

**THE FLOW AND DISTRIBUTION OF COMMUNITY  
FORESTRY BENEFITS: A CASE STUDY FROM  
PYUTHAN DISTRICT, NEPAL**

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## ABBREVIATIONS AND ACRONYMS

ANOVA	Analysis of Variance
CBS	Central Bureau of Statistics
CF	Community Forest/ Forestry
CFUG	Community Forest Users' Group
CPR	Common Property Resources
CPRM	Common Property Resource Management
DAG	Disadvantaged Group
DANIDA	Danish Assistance for International Development
DFID	Department for International Development
DFO	District Forest Office/ Officer
DoF	Department of Forest
EFEA	Environment and Forestry Enterprise Activity
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus Group Discussion
FOP	Forest Operational Plan
FRD	Forest Research Division /Department
hh	Household
HMGN	His Majesty's Government of Nepal
ICRAF	International Centre for Research in Agroforestry
IFMS	Indigenous Forest Management System
LRMP	Land Resources Mapping Project
masl	meters above sea level
MPFS	Master Plan for the Forestry Sector
NDAG	Non-disadvantaged Group
NF	National Forest
NGO	Non-governmental Organization
NRs	Nepali Rupees
PAR	Participatory Action Research
PF	Private Forest

PRA	Participatory Rural Appraisal
RIRDP	Rapti Integrated Rural Development Project
RRA	Rapid Rural Appraisal
SIDA	Swedish International Development Agency
SPSS	Statistical Program for Social Sciences
TU	Tribhuvan University
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Program
USAID	United States Agency for International Development
VDC	Village Development Committee
WCARRD	World Conference on Agrarian Reform and Rural Development
WDO	Women Development Office

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## ABSTRACT

The study was conducted to evaluate the distribution of benefits from Community Forestry (CF) to three economic and two social strata of four community forest user groups in Pyuthan District, Nepal. The benefits of CF were compared in terms of forests products' availability, income and employment generation, and contribution to farming system among the socio-economic strata of the population. The study compares users' perceptions of availability and reported consumption of forest products now and before CF. The participation and perception of users in decision-making and benefit-sharing system has been assessed in respect to economic and social status of the respondents.

Economic stratification of user households into poor, medium and rich was based upon participatory wealth ranking. Social stratification was based on castes; the lower or untouchable castes (so-called) were categorized as a disadvantaged group (DAG) and others as a non-disadvantaged group (NDAG). Both formal and informal research methods (face-to-face questionnaire survey, focus group discussions, observation and committee meetings supported by PRA tools like mapping, ranking and discussions) were applied for information collection. Both perceptions of the majority of the respondents and the data reported by the informants showed the greater scarcity of forest products after CF. Greater scarcity was observed for poor and DAG respondents than for richer and NDAG respondents. Following the scarcity of forest products, the poor and DAG lost more livestock and nutrients to their farmlands. The income and employment opportunities were found very low in comparison to the costs for forest management, forest products, and the opportunity costs of participating in meetings and assemblies.

The research concluded that the present practice of CF in the research area is less favorable to poor and DAG than wealthier and NDAG households. In spite of aims to provide forest products in a sustainable and equitable basis, poor and DAG households lost more from the switch to CF. Thus, the present practice of CF is widening the gap between poor and wealthier and DAG and NDAG households, rather than contributing to poverty alleviation as intended by policy.

Key words: community forestry, equity, Nepal, poor, disadvantaged group, common property resources.

## I. INTRODUCTION

### 1.1 Introduction

This chapter presents a general overview of the research. The Chapter is divided into six sections. The second section deals with research background, the third with problem statements. The fourth section introduces who are disadvantaged groups in this research. The fifth section presents the aim and objectives of the research. The sixth section presents the research hypotheses and the seventh deals with structure of the thesis.

### 1.2 Research background

Community forestry or related approaches towards the devolution of forest management authority is a common trend sweeping through many parts of the world in the last three decades. The recognition of multiple benefits of forest products, greater dependency of local people upon these resources and the experiences of government-controlled forest management systems informed governments and donor agencies that forests could not be properly managed without active support from local people (Gilmour and Fisher, 1998). During its evolution and development, CF has been shifted from a government-sponsored program to institutionalized local control and management of the resources, from outsider-driven to community-initiated approaches, from poor to rich resources and from a third world issue to a global challenge (Veer et al., 1998). Diversified tools and approaches are being used in a variety of settings to support local people in managing and utilizing local forest resources.

