trees (including Perimeter, Diameter, and Height in Bhedichok, Ilam (1993)

SN	Species	Perimeter (cm)	Diameter (cm)	Height (m)	Volume m^3
1	*Patle Katus*	76.2	24.2	11.9	0.274
2	"	518.1	165.0	21.3	15.430
3	"	28.0	8.9	4.9	0.021
4	"	78.8	25.0	9.4	0.029
5	*Kharane*	35.6	11.3	4.6	0.031
6	"	28.0	8.9	3.7	0.016
7	"	25.4	8.0	7.7	0.025
8	*Kholme*	35.6	11.3	3.0	0.022
Total					15.848

Total Stock of Different Trees Species, Kharkhare, Ilam (1993)

		A: 0-5" Plot No											B:5+" Plot No										
SN	Species	1	2	3	4	5	6	7	8	9	10	Total	1	2	3	4	5	6	7	8	9	10	Total	Grand Total
1	*Asare*	14	21	14	2	-	-	-	-	-	-	51	-	-	1	-	-	-	-	-	-	-	1	52
2	*Akhane*	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	1
3	*Bajranth*	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	1	-	-	-	3
4	*Bhalayo*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	1
5	*Badkaule*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	1
6	*Boke Timur*	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	1
7	*Champ*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	1
8	*Chuthrow*	-	-	-	-	-	-	-	-	-	3	3	-	-	-	-	-	-	-	-	-	-	-	3
9	*Ghurpis*	-	2	-	-	-	2	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	4
10	*Jhigane*	-	-	-	10	11	-	-	-	-	-	21	-	-	-	-	-	-	-	1	-	1	1	22
11	*Kharane*	102	67	61	17	10	14	37	16	71	1	396	8	7	5	-	2	5	5	2	-	-	34	430
12	*Kholme*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	1
13	*Lokta*	11	11	-	1	5	-	-	5	-	-	33	33	-	-	-	-	-	-	-	-	-	-	33
14	*Patle Katus*	-	-	8	5	-	5	1	-	-	-	19	-	-	-	1	3	-	1	-	1	-	8	27
15	*Pinus patula*	-	-	-	-	-	4	-	-	-	3	7	-	-	-	-	-	-	-	-	7	7	7	14
16	*Sisee*	-	-	-	-	-	-	1	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	1
17	*Tarsing*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	1
	Total	127	101	83	35	26	25	39	21	71	7	535	12	8	7	2	5	5	8	5	2	7	61	596

Annex - 14

Volume of Trees with Perimetre, Diameter, and Height in Kharkhare Community Forest, Ilam (1993)

Plot No 1

SN	Species	Perimeter (cm)	Diameter (cm)	Height (m)	Volume m^3
1	*Bajranth*	304.9	97.1	38.1	9.3300
2	*Patle katus*	287.0	91.4	16.8	4.2600
3	"	320.0	102.0	38.1	10.2200
4	*Boke timur*	25.4	8.0	4.9	0.0170
5	*Kharane*	40.7	13.0	4.6	0.0397
6	"	38.1	12.1	4.6	0.0350
7	"	17.8	5.7	3.0	0.0061
8	"	17.8	5.7	3.0	0.0061
9	"	22.9	7.2	3.0	0.0093
10	"	30.4	9.8	4.9	0.0250
11	"	15.2	4.9	1.9	0.0031
12	"	71.1	22.7	7.7	0.1700
	Total				24.1213

Volume of Trees with Perimeter, Diameter, and Height in Kharkhare Community Forest, Ilam (1993)

Plot No 2

SN	Species	Perimeter (cm)	Diameter (cm)	Height (m)	Volumem^3
1	*Bajranth*	307.3	97.9	18.2	5.16000
2	*Kharane*	12.7	4.0	3.0	0.00315
3	"	76.2	24.2	9.1	0.21970
4	"	58.4	18.7	12.1	0.17200
5	"	15.2	5.0	3.7	0.00566
6	"	20.3	6.4	3.0	0.00750
7	"	63.6	20.2	7.7	0.13700
8	"	35.6	11.3	7.7	0.46800
	Total				

Volume of Trees with Perimeter, Diameter and Height in Kharkhare Community Forest, Ilam, 1993

Plot No 3

SN	Species	Perimeter (cm)	Diameter (cm)	Height (m)	Volume (m^3)
1	*Akhane/Maure*	25.4	8.0	3.0	0.01140
2	*Ashare*	20.3	6.4	2.4	0.00626
3	*Kharane*	28.0	8.9	3.0	0.01380
4	"	20.3	6.4	4.9	0.01130
5	"	15.2	4.9	2.4	0.00380
6	"	43.1	13.8	5.4	0.05100
7	"	28.0	8.9	1.9	0.00952
Total					0.10708

Volume of Trees with Perimeter, Diameter and Height in Kharkhare Community Forest, Ilam, 1993

Plot No 4

SN	Species	Perimeter (cm)	Diameter (cm)	Height (m)	Volume m^3
1	*Patle Katus*	365.8	116.4	15.2	6.131
2	*Kholme*	49.0	30.0	4.6	0.187
	Total				6.187

Volume of Trees with Perimeter, Diameter and Height in Kharkhare Community Forest, Ilam, 1993

Plot No 5

SN	Species	Perimeter (cm)	Diameter (cm)	Height (m)	Volume m^3
1	*Patle Katus*	60.9	19.4	3.7	0.0690
2	" "	182.9	58.2	13.8	1.5700
3	" "	172.8	55.0	10.7	1.1500
4	*Kharane*	30.4	9.8	4.6	0.0235
5	" "	15.2	4.9	1.6	0.0027
	Total				2.8152

Volume of Trees with Perimeter, Diameter and Height in Kharkhare Community Forest, Ilam, 1993

Plot No 6

SN	Species	Perimeter (cm)	Diameter (cm)	Height (m)	Volume m^3
1	*Kharane*	40.7	13.0	3.7	0.03300
2	" "	38.1	12.1	4.2	0.03200
3	" "	25.4	8.0	2.4	0.00947
4	" "	22.9	7.2	2.8	0.00880
5	" "	43.1	13.8	4.6	0.04400
	Total				0.12727

Volume of Trees with Perimeter, Diameter and Height in Kharkhare Community Forest, Ilam, 1993

Plot No 7

SN	Species	Perimeter (cm)	Diameter (cm)	Height (m)	Volume m^3
1	*Patle Katus*	152.4	48.6	15.2	1.22000
2	*Bhalayo*	33.0	10.6	4.6	0.02700
3	*Bhadkaule*	137.1	43.7	13.8	0.92400
4	*Kharane*	27.9	8.9	3.0	0.01380
5	" "	73.7	23.4	9.1	0.20600
6	" "	15.2	4.9	3.7	0.00550
7	" "	40.7	13.0	4.2	0.03700
8	" "	22.9	7.2	1.9	0.00643
	Total				2.43973

Plot No 8

SN	Species	Perimeter (cm)	Diameter (cm)	Height (m)	Volume m^3
1	*Champ*	195.6	62.2	16.8	2.4400
2	*Bajranth*	152.0	48.6	6.8	0.6280
3	*Jhigane*	48.2	15.3	3.0	0.0380
4	*Kharane*	20.3	6.4	3.7	0.0089
5	" "	17.8	5.7	3.0	0.0061
	Total				3.1210

