

## Chapter 3

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

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### 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.

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**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	Sankhuwasabha	EDR
Cultivated Land	44754 (26.0)	33105 (36.8)	32136 (9.3)	838421 (29.4)
Non-cultivated Inclusions	22803 (13.3)	13711 (15.2)	17662 (5.0)	236711 (8.3)
Grassland	3398 (2.0)	4067 (4.5)	39256 (11.4)	178080 (6.2)
Forest Land	80676 (47.0)	30638 (34.0)	126541 (36.6)	948825 (33.3)
Shrubland	05242 (8.9)	5745 (6.4)	54039 (15.6)	91941 (6.70)
Other Lands	4852 (2.0)	2754 (3.1)	76425 (22.1)	460148 (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).

## A Review of Forest User Groups: Case Studies from Eastern Nepal

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	Maturity Class	Area	Forest Cover	Area	Maturity 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		Sankhuwasabha	
	Population	%	Population	%	Population	%
<b>Total Population</b>	229,214		146,386		141,903	
<b>1. High Caste Hindu Group (only two dominant groups)</b>						
<i>Brahmin</i>	36,599	16.0	10,511	7.2	10,977	7.7
<i>Chhetri</i>	30,565	13.3	29,511	20.2	27,895	9.7
<b>Total</b>	67,164	29.3	40,062	37.4	38,872	37.4
<b>2. Ethnic/tribal group (three dominant groups)</b>						
<i>Rai</i>	56,326	24.6	34,366	23.5	33,600	23.7
<i>Limbu</i>	30,962	13.5	21,026	14.3	-	-
<i>Tamang</i>	15,615	6.8	-	-	11,791	8.3
<i>Magar</i>	-	-	14,032	9.6	-	-
<i>Gurung</i>	-	-	-	-	8,831	6.2
<b>Total</b>	102,903	44.9	69,424	47.4	54,222	38.2
<b>3. Untouchable (all)</b>						
<i>Kami</i>	7,521	3.3	5,025	3.4	6,071	4.3
<i>Sarki</i>	925	0.4	1,918	1.3	1,202	0.8
<i>Damai</i>	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)	<i>Rai</i> 33,876 (16.5)	<i>Limbu</i> 25,930 (11.3)	229,214
Dhankuta	Nepali 70,076 (47.9)	<i>Rai</i> 27,793 (19.0)	<i>Limbu</i> 18,969 (13.0)	146,386
Sankhuwasabha	Nepali 77,701 (54.8)	<i>Rai</i> 24,926 (17.6)	<i>Sherpa</i> 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*<sup>1</sup> 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

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<sup>1</sup> *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 Handikharka 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

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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.

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### 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
<i>Athpahariya Rai</i>	62	27.7
<i>Other Rai Groups</i>	47	21.0
<i>Brahmin</i>	37	16.5
<i>Newar</i>	34	15.2
<i>Bhujel</i>	12	5.3
<i>Chhetri</i>	11	4.9
<i>Magar</i>	9	4.0
<i>Limbu</i>	3	1.3
<i>Tamang</i>	2	1.0
<i>Gurung</i>	1	0.9
<i>Kami</i>	2	1.0
<i>Sarki</i>	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
Agriculture	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*<sup>2</sup> and *bari*<sup>3</sup>, 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.

<sup>2</sup> *khet* = irrigated rice land

<sup>3</sup> *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 emancipation 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 Household	Male	%	Female	%	Total	%	Average F Size
<i>Athpahariya Rai</i>	31	91	22.30	72	20.05	163	21.26	5.2
<i>Other Rai</i>	30	83	20.34	77	21.45	160	20.87	5.3
<i>Brahmin</i>	31	78	19.12	81	22.57	159	20.73	5.1
<i>Newar</i>	14	38	9.31	37	10.31	75	9.78	5.3
<i>Chhetri</i>	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
<i>Magar</i>	6	21	5.15	12	3.34	33	4.30	5.5
<i>Limbu</i>	3	8	1.96	5	1.39	13	1.69	4.3
<i>Tamang</i>	2	6	1.47	4	1.11	10	1.30	5.0
<i>Gurung</i>	1	3	0.73	3	0.83	6	0.78	6.0
<i>Kami</i>	3	6	1.47	6	1.67	12	1.57	4.0
<i>Sarki</i>	4	10	2.45	10	2.78	20	2.61	5.0
Total	144	408 (53.2%)	100.0	359	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)**