The need for people's participation in forest management was recognized in Nepal in the 1970s, although forests in the hills were protected and managed by local communities for a long time (Bonita and Kanel, 1987; Gilmour and Fisher, 1991). MPFS Nepal 1988 declared the CF program to be one of the major forestry components and decided to hand-over all accessible hill forests to the CFUGs for their protection, management and

utilization (HMGN, 1988). According to the new policy, CFUGs are defined as a "specified group of people who share mutually recognized claims to specified use-rights" (Gilmour and Fisher, 1991:70). The CF program thus became one of the major forestry components aiming at managing rural forests for equitable sharing of benefits among stakeholders and sustainable management of forest resources. The equity issues are very important in any development process including community forestry for the multi-ethnic society of Nepal (Kanel, 1993).

### **1.3 The problem statement**

The poor and marginalized (disadvantaged) people in rural areas are more dependent on public or community forests for their basic forest products than wealthier people of the same area (Hobley, 1987; Jodha, 1995; Maharjan, 1998; Sarin, 1998). Many poor people depended on forest resources for their livelihood like fuelwood sellers, charcoal makers and sellers of medicinal plants (Bhatia, 1999). Thus, the inclusion of their voices in decision-making process of CF is very essential to maximize the CF benefits to them.

Nepali society from a historical perspective is developed from feudal, bureaucratic and caste and gender-biased interests, all of which resisted broad-based development of the country (UNDP, 1998). The equity in decision-making and benefit-sharing processes is related to internal power-sharing mechanisms within socially and economically heterogeneous feudal communities (Gronow, 1995).

The participation of poor and DAG in CF is very low and the local elites (high social status, wealthier and educated) are influential in local decision-making processes of CFUGs (Gilmour and Fisher, 1991; Hood et al., 1998; Laughed et al., 1994; Mehta and Kellert, 1998). As a result, an unequal distribution of CF benefits in favor of local elites is common in many CFUGs (Maharjan, 1998; Pokharel et al., 1999). Recent studies revealed that the poor segment of the community are getting less benefit from CF than the wealthier households of CFUGs (Maharjan, 1998; Richards et al., 1999). By contrast, Sharma (1999a) found that poor households are getting more income than that

of rich households. In this context, it is very relevant to evaluate how CF benefits are distributed to different socio-economic strata of the population and how far poor and disadvantaged segments of the population are receiving benefit from this program.

Poverty alleviation is the basic premise of the country's development plans (HMGN, 1997) and the future vision of CF program has been stated as poverty alleviation (HMGN, 1999). However, the contribution of CF to poverty alleviation has not been examined well. Thus, this study also seeks to evaluate how much the CF program is contributing to poverty alleviation in the study area.

#### **1.4 The disadvantaged group**

The term DAG has been defined in different ways by different authors according to their study contexts. Disadvantageous-ness is relative and compares among people or communities by e.g., caste, ethnicity, race, gender, class, religion and origin. Preferential policies have been developed in many countries to support DAG. Wilson (1987) explained racism and economic factors responsible to make poor urban Blacks truly disadvantaged among others in the United States. Indians and Chinese are the ethnic minorities recognized as disadvantaged groups in Malaysia from the time of independence (Jenkins, 1998). In India, disadvantaged groups are based on social, political and economic criteria, including scheduled (untouchable) castes, scheduled tribes and other backward classes (Galanter, 1992). Similarly, in Northern Ireland Catholics are recognized as historically disadvantaged in employment opportunities (Jenkins, 1998).

Constitutionally, there is no discrimination among citizens on grounds of religion, race, sex, caste, tribe, or ideological conviction in Nepal (HMGN, 1990). But in practice exclusion is a highly prominent feature of culture in relation to women, the "low caste", ethnic groups and the poor, and such groups face severe barriers against the use and enhancement of capabilities (UNDP, 1998). The extent of caste and ethnicity-based exclusion is very deep in the control and management of forest resources by user groups (UNDP, 1998).