Plot No 9

SN	Species	Perimeter (cm)	Diameter (cm)	Height (m)	Volume m^3
1	*Tarsing*	220.9	70.3	26.0	3.75
2	*Patle Katus*	426.8	135.9	21.3	10.78
	Total				14.53

Plot No 10

SN	Species	Perimeter (cm)	Diameter (cm)	Height (m)	Volume (m^3)
1	*Pinus patula*	61.0	19.0	3.0	0.0360
2	"	35.6	11.3	3.7	0.0179
3	"	45.8	14.6	6.0	0.0490
4	"	38.1	12.1	5.4	0.0312
5	"	48.2	15.3	6.8	0.0610
6	"	40.7	13.0	5.4	0.0353
7	"	35.6	116.0	6.8	0.0360
	Total				0.2664

Note: In order to calculate the volume, the following volume equation has been userd

$$\ln (v) = a + b * \ln(d) + c * \ln(h)$$

Annex - 15

Total Number of Community Forest User Groups in Sankhuwasabha District by Forest Area, Number of Users, and Date of Handing Over (September 1993)

Name of CF User Group	Name of VDC and Ward	Forest Area (in ha)	Date of Handing Over to User Groups	Number of User Households[1]
1. Makar CF	Manakamana-3	2.8	048/11/22	18
2. Thulo Pakha Dhusune	Manakamana-3	10.0	048/12/21	43
3. Dharmadevi	Pangma-4	15.0	049/2/2	53
4. Golkhadi	Tamku-5	60.0	049/1/14	41
5. Pahire	Pangma-5	15.0	049/2/13	61
6. Chyane Dashe *Danda*	Pangma-1	50.0	049/1/17	72
7. Ramche Sunkhani	Manakamana-1	100.0	049/2/4	100
8. Thale *Danda*	Malta-7	14.0	049/2/13	66
9. Kechum	Kharang-4	20.0	049/3/11	48
10. Topakhani & Kolepakha	Syabun-9	52.5	049/2/12	49
11. Devithan	Pathibhara-2		049/2/26	36
12. Umring	Madi Rambeni-7	20.0	049/7/12	57
13. Ahale Sisne Salleri	Chainpur-8	53.0	050/1/20	75
14. Sherajangare	Chainpur-9	17.5	050/1/20	88
15. Bhasme	Malta-8	25.0	050/1/18	54
16. Sukrabare	Chainpur & Siddhapokhari-9	10.0	050/1/20	78
17. Pangre Damkhoriya	Manakamana-4	25.0	050/1/17	111
18. Archale	Manakamana-4	53.0	050/1/18	81
19. Dhunge Dharo & Thulopakho	Manakamana-6	65.0	050/1/18	188
20. Manakamana	Manakamana-7	130.0	050/2/5	131
21. Deurali	Barhabise-4	100.0	050/2/1	59
22. Devithan	Dhupu-1	75.0	050/2/8	41

Name of CF User Group	Name of VDC and Ward	Forest Area (in ha)	Date of Handing Over to User Groups	Number of User Households[1]
23. Tudiphukuding	Hatiya-4	250.0	050/2/4	112
24. Mulpani	Tamku-4	30.0	050/2/8	69
25. Tilinge Mahamir Gurmita	Pathibhara-2	35.0	050/2/1	29
26. Kabre Amale	Syabun-9	12.5	050/2/8	38
27. Andheri Bhajana	Malta-9	18.7	050/2/8	140
28. Simledhunge	Wana-5	17.0	050/2/22	96
29. Sheresunakhani	Manakamana-5	200.0	050/3/8	216
30. Ratmate Katusini	Siddhapokhari-5,6	14.5	050/3/9	55
31. Aitbare Ambung Nigale	Siddhapokhari-3	15.0	050/3/9	84
32. Maldumki	Manakamana-2	5.0	050/3/9	70
33. Amrang	Num-7	35.0	050/3/18	44
34. Naughare Paktibeka	Syabun-2	25.0	050/3/16	92
35. Sisuwa Salghari	Syabun-2	150.0	050/3/13	117
36. Maksuwa	Syabun-1	60.0	050/3/16	72
37. Okhre	Tamaphok-9	40.0	050/3/27	59
38. Syabi Saureni	Barhabise-5	52.5	050/3/16	64
39. Kalika	Tamaphok-9	100.0	050/3/7	98
40. Laligurans	Tamku-2	50.0	050/3/16	23
41. Kartike Amphe	Wana-4,5	12.0	050/3/23	100
42. Hokse Pipale	Wana-9	250.0	050/3	154
43. Jalkanyadevi	Bala-1	10.0	050/3/27	20
44. Pikhuwa Triveni	Barhabise-4, 5	50.0	050/3/31	52

1. The number of users was noted in the register of the DFO when it was first formed. Since then, the number of users has fluctuated in some FUGs.

Annex - 16

Total Number of Community Forest User Groups in Dhankuta District by Forest Area, Number of Users, and Date of Handing Over (September 1993)

Name of CF User Group*	Municipality/ VDC	Area in Hectares	Number of Users	Date of Handing Over to User Groups**	Area/Unit	Type of Forest
1. Sidhunga CF	Dhankuta Municipality - 3	24.0	136	045/11/6	Dhankuta Area Office, Chuliban	Va Affo-rested
2. Patle Pansing CF	Dhankuta - 3	40.0	162	046/11/3	DHK Area Forest Office, Kagate	IVb Natural
3. Sansari Suke Pokhari CF	Dhankuta - 1	5.0	69	047/10/26	DHK Area Forest Office, Chuliban	Va
4. Panchakanya Gadi *Danda* CF	Dhankuta - 1&2	6.0	78	047/12/26	DHK Area Forest Office, Chuliban	Vb
5. Mangdin Pakha CF	Dhankuta - 9	22.0	41	048/1/7	" "	IIb
6. Wagley CF	Dhankuta - 4	35.0	119	048/7/9	" "	IIa
7. Aitabari Rai CF	Dhankuta - 1	10.0	113	049/1/6	" "	IIb
8. Handikhara CF	Dhankuta - 3	150.0	224	049/2/3	" "	Ib Natural
9. Kangiyogari CF	Dhankuta - 3	40.0	96	049/7/13	" "	Ib Natural
10. Chuliban CF	Dhankuta - 7	18.0	111	049/8/28	" "	Ib Natural & Afforested
11. Chuliban CF	Dhankuta - 7	25.0	72	049/8/30	" "	IIb Natural & Afforested
12. Ghelpetangwa	Dhankuta - 7	40	90	049/12/25	" "	Vb Afforested
13. Baikini CF	Phalate - 7	10	72	046/11/9	DHK Area Forest Office, Pakhribas/ Ghorlikharka	IIb Natural
14. Dhap CF	Phalate - 5	25.0	127	047/12/18	DHK " "	IIb
15. Banpala	Phalate	2	31	050/1/19	" "	IVb