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

Source: Survey

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

Landholding Size ( <i>ropani</i> )	Type of Land			
	<i>Bari</i>	Per cent	<i>Khet</i>	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
<i>Athpahariya Rai</i>	31	56	35	125	6	44	8.58
<i>Other Rai</i>	30	10	8	36	-	17	2.29
<i>Brahmin</i>	31	85	37	73	22	-	7.00
<i>Newar</i>	14	19	24	35	2	-	5.71
<i>Chhetri</i>	10	8	8	19	9	2	4.60
<i>Bhujel</i>	9	23	15	22	5	5	7.70
<i>Magar</i>	6	7	9	20	1	7	7.33
<i>Limbu</i>	3	2	5	8	-	5	6.66
<i>Sarki</i>	4	5	3	3	-	2	3.25
<i>Kami</i>	3	3	-	2	1	3	3.00
<i>Tamang</i>	2	4	2	26	-	2	17.00
<i>Gurung</i>	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

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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
<b>Total</b>	<b>31</b>	<b>100.00</b>

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
<b>Male</b>	86	50.89	
Female	83	49.11	
<b>Total</b>	<b>169</b>	<b>100.00</b>	<b>5.43</b>

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 respondents 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

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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**

Size of Land	Number of Respondents			
	<i>Bari</i>	<i>Khet</i>	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.

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*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. Surprisingly, although this is a *Limbuwan* area, there were no *Limbu* members in these FUGs.

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

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

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 <i>Danda</i>		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.

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**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	(24.5)
50-59	4	(14.8)	9	(19.1)	9	(17.0)
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	(100.0)

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.

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

<i>Khet</i> Landholding ( <i>ropani</i> )	Thulopakha		Chyane <i>Danda</i>		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)
<b>Total</b>	<b>27</b>	<b>(99.9)</b>	<b>49</b>	<b>(100.0)</b>	<b>53</b>	<b>(100.0)</b>

Source: Survey

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

<i>Bari</i> Landholding ( <i>ropani</i> )	Number of Households by FUG					
	Thulopakha		Chyane <i>Danda</i>		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)
<b>Total</b>	<b>27</b>	<b>(100.0)</b>	<b>49</b>	<b>(99.9)</b>	<b>53</b>	<b>(100.0)</b>

Source: Survey

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

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

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 Households	Number of Livestock	Number of Households	
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**

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

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**

Age Group	Bhedichok			Kharkhare (Nayabazaar)		
	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
<b>Total</b>	<b>82</b>	<b>4</b>	<b>86</b>	<b>63</b>	<b>1</b>	<b>64</b>
<b>% of the Total</b>	<b>95.3</b>	<b>4.7</b>	<b>100.0</b>	<b>98.4</b>	<b>1.6</b>	<b>100.0</b>

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
<b>Total</b>	<b>82</b>	<b>4</b>	<b>86</b>	<b>100.0</b>	<b>63</b>	<b>1</b>	<b>64</b>	<b>100.0</b>

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<sup>1</sup>, 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.

<sup>1</sup> 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 <i>ropani</i> )		Kharkhare Area (in <i>ropani</i> )	
<i>Khet</i>	35	(1.1)	70	(2.3)
<i>Bari</i>	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**

Land Size (in <i>ropani</i> )	Kharkhare		Bhedichok	
	<i>Khet</i>	<i>Bari</i>	<i>Khet</i>	<i>Bari</i>
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 cumini*), *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*), *kholve* (*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.