For this research, DAG includes "*socially disadvantaged and minority communities*" (Chhetri et al., 1998). More specifically, DAG has been defined as "*those groups of people who are identified to be historically socially and economically discriminated against and/or who have been denied opportunities and access to resources thereby leading them to further poverty and exploitation*" (CARE Nepal, 1996:1). According to this criterion, DAG for the mid-hill region of Nepal includes ethnic groups like *Kami, Damai, Sunar, Thami, Sarki, Gaine, and Badies*. All these castes are recognized as low castes or untouchable castes by tradition. The untouchable castes constitute about 15% of the total population of Nepal (CARE Nepal, 1996).

### **1.5 Study aims and objectives**

The aim of this study is to evaluate the flow and distribution of CF benefits to different economic and social strata of people in the study area. More specifically:

1. To evaluate CF benefits in terms of perceived forest product availability, income and employment generation, and contribution to farming system, and to compare the situation among the economic and social strata of the people in the study area.
2. To evaluate the participation and perception of users group members of CFUG in decision-making and benefit-sharing systems and to compare participation among different economic and social strata of the population in the study area.

### **1.6 The hypotheses**

1. Poor and DAG have greater scarcity of forest products after handing-over the CF than before, and than that of rich and non-DAG of the same CFUG.
2. Poor and DAG have less opportunity for animal husbandry, due to reduced availability of grazing land and fodder in the forest than before CF and than that of rich and non-DAG of the same CFUG.

3. The availability of leaf litter for bedding material and ultimately for compost has no significant impact upon the farming system of poor and DAG people.
4. The income from employment in CF is negligible for poor and DAG when compared with their time investment in forest management, costs of forest products and forest management.
5. Local elites are capturing the decision-making and benefit-sharing systems of most of the CFs.

### **1.7 Thesis structure**

This thesis is divided into seven chapters. Chapter two describes the review of research-related literature. Starting from the concept and philosophy of CF, literature related to the emergence, practice and status of CF in Nepal are reviewed. Chapter three presents a general background of the study area including the background of the country, concerned District and CFUGs. In Chapter four, the methodology of data collection and analysis is given.

Chapter five presents the results. Results are presented in different sections each describing the findings on forest products availability, contribution of CF in farming, CF and livelihood, participation of users and benefit-sharing system of CF. Chapter six discusses the results. Chapter seven presents the conclusions and recommendations arising from implications of the research.

## II. LITERATURE REVIEW

### 2.1 Introduction

This chapter presents an overview of CF-related literature including the broad concept and philosophy of CF, evolution of CF in the global and Nepali contexts and the application of CF in Nepal. The literature related to the socio-economic aspects of CF in terms of access and control of community resources by different economic and social strata of the population is reviewed.

### 2.2 Concept and philosophy of community forestry

CF or related approaches of community involvement in forest management are widely accepted. However, the management goals, policies and implementation approaches are different in many countries based upon their particular contexts. CF was first defined by FAO (1978) as:

*" Any situation which intimately involves local people in a forestry activity"*. The original concept of CF was based upon three main elements. These were fulfillment of the basic needs of fuelwood, fodder, and timber at the rural household and community level, supplying food and the environmental stability for cropland, and the generation of income and employment in rural communities (FAO, 1978:1).

Gilmour and Fisher (1991) defined CF as *"...the control and management of forest resources by the rural people who use them for domestic purposes as an integral part of their farming system"*. In addition to the former definition of FAO, this definition emphasized local control over resources.

Hirsch (1998:10) defined some core principles of CF as:

- a) CF is about using or managing natural or plantation forests at the local level in a way that is compatible with local objectives and values.
- b) CF involves a degree of decision-making separate from state forestry agency control.

- c) CF is an attempt to match simultaneously environmental, economic, and social objectives related to the forest resource.
- d) CF involves users who live in the same area.
- e) CF is primarily carried out by peasant farmers or smallholders.

Some terms in use in the field of participatory forestry like CF, joint forest management, collaborative forest management, participatory forest management, and social forestry are creating terminological confusion (Gilmour and Fisher, 1998). The terms "Community Forestry" and "Social Forestry" are sometimes used differently, because *"social forestry often refers to a form of industrial forestry modified to allow benefits to be distributed locally, while community forestry ... is, or should be, locally controlled"* (Gilmour and Fisher, 1991:8). However, the term originally used in practice was "social forestry" (Gilmour and Fisher, 1998).