Name of CF User Group*	Municipality/ VDC	Area in Hectares	Number of Users	Date of Handing Over to User Groups**	Area/Unit	Type of Forest
16. Teen	Phalate - 5	25	127	047/12/17	Ghorlikharka	IIb
17. Bhainsa Kham CF	Belahara - 5	55	91	046/11/22	DHK Area Forest Office, Kagate	IVb
18. Aitabare CF	Belahara - 2&3	30	42	049/3/20	DHK Area Forest Office, Chuliban	IIb
19. Dumre Sanne CF	Belahare - 2&3	70.0	163	049/3/20	" "	IIb
20. Kalimati CF	Belahara - 7	3.0	34	050/1/19	DHK Area Forest Office, Chungbang	Vb
21. Rajarani CF	Rajarani - 6	32.0	165	046/11/25	DHK Area Forest Office, Bhedetar	IIa
22. Kirtipur CF	Rajarani - 6	4.0	49	046/11/26	" "	IIb
23. Rajathan	Rajarani - 6	5.0	42	047/9/5	DHK Area Forest Office, Bhedetar	IIb
24. Sitali CF	Rajarani - 3	7.0	33	049/2/8	DHK Area Forest Office, *Danda Bazaar*	IIb
25. Thaprong CF	Rajarani - 2&3	7.0	49	049/9/9	" "	IIb
26. Rajarani Samlolung CF	Rajarani - 2&3	15.0	66	049/9/20	DHK Area Forest Office, Maunadudhuk	IIb
27. Ramdhe CF	Hattikharka	36.0	142	046/12/12	DHK Area Forest Office, Pakhribas	IIa
28. Gurung Khop CF	Hattikharka - 8	7.0	91	050/2/21	" "	IIb
29. Chiple Pakha	Murtidhunga - 6	6.0	62	047/1/2	" "	Va
30. Chauki *Danda*	Murtidhunga - 6	30.0	235	047/12/16	DHK Area Forest Office, Munga	IIa
31. Nigale Kalimati CF	Murtidhunga - 1&9	15.0	84	050/30/2	DHK Area Forest Office, Jitpur	IIb
32. Newar Dhara CF	Ankhisalla	33.0	129	047/12/18	DHK Area Forest Office, Kagate	Vb

Name of CF User Group*	Municipality/ VDC	Area in Hectares	Number of Users	Date of Handing Over to User Groups**	Area/Unit	Type of Forest
33. Sano Pokla CF	Ankhisalla	51.25	138	049/9/6	DHK Area Forest Office, Ankhisalla	IIb
34. Thulo Pokla CF	Ankhisalla - 3	80.0	133	049/12/8	" "	IVb
35. Chisapani CF	Khuwaphok-1,2,5,9	5.0	186	048/1/9	DHK Area Forest Office, *Danda Bazaar*	IIb
36. Saplang CF	Khuwaphok-13	13.0	110	049/12/14	" "	IIb
37. Pahire CF	Pakhribas	15.0	123	048/8/5	DHK Area Forest Office, Muga	IIc
38. Jantar CF	Pakhribas-7	32.0	43	050/2/9	Pakhribas	Vb
39. Chumaune CF	Budhabare-1,2	35.0	111	048/7/14	6 No, Budhabare	IIa
40. Okhada CF	6 No Budha-bare-2,3	5.0	45	049/2/9	Bhedetar	IIa
41. Patle Khola CF	6 No Budhabare	50.0	85	049/8/20	Budhabare	Natural
42. Niule CF	" "	15.0	29	050/1/7	Mauna Budhuk	IIb
43. Ramite *Danda* CF	Bhedetar	45.0	43	048/7/26	Bhedetar	IIb
44. Pungima Pakha CF	Bhedetar-3	10	56	049/4/11	"	Ib
45. Khani *Danda* CF	Bhedetar	40	142	049/5/6	"	Natural
46. Chante *Danda* CF	Bhedetar	25	95	049/6/2	"	"
47. Panchami *Danda* CF	Tankhuwa-6	2	33	048/7/25	Chula Chuli	IVa
48. Singh Devi Patle CF	Tankhuwa-7	5	19	048/7/25	"	IIb
49. Chulohunge Pakha CF	Tankhuwa-8	15	54	050/3/26	"	Vb
50. Dhoje CF	Danda *Bazaar*	18	49	048/9/16	*Danda Bazaar*	IIa
51. Hangsingh *Danda* CF	Danda *Bazaar* - 8,9	10	46	049/2/10	Dhankuta	IIb
52. Siteseni Pakha CF	Danda *Bazaar* - 7	17	27	050/3/13	*Danda Bazaar*	IVb

Name of CF User Group*	Municipality/ VDC	Area in Hectares	Number of Users	Date of Handing Over to User Groups**	Area/Unit	Type of Forest
53. Salleri Chuar *Danda* CF	Pariyadir-7,9	12	136	047/10/17	Kagate Chula Chuli	IVb
54. Singha Devi Tare Bhir CF	Pariyadir-6,7	10	35	049/3/6	Chula Chuli	Vc
55. Namgang Sepini CF	Parixadin-6,8	15	45	049/3/7	" "	Vc
56. Aitbare Angeri Pakha CF	Parixadin-6	20	89	049/8/12	" "	Natural
57. Bhulukhop Singhdevi CF	Parixadin-6	20	69	049/10/2	" "	IIc
58. Hawa Khola Chungegari CF	Parixadin-4,8	20	62	050/3/27	" "	Vc
59. Chapehit CF	Bhirgaon	5	15	049/2/5	Chuliban	Vc
60. Chetmala CF	Mahabharat	30	80	049/4/10	Bhedetar	Ib
61. Garjuwa Pakha CF	Mahabharat-3	30	102	049/9/20	"	Ib
62. Tatopani CF	Mahabharat-9	60	83	049/11/10	"	IVb
63. Kuimir CF	Danda *Bazaar*-9	80	132	049/5/6	"	Natural & Afforested
64. Bileni Pakha CF	Budhi Morang	150	201	049/7/1	Budhi Morang	Natural
65. Salghari CF	Budhi Morang-5	50	61	050/3/20	*Danda Bazaar*	Ib
66. Newar Gaon Mathillo CF	Chanuwa-7	15	48	049/7/28	Chanuwa	IIb
67. Mathillo CF	Chanuwa-6	15	35	049/7/29	"	Natural
68. Khakle Cf	Chanuwa-8	20	198	050/1/7	"	Ib
69. Machhindre Salleri CF	Maunabudhuk-3	30	115	049/8/15	Maunabudhuk	Natural
70. Mauna Salleri CF	Maunabudhuk	24	102	049/10/11	*Danda Bazaar*	IVb
71. Kafalbote CF	Maunabudhuk	5	39	049/12/20	"	IIb
72. Bhadrache CF	Danda *Bazaar*-2,6	18	71	049/9/25	"	IIb
73. Dhapsingh CF	Muga-6	17	50	049/10/6	Pakhribas	IIb
74. Ghanchi Pakha CF	Ahale	30	48	049/11/9	Bhedetar	IVb
75. Rumti CF	Saune	25	104	049/12/4	Hattikhara	Ib

Name of CF User Group*	Municipality/ VDC	Area in Hectares	Number of Users	Date of Handing Over to User Groups**	Area/Unit	Type of Forest
76. Mane Salleri CF	Saune-3,4	9	130	050/2/8	Pakhribas	IIb
77. Tare Bhir Devi Dhara CF	Chhintang Ankhisalla	60	211	049/12/9	Chhintant Ankhisalla	IIb
78. Daskatiya CF	Chhintang-1,2	80	209	050/2/22	Ankhilalla	IIb
79. Simta Utteseni CF	Murtidhunga	20	104	049/12/29	Pakhribas	IIb
80. Negale Kalimati Singhadevi CF	Murtidhunga-1,9	15	84	050/2/30	Jitpur	IIb
81. Janta CF	Ghorlikharka-2	25	119	050/1/10	Ghorlikharka	Ib
82. Banpala CF	Kuruletenupa-2	50	77	050/3/16	Mudhebas	IIb
83. Bhale Pokhari	" - 6	17	55	050/3/17	"	Vb
84. Ratmate CF	Teliya-1,5	30	110	049/12/7	Chula Chuli	Va
85. Chijeghode CF	Jitpur	-	-	-	-	-
86. Andheri Khola CF	Parewadin	-	-	-	-	-
87. Shiva Ratri CF	Leguwa	-	-	-	-	-
88. Sitaladevi CF	Pakhribas	-	-	-	-	-
89. Jalkini Koljar CF	Ghorlikharka	-	-	-	-	-
90. Jalkanyadevi CF	Marekatahare	-	-	-	-	-
91. Sim *Danda* CF	Maunabudhuk	-	-	-	-	-

* From Ratmate onwards, the CFs are recognised but have not been handed over.
** The number of users has fluctuated since the date the FUG was formed.