According to Hobley (1987), CF management should include both participation and control of management by local people. As Hobley (1987:2-3) stated: *"...management of forest resources does not just refer to the narrow understanding attributed, by foresters, to the word management, that of utilization, harvesting but goes beyond this to include the full participation and control by local people over all aspects of the establishment, sustenance, access to and distribution of the forest resource. The key concepts are power, authority, control and responsibility. Transfer of power and authority from those who have traditionally held it, to groups who previously had no access to power"*.

Diverse approaches are applied in different countries for the involvement of local people in forest management (Poffenberger, 1996). For example, India is practicing co-management of degraded forests with a partnership between local communities and the Forest Department. Many African countries are involving local people in park management and bio-diversity conservation and countries like Canada, Panama, and the Philippines are developing policies and approaches to manage forest resources through an agreement with indigenous people.

### 2.3 Community forestry as common property resources

Jodha (1995:2) defined CPRs as "*those resources in which a group of people have co-equal use rights, specifically rights that exclude the use of those resources by other people*". Thus, property rights over the resources are the prerequisite for CPRs (Cox, 1989, Jodha, 1995). Except for possession entitlements, the common property regimes also include use rights, exchange rights distribution entitlements, a management subsystem, and authority instruments as means of management (Bromley and Cernea, 1989).

Common property resources may be held within communal, state, open-access and private property regimes (Berkes and Farver, 1989). However, in a practical sense, only a few resources are purely open-access, communal or state property, most are a combination of two or more regimes. Two important characteristics of CPRs are communal arrangements for the exclusion of non-owners and for allocation among co-owners. Berkes and Farver (1989) proposed three idealized types of property-rights regimes related to CPRs (Table 2-1).

**Table 2-1: Property-right regimes relevant to common property (adapted from Berkes and Farvar, 1989)**

1. Open-access	Free for all; resource-use rights are neither exclusive nor transferable; these rights are owned in common but are open-access to everyone (and property to no one).
2. State property	Ownership and management control is held by the nation, state or crown; public resources to which use-rights and access rights have not been specified.
3. Communal property	Use-rights for the resource are controlled by an identifiable group and are not privately owned or managed by governments; there exist rules concerning who may use the resource, and who is excluded from using the resource, and how the resource should be used; community-based resource management systems.

It is also common to shift CPRs from one idealized type to another. Dissolution of common property institutional arrangement result from interference of the state and from socio-economic differentiation and growing stratification processes within communities and both situations ultimately shift the common property regimes into open-access property regimes (Bromley and Cernea, 1989). The nationalization of PFs in Nepal was one of the best examples of shifting customary common property regimes to state ownership, which accelerated resource degradation in Nepal (Bromley and Cernea, 1989).

Similarly, resource users with different socio-economic status may have different interests in managing the same CPRs. Relatively poor households depend more on CPRs for their basic forest products (Jodha, 1995). So, the exclusion of their user rights increases chances of shifting CPRs into open-access resources or towards the situation described by Hardin (1968) as 'the tragedy of the commons'. Any management or technical innovation is destined to 'tragedy of the commons' if the participatory institutions are not appropriate (Picciotto, 1995). The five critical roles of common property systems are livelihood security, access equity and conflict resolution, mode of production, resource conservation, and ecological sustainability (Berkes and Fraver (1989).

The CF program of Nepal is a superior example of common property resource management (Acharya, 1999). According to the Forest Act 1993 and Forest Regulations 1995, CF is a co-management model of CPRs with a distribution of land and use-rights ownership with state and local users, respectively. Similarly, equal rights over the resources have been guaranteed to each member of the CFUG. The CFUGs are emerging as appropriate institutions for the management of CPRs.

#### **2.4 Emergence of community forestry in global context**

The concepts of "development from below" emerged in the 1960s with a new definition of development concerned with the fulfillment of basic human needs rather than material needs or financial advantage (Gilmour and Fisher, 1991). The mobilization of rural people towards fulfillment of their basic needs was further emphasized in the

World Conference on Agrarian Reform and Rural Development (WCARRD) organized by FAO in 1979 (Arnold, 1991).

During the succession of bottom-up development approaches, the pro-industrialization forest development model was challenged in the 1970s. Westoby, a former economist of FAO, became a strong advocate of a CF program in the 1970s and played a significant role against forest-based industrialization and emphasized the mobilization of resources for socio-economic development (Gilmour and Fisher, 1991).

Fossil energy prices rose rapidly in 1973 and dependency on fuelwood rapidly increased in developing countries (Arnold, 1991). The over-exploitation of fuelwood was widely cited for several consequences like deforestation and declining productivity of food-production systems. The prolonged period of drought in Sahelian countries in the early 1970s and calamitous floods of South Asian countries in 1977 highlighted the impacts of deforestation and degradation of tree cover (Arnold, 1991). In this context, Gilmour and Fisher (1991:4) concluded:

*... "the concept of CF emerged in response partly to the failure of the forest industries model to lead to socio-economic development, and partly to the increasing rate of deforestation and forest land degradation in the third world".*

The emergence of the social forestry concept was also due to the ineffectiveness or inefficiency of conventional forestry practices to conserve and properly regulate the use of forests (Wiersum, 1999).

CF was first conceptualized by a definition of FAO (1978) as discussed above. The concept was further endorsed by the 1978 Eighth World Forestry Congress in Jakarta, which was devoted to the theme " Forestry for People" (Arnold, 1991; Gilmour and Fisher, 1991). Arnold (1991) presented some key events in the emergence and development of CF from the mid-1970s to mid- and late-1980s (Table 2-2).

**Table 2-2: Emergence and development of CF (adapted from Arnold, 1991)**

<b>Year</b>	<b>Key events</b>
<b>Mid 1970s</b>	Energy crisis and Sahelian drought drew attention to the dependence of rural people on forest products.
	Drought in Africa and flooding in Asia emphasized impacts of deforestation and degradation of forested land.
	FAO and SIDA organized an expert group on forestry and local development; projects in India (Social Forestry), South Korea (Village Woodlots), Thailand (Forest Villages), and Tanzania (Village Afforestation) were initiated.
<b>Late 1970s</b>	FAO forestry for local community development program, new World Bank forest policy and ICRAF were launched.
	1978 World Forestry Congress committed to "Forests for People".
	1979 FAO World Conference on Agrarian Reform and Rural Development.
<b>Early 1980s</b>	1981 UN Conference on New and Renewable sources of energy.
	FAO fuelwood map focused attention on energy needs.
	First generation of projects focused on creating new village-level resources to meet local subsistence needs through afforestation.
<b>Mid and late 1980s</b>	Experiences from projects and research identified the importance of the economic dimension to farmer and communal decisions, and forests and trees as sources of food, income, employment and household security.
	Second generation of projects emphasized local control and management of existing forestland resources and multiple roles of trees in farming systems.
	Focus on working through local institutions.



In countries like Nepal, CF initially evolved from the government approach for the reforestation of degraded forests and gradually diverted towards strengthening local institutions to manage resources for the fulfillment of local needs (Gilmour and Fisher, 1998). On the other hand, in countries like Thailand, CF has been developed from the peoples' movement rather than a government program (Gilmour and Fisher, 1998). Where government has initiated CF, its activities are related to strengthening the organizations and human resources development of both government and community; in contrast, where CF has been developed through social movements, forest departments have opposed it.

## **2.5 Emergence of Community forestry in Nepal**

The protection and management of forests by local people in the hills region has long been established in Nepal. The practice of several formal and informal forest management systems have been widely reported. In this context, an overview of the indigenous forest management systems prior to formal CF seems appropriate.

### **2.5.1 Indigenous forest management systems**

The existence of indigenous forest management systems (IFMS) has been reported throughout the hill region of the country (Baral and Lamsal, 1991; Bartlett and Malla 1992; Budhathoki, 1987; Chhetri and Pandey, 1992; Dahal, 1994; Furer-Haimendorf, 1984; Gautam, 1991; Gautam, 1993; Gilmour, 1990; Gilmour and Fisher, 1991; Tamang, 1990; Tamrakar, 1996). Similarly literature also documents the existence of traditional ecological and conservation knowledge of people in the hills (Brower, 1990; Gurung, 1989; Thapa, 1994; Zurick, 1990).