Annex - 17

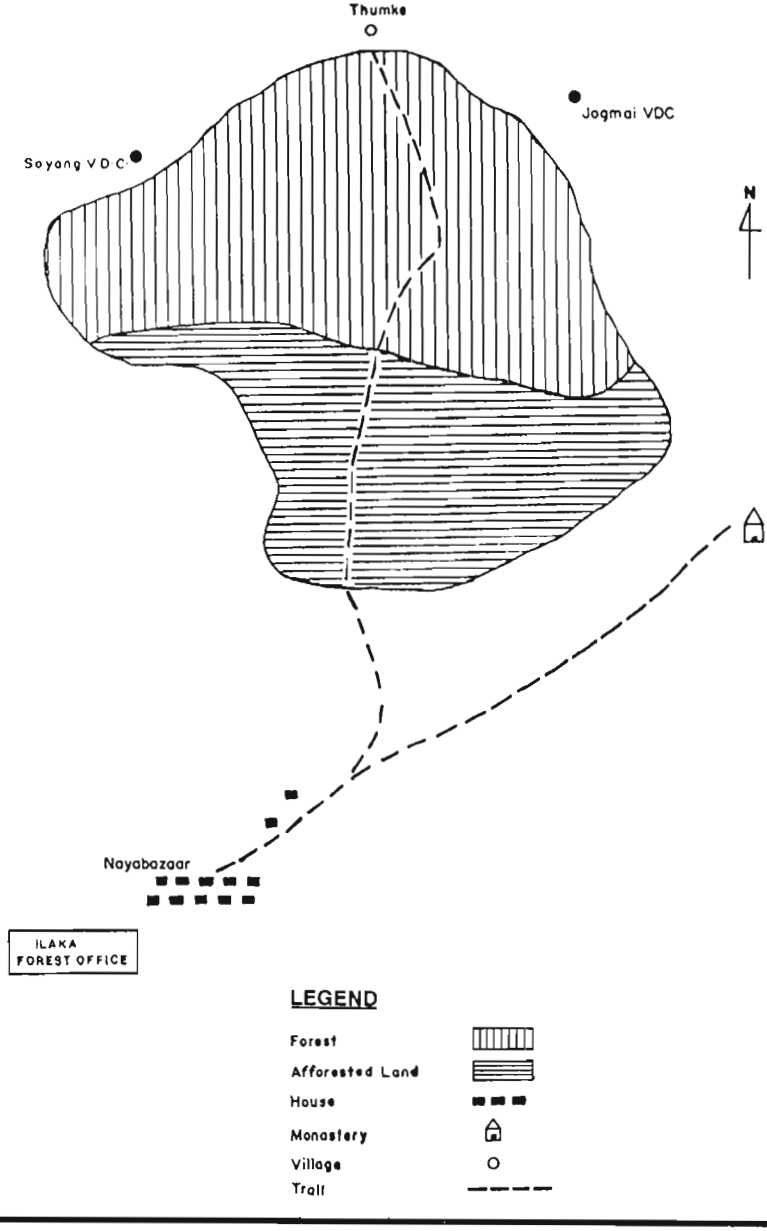
Total Number of Community Forest User Groups in Ilam District by Forest Area, Number of Users, and Date of Handing Over (September 1993)

Name of CF User Group	Name of VDC	Forest Area (in ha)	Date of Handing Over to User Groups	Number of Users (Households)
1. Kundule Sepani	Barbote	20.0	1991	150
2. Gholetar	"	7.7	1992	na
3. Dhamane	"	150.0	1993	84
4. Jarbute Bhalu Pani	Maipokhari	150.0	1992	101
5. Bhedichok	"	150.0	1986	86
6. Kharkhare	Nayabazaar	300.0	1992	105
7. Kharkhare Puwajung	Ilam Municipality	40.0	1992	143
8. Rajduwali	"	25.0	1993	97
9. Maghe	Maimajhuwa	67.0	1992	42
10. Todke	"	na	1992	72
11. Chipchipe	Jogmai	640.0	1992	99
12. Santi *Danda*	Santi *Danda*	79.5	1992	43
13. Bhluktery	Sulubung	35.0	" 1992	55
14. Dipkamal	Sri Antu	na	1992	120
15. Thumke	Gorkhe	300.0	1992	120
16. Pyange	Pyang	na	na	na
17. Namsaling	Namsaling	3.0	na	na
18. Jumuna	Jamuna	20.0	na	na
19. Pawan	Jitpur	15.0	na	na
20. Alubari	Maipokhari	200.0	na	na

na = Not available. From Pyang CF onwards, the CFs are recognised but have not been handed over.