One of the ancient IFMS is the *singa naua* system of the Sherpas of Solukhumbu district (Furer-Haimendorf, 1984). The *singa naua*, or forest guards, were the locally appointed officials responsible for the protection of the reserved forest close to the village. They were also responsible for providing permits for limited felling in the protected forests for special purposes like house construction and funeral pyres. These officials derived their mandate from the village assembly.

Gautam (1991) named as IFMS those systems practiced in the country before 1957 (before the external influence). Gautam's study, on the basis of codes of practice, revealed distinct categories of IFMS for different geographical regions of the country such as Kathmandu Valley and its surroundings, the Mahabharat, the other hills, and the Tarai. For the middle hills, the legal code of 1854 was the pioneer form of legislation, which included provisions related to forest management.

The handing-over of responsibility for forest management to the local people was also practiced during the Rana regime (over a century ago), when authority for forest management was transferred through *lalmohar*, a document to declare the authority (Adhikari, 1990). However, other studies (see Mahat et al., 1986) suggested that there was no forest legislation before the mid-Twentieth Century.

Bartlett and Malla (1992:113) described two main types of IFMS, the first "*...generated, developed and sustained entirely by internal initiative*" and the second "*...generated by internal initiative but which are developed and sustained by a co-operative arrangement between the community and the forest department*". The understanding of the two different types of management systems is necessary to formulate apposite CF policy and approaches.

A model showing the relationship between resource availability and the existence of IFMS noted that "*...the perceived shortage of forest products is the stimulus*" for the initiation of IFMS (Gilmour (1990:147). The interest of local people in indigenous forest management depends upon the scarcity of resources in the particular area; where there is more scarcity of resources there should be high interest in indigenous forest management. However, a study in CF management in Jajarkot district contradicted the premises proposed by Gilmour. The study reported that the IFMS existed in far western Jajarkot district of Nepal, where there were extensive natural forests with ample resources to meet the demand of local people (Budhathoki, 1987).

The existence of IFMS has been recognized as a potential basis for the formation and implementation of CF. According to Baral and Lamsal (1991), the identification and

recognition of IFMS not only quickens the forest handing-over process, but also strengthens local management systems. Chhetri and Pandey (1992) suggested that the existence of IFMS in any particular area is an indicator of the ability and willingness of local people for CF management. Tamrakar (1996) suggested that the enhancement of forest management in CF could be possible, if the IFMS are properly recognized.

The equity aspect of IFMS has not yet been studied in detail. However, the tendency of discrimination in favor of rich people in decision-making has been remarked. Baral and Lamsal (1991) perceived some rules in favor of rich people like a fixed monthly charge of NRs<sup>1</sup> 10 per household for the fuelwood collection in Palpa District. Rich people could send many people for fuelwood collection in comparison with poor, who can rarely send anybody because of their dependency on wage labor for their livelihood (Baral and Lamsal, 1991).

The existence of communal (managed by clan or cluster of families) IFMS was observed in western Nepal (Bhandari and Pokharel, 1996). The four communal forests were managed for their exclusive use by different casts such as *Thakuri*, *Ranabhat*, *Paudel*, and *Adhikari* since the last two generations. As a result, the minority inhabitants like low-caste people were compelled to exploit the government-managed forest far away from the village to fulfill their basic needs.

Tamang (1990) reviewed the literature on IFMS of Nepal. She perceived a lack of studies on the distribution of forest products, benefit-sharing, and organizational and technical aspects of indigenous forest management. She also noted the lack of such studies in Tarai, far-east, west, and north of the country.

### **2.5.2 Evolution of modern community forestry**

CF is not a new concept for Nepal, but is a continuation from the past where people developed very wise and sustainable working arrangements to manage their natural resources. Historically, the control of forests was under the tenure of state or feudal and communal landowners. The exploitation of resources for revenue collection was started

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<sup>1</sup> One US\$ = 73.85 Nepali Rupees, October 2000.

in the 17<sup>th</sup> Century. Before the mid-18<sup>th</sup> Century, the country was fragmented into 80 small kingdoms.

Gorkhali rulers of Nepal first initiated forest management by the late Eighteenth Century (Gilmour and Fisher, 1991). The main concern of forest management was to maximize revenue flows, and to prevent unauthorized exploitation of the resources to reserve the benefits for the state and its functionaries (Mahat et al., 1986).

Before the unification of the Nepali kingdom, people in the middle hills used forests to support subsistence rather than commercial exploitation. After the unification, the state declared its ownership over forests and part of the forests' ownership was transferred to institutions and individuals as *birta*<sup>2</sup> (Mahat et al., 1986). The state did not receive revenue from these forests. Despite the *birta* system, local people had free access to most forest areas (Arnold, 1998).

Along with the *birta* system, there were the *talukdari* and *kipat* systems in the hills. *Talukdari* was where the Talukdar as representatives of the state protected the forests by appointing *chowkidars* (watchmen). *Kipat* was where the village headman (*Jimmuwals*), recognized as tax collectors, managed the forests and local people were allowed to collect forest products. Meanwhile, the religious forests in many places, which were under the control of a particular temple or monastery, were managed as *guthi*.

The exploitation of commercially valuable forests was started after the emergence of the Rana State in 1846. British India extended a railway link to the Nepali border, which opened access to highly valuable Nepali forest resources to the Indian economy. Widespread felling of sal<sup>3</sup> forests began and the timber was given free of cost for railway sleepers as a contribution to World War I.

The DoF was established in 1942 and its first policy document was prepared in 1952/53. The document classified the forests of Nepal into three main categories, one of which

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<sup>2</sup> Appendix-1 "Glossary of Nepali terms"

was CF (Gilmour and Fisher, 1991; Poffenberger, 1996). However, the policy was never implemented.

The government of Nepal implemented the Private Forest Nationalization Act 1957 to nationalize all the forests. The objective of the nationalization was to procure back under state control one-third of the country's forests and agricultural lands held under feudal tenure (Gilmour and Fisher 1991; Mahat et al., 1986; Poffenberger, 1996; Regmi, 1978). But the forest area brought under the government ownership was neither adequately controlled nor properly demarcated due to lack of resources (HMGN, 1988; Mahat et al., 1986).

Nationalization of the forests was blamed for country-wide deforestation (Bajracharya, 1983) and breakdown of local forest management systems (Pardo, 1993). However, contrary to this opinion, Gilmour and Fisher (1991) noticed a great number of IFMS originated around the 1960s, immediately after the implementation of the Act. According to Arnold (1998), local control was continued in those forests where local leadership was strong.

The Forest Act of 1961 enacted with the political changes in 1960 made provision for private forest plots (*banbatika*) and incorporated the idea of handing-over government forestland to village *panchayats* for their use (Mahat et al., 1986). However, the policy was not implemented for a further 15 years (Poffenberger, 1996). The Forest Preservation Act was passed in 1967, and provided more powers of offences to Forest Department for enforcement of law and policy (Gilmour and Fisher, 1991; Mahat et al., 1986).

Environmental problems became more pronounced in Nepal during the 1970s and rapid deforestation in the hills was allied with soil erosion in Nepal and ruinous flooding in Bangladesh. The country lost about 570,000 hectares of forest between 1964 and 1985 (HMGN, 1988). Accelerating population growth, expanding livestock herds and cultivation on sloping land were responsible for deforestation. According to Mahat

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<sup>3</sup> The scientific name of the trees is mentioned in Appendix-2.

(1985), deforestation in Nepal is not recent, and both government land-use policy and subsistence agricultural systems are responsible for deforestation. Whatever the various interpretations of the environmental crisis, it was useful to the Nepali government to draw the attention of foreign donors to CF (Hausler, 1993).

In 1975, the Ninth Forestry Conference was organized in Kathmandu and forest officers attended the conference from all over the country. The conference concluded to form a working group for the formation of a forestry plan for Nepal (Gilmour and Fisher, 1991). The National Forestry Plan 1976 was prepared through a great effort of the working group. The Plan realized that the management of hill forests of the country is not possible by government effort alone, and recognized the participation of local people through *panchayats* (HMGN, 1976).