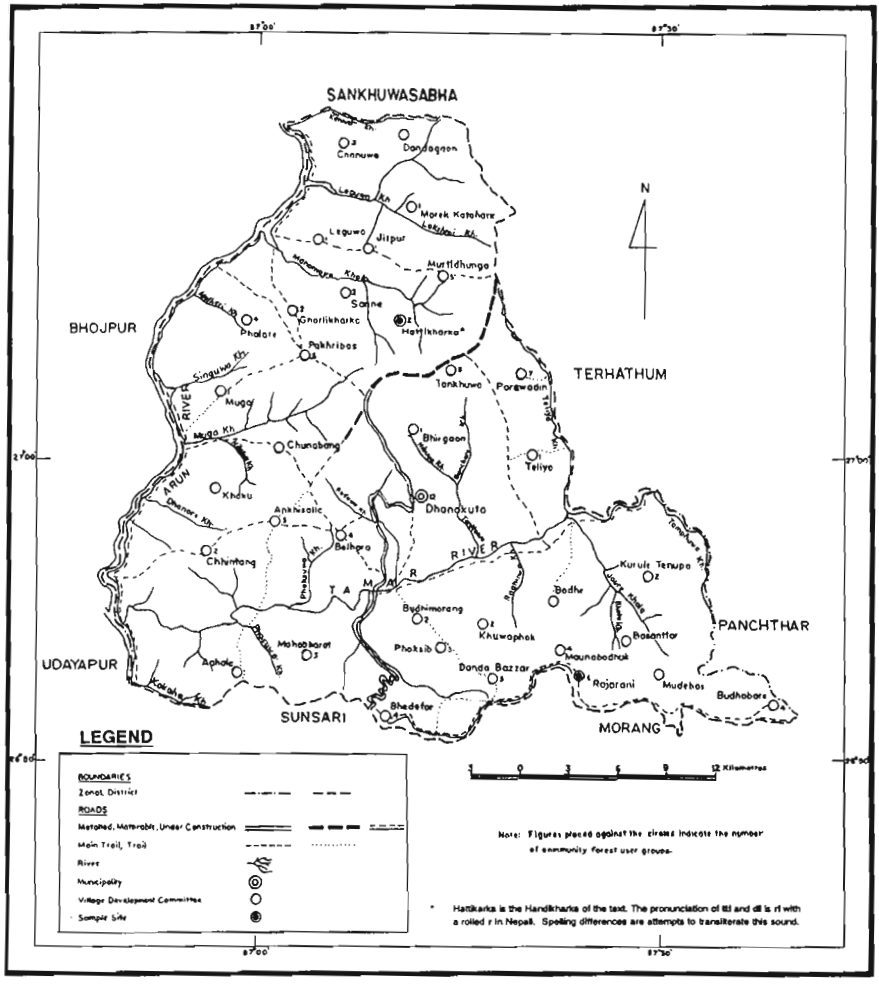
Map 10

KHARKHARE COMMUNITY FOREST OF NAYABAZAAR IN ILAM DISTRICT, 1993

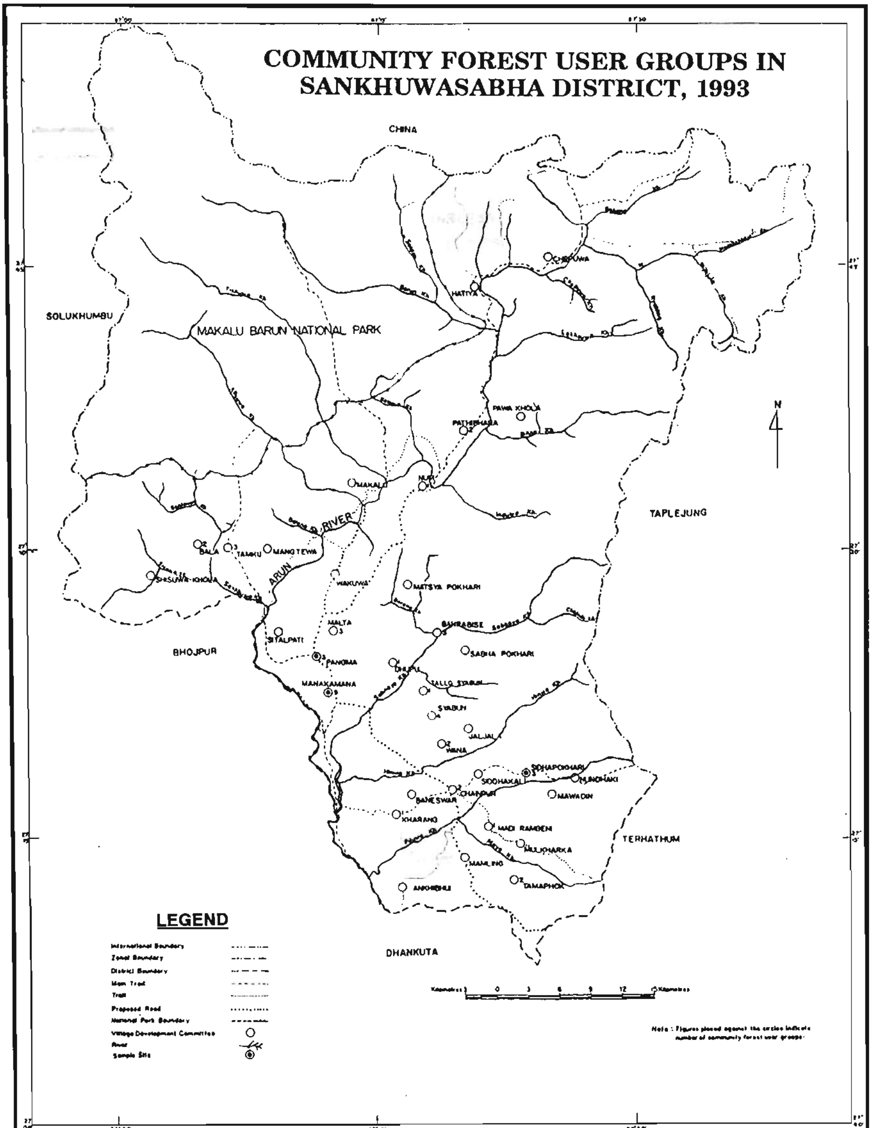


Map 1

COMMUNITY FOREST USER GROUPS IN DHANKUTA DISTRICT, 1993

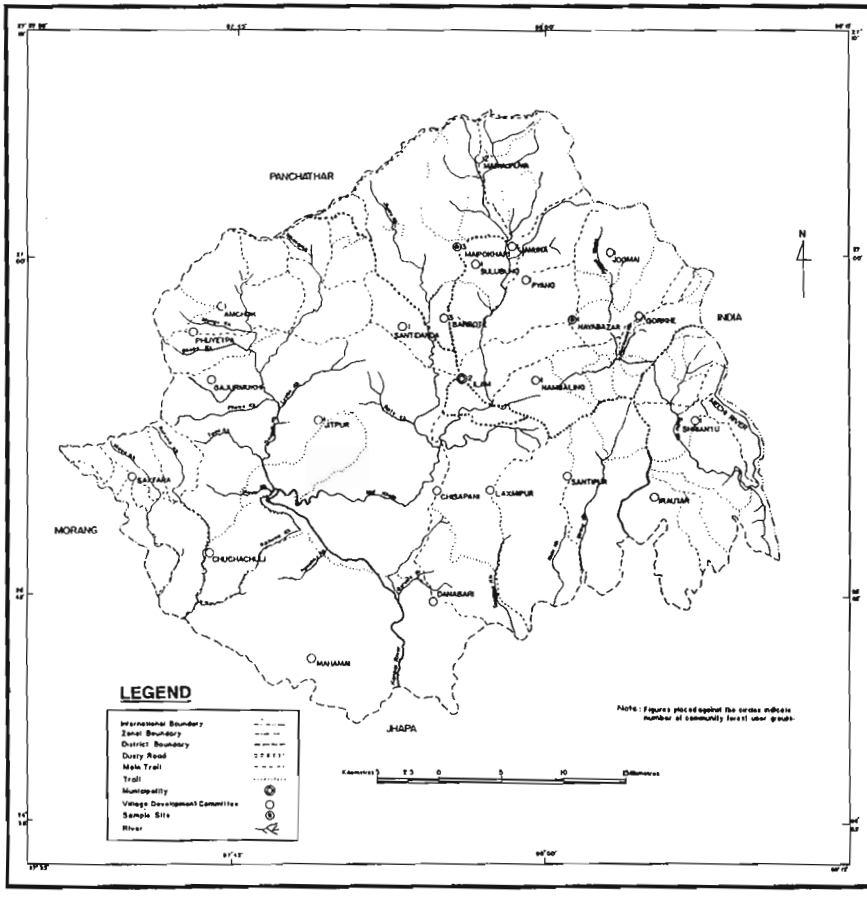


Map 2


COMMUNITY FOREST USER GROUPS IN SANKHUWASABHA DISTRICT, 1993
CHINA
SOLUKHUMBU
MAKALU BARUN NATIONAL PARK
TAPLEJUNG
BHOJPUR
TERHATHUM
DHANKUTA
ARUN
RIVER
HATIYA
CHEPUWA
PAWA KHOLA
PATHIBHARA
MAKALU
NUM
BALA
TAMKU
MANGTEWA
MATSYA POKHARI
WAKUWA
MALTA
SITALPATI
PANGMA
MANAKAMANA
BAHRABISE
SABHA POKHARI
SYABUN
JALJALA
WANA
SIDHAPOKHARI
SIDDHAKALI
CHAINPUR
BANESWAR
MAWADIN
KHARANG
MADI RAMBEN
MULKHARKA
MAMLING
TAMAPHOK
ANKHIBHUI
N
LEGEND

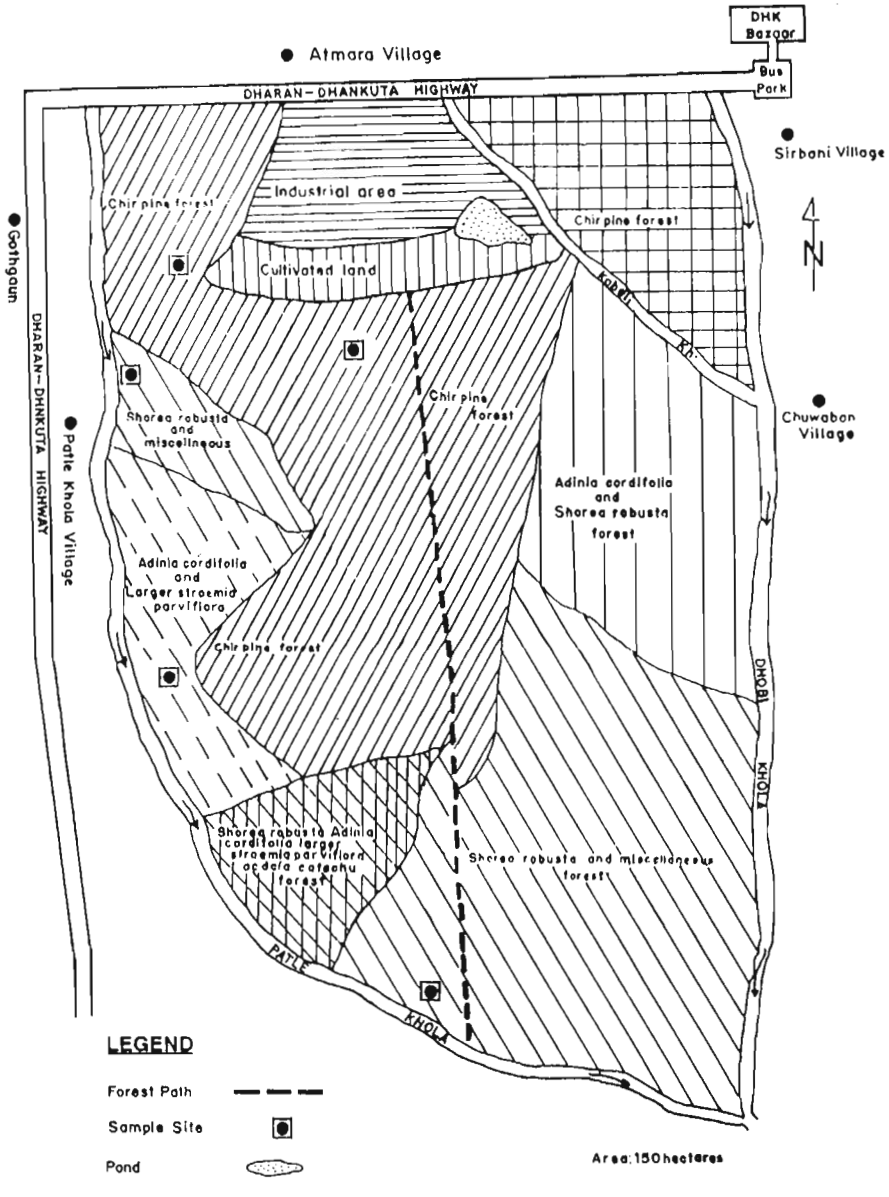
Map 3

COMMUNITY FOREST USER GROUPS IN ILAM DISTRICT, 1993

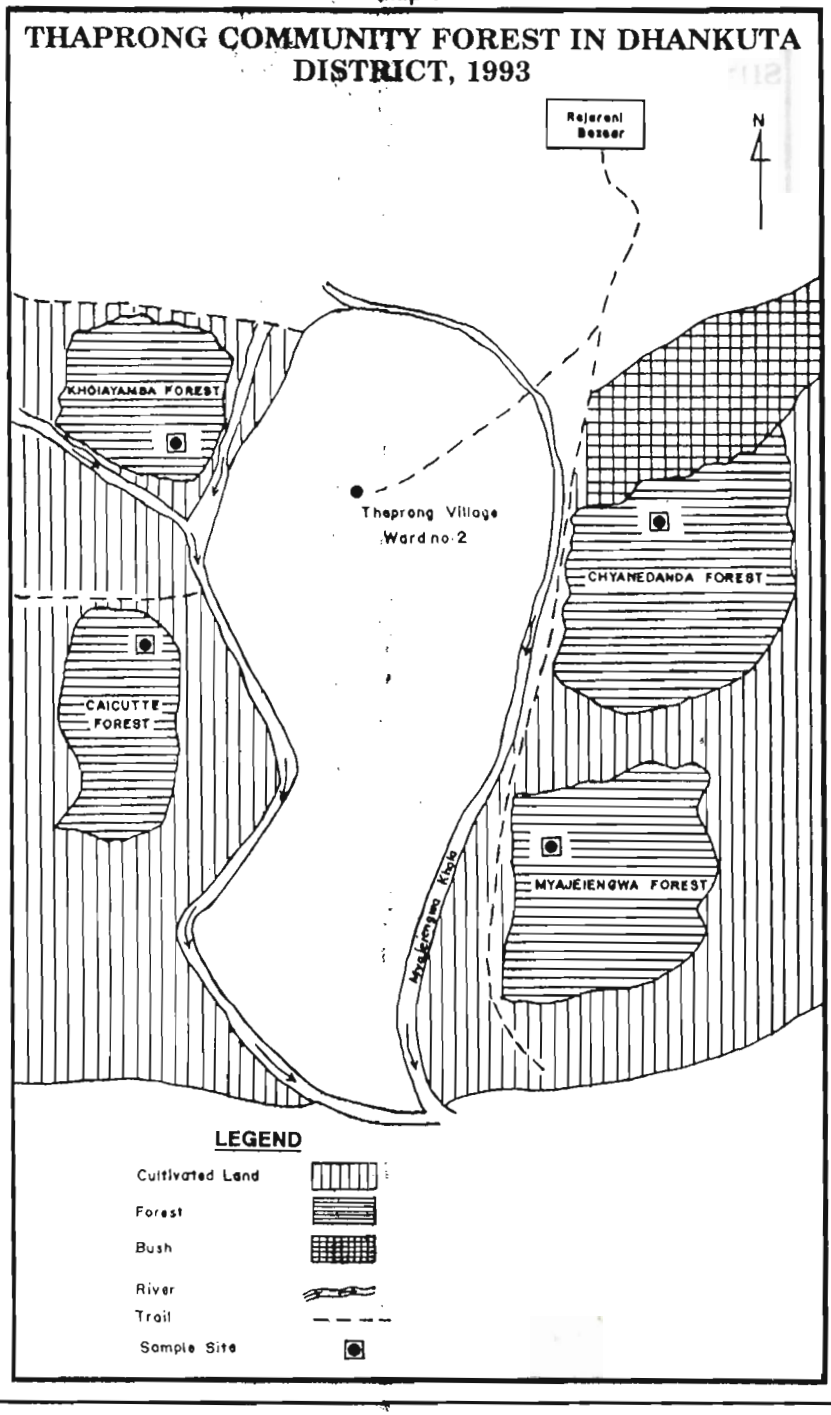


Map 4

HANDIKHARKA COMMUNITY FOREST IN DHANKUTA, 1993

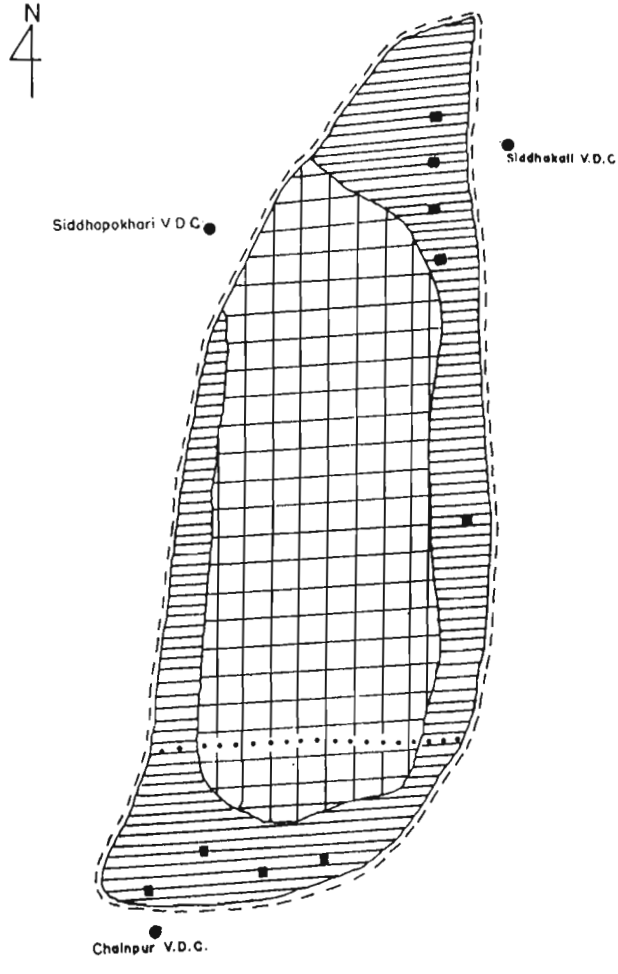


Map 5


THAPRONG COMMUNITY FOREST IN DHANKUTA DISTRICT, 1993
Rajarani Bazaar
N
KHOIAYAMBA FOREST
Theprong Village
Ward no. 2
CHYANEDANDA FOREST
CAICUTTE FOREST
MYAJEIENGWA FOREST
Myajeingwa Khola
LEGEND
Cultivated Land
Forest
Bush
River
Trail
Sample Site

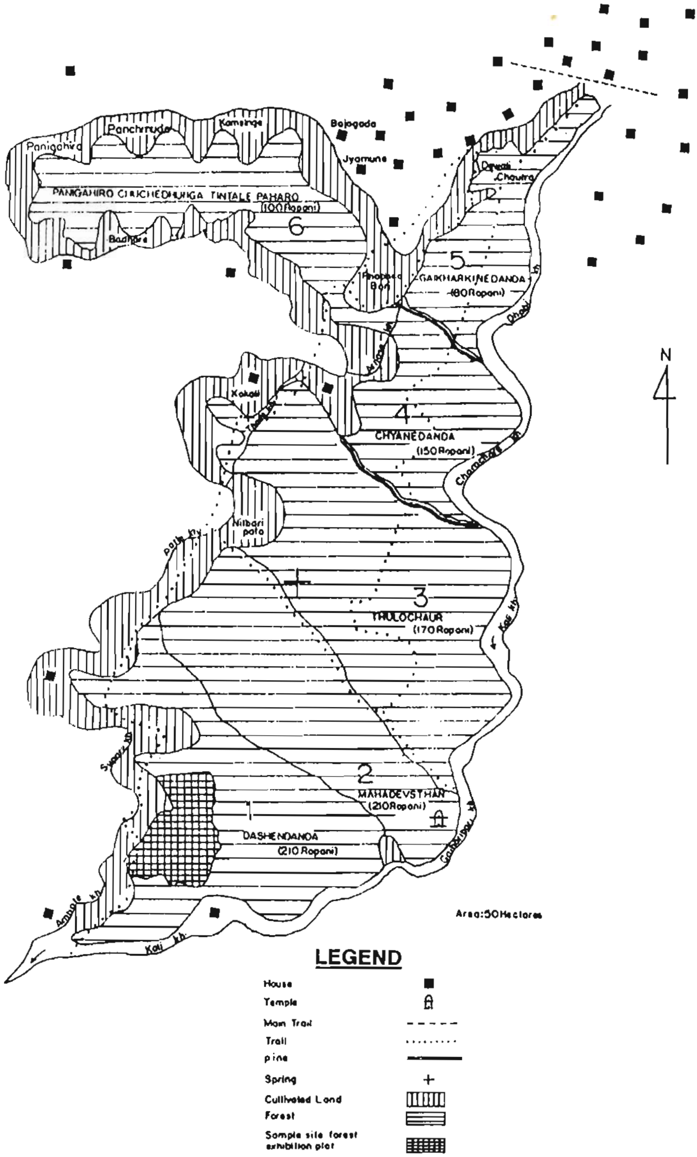
Map 6

SUKRABARE COMMUNITY FOREST OF SIDDHAPOKHARI IN SANKHUWASABHA, 1993



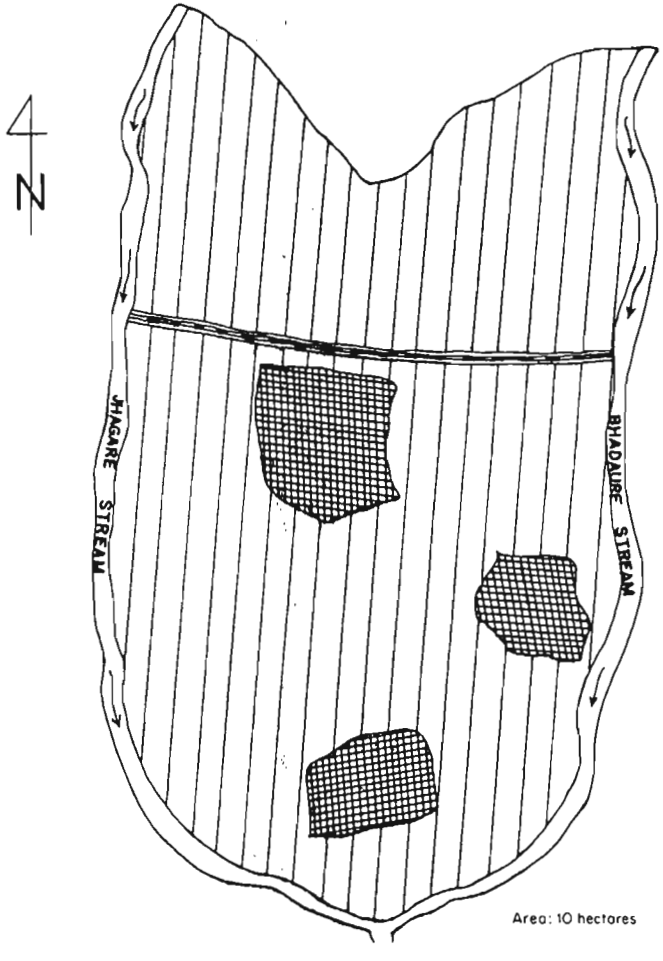
Map 7

CHYANE DASHE COMMUNITY FOREST OF PANGMA IN SANKHUWASABHA, 1993



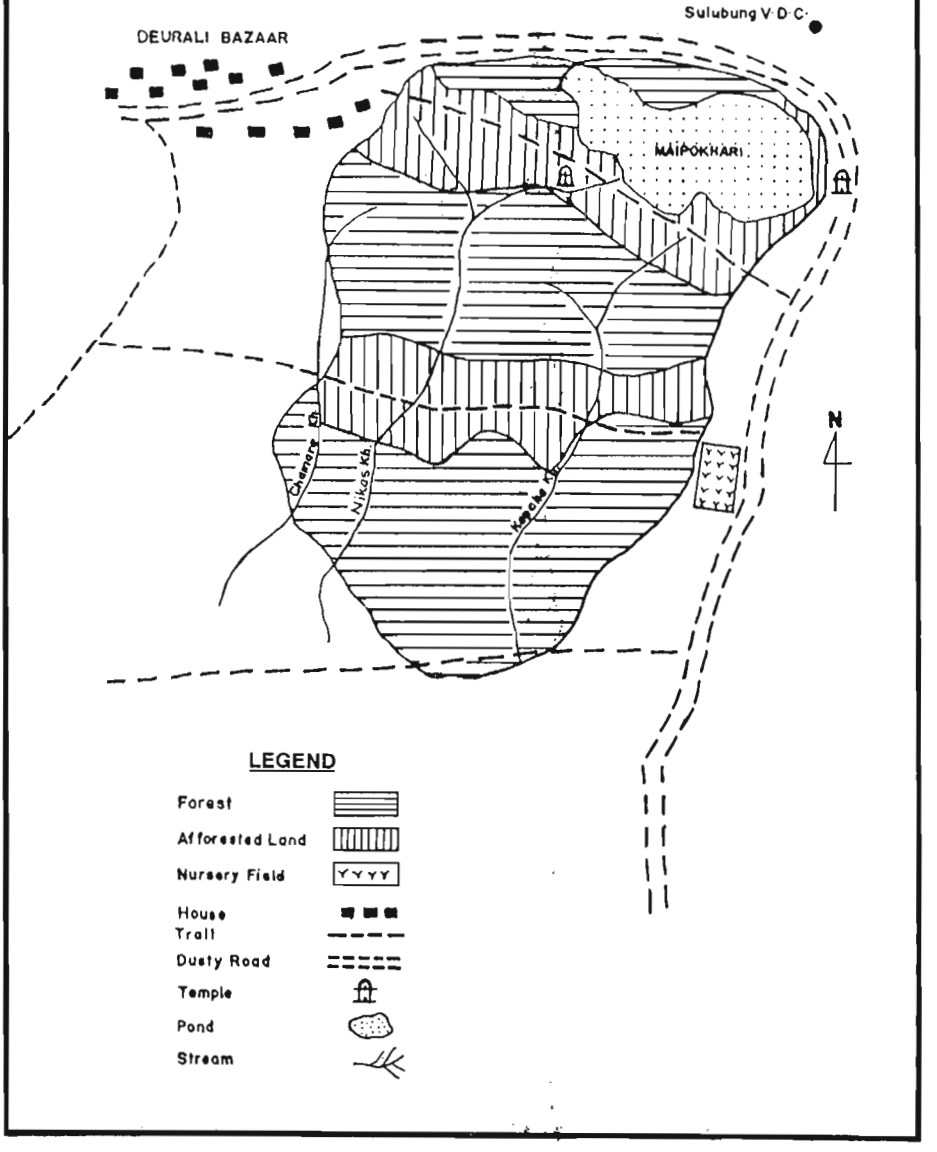
Map 8

THULO PAKHA DHUSUNE COMMUNITY FOREST OF SANKHUWASABHA DISTRICT, 1993



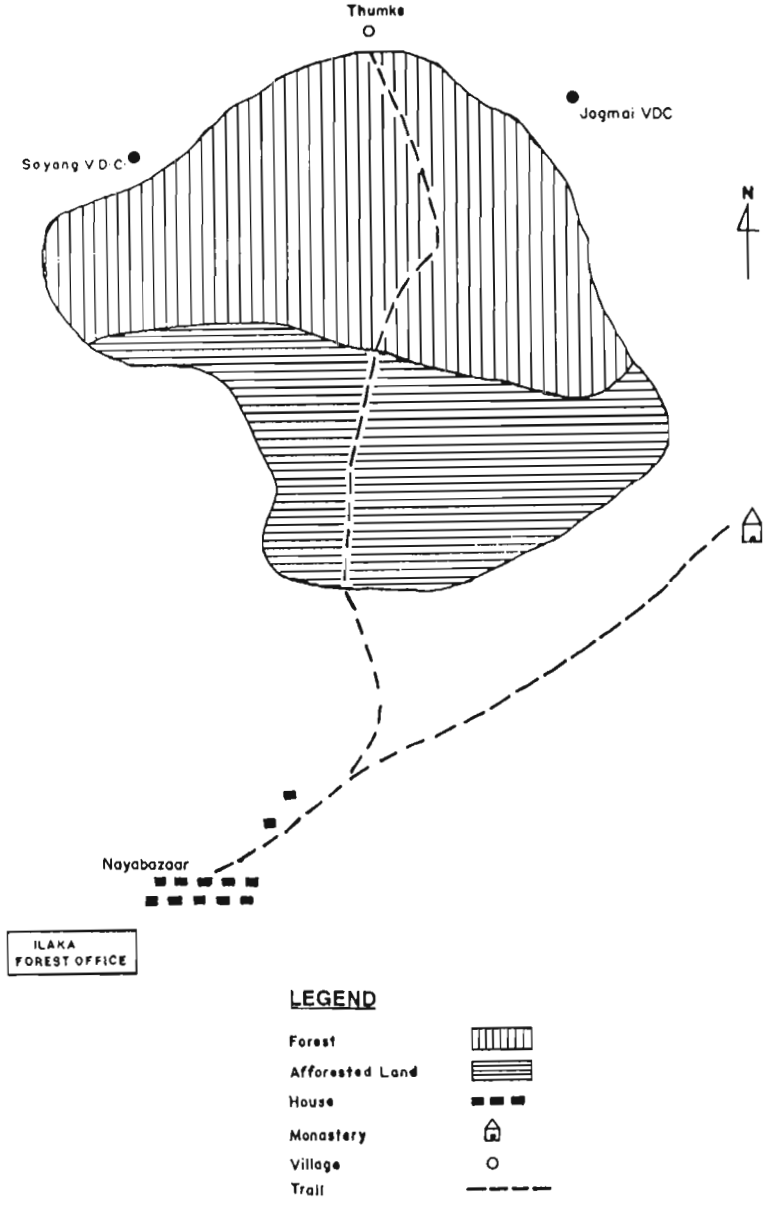
Map 9

BHEDICHOK COMMUNITY FOREST OF MAIPOKHARI IN ILAM DISTRICT, 1993



Map 10

KHARKHARE COMMUNITY FOREST OF NAYABAZAAR IN ILAM DISTRICT, 1993



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