The Forest Act of 1961 was first amended in 1977 and rules and regulations under this Act were introduced in 1978. The amendment of the Act categorized the forests of Nepal into six categories as panchayat, panchayat-protected, leasehold, religious, government, and private forests (Mahat et al., 1986). The regulations specified the provision of handing-over a limited (up to 125 ha) area of government-owned degraded forests to local panchayats as panchayat forests with an aim of reforestation. Similarly, provisions were also made to hand-over the existing forest areas (up to 500 ha) for their protection, management, and utilization as panchayat-protected forests. No provision was made for forest products sale by the panchayats (Kanel, 1993).

Since *panchayats* were the local-level political units, they became unable to represent real users in CF management. Institutions like *panchayats* are not appropriate institutions for the management of common property resources (Jodha, 1995). Rather, such institutions have played a decisive role to convert the CPRs into open-access resources.

The history of forest exploitation and development of forest policies have a parallel development with Nepal's political structure (Hobley et al., 1994). The Private Forest

Nationalization Act 1957, Forest Act 1961 and Forest Act 1993 followed the major political changes in 1950, 1960 and 1990, respectively.

The policy of the government was incorporated into the Sixth Five Year Plan (1981-85) and also supported by the Decentralization Act 1982 (Palit, 1996). The Master Plan for the Forestry Sector Nepal (MPFS), a twenty-year forestry sector plan, was prepared in 1988. The plan declared an absolute commitment of the government for the implementation of the CF program as a major forestry component. The plan decided to hand-over all accessible forests to local communities as CFs for the development and management of forest resources through people's participation to meet their basic needs (HMGN, 1988). The potential forest area for CF is about 3.5 million ha (Tamrakar and Nelson, 1991). Similarly, MPFS emphasized the re-orientation of the staff under the Ministry of Forestry and Soil Conservation for their new role as extensionists and advisors.

The forest legislation was revised following political changes in 1990. The amendment in forest legislation mandated handing-over the forests to CFUG for the control and management of forest resources. Thus, the Forest Act 1993 was formulated as the latest forestry legislation of the country.

## **2.6 Status of community forestry in Nepal**

### **2.6.1 Policy and legislation**

According to the Forest Act 1993, forests of Nepal have been broadly classified into private and NFs based on the land ownership, being private and government, respectively (HMGN, 1993). The NF has been further classified into community, leasehold, religious, protected, and government-managed forests. According to the Forest Act 1993, CF is a NF handed to CFUG for its development, conservation and utilization for collective benefit.

According to the 1993 legislation, CFUG has a status of an autonomous and self-governing body after the formal registration of the group in the relevant DFO (HMGN,

1993). Similarly, CFUG has a right to production, utilization, and sale of surplus forest products as prescribed in the operational plan of the particular forest approved by the DFO concerned. The Act also allows generating user group funds from various sources such as:

- grants received from HMGN;
- grants, donations, or assistance received from any individual or institution;
- funds from the sale and distribution of forest products;
- funds collected as fines;
- funds received from other sources.

(HMGN, 1993)

The CFUGs also have an authority to spend for other public welfare activities from the surplus balance left in the account after making disbursements for the development of the CF activities (HMGN, 1993). Such activities enhance the communities' education, health and socio-economic status (Joshi, 1997).

The forest policy and legislation of Nepal has been widely recognized as one of progressive intervention (Joshi, 1997). However, legislation is only a device for the implementation of policy; the eventual impact of legislation depends upon the interpretation of politicians and bureaucrats (Gilmour and Fisher, 1991; Kanel, 1993).

Joshi (1997:33) highlighted three major constraints in the present CF legislation:

- CFUG members cannot punish persons outside their group if they misuse resources belonging to the group.
- CFUG can amend their operational plan and should inform the concerned DFO but an amendment not necessarily approved by DFO for its implementation might be diverted towards the misuse of resources.
- DFO can repossess the forest without intermediate-level punishment if the CFUG commits mistakes.



Continued government ownership of forestlands, although use rights are handed-over to users groups, has been criticized (Gilmour and Fisher, 1998). Similarly, the Forest Act is not clear about how much land should be handed-over to local communities (Pardo, 1993) and what the criteria will be for distribution of benefits in Tarai, where valuable stands of commercial timber exist (Pardo, 1993; Shrestha, 1999).

## **2.6.2 Progress and prospects**

### **2.6.2.1 The slow versus quick handing-over process**

Although handing-over the forests to local communities is the priority of the government's program, the transfer rate has been quite slow (Gilmour and Fisher, 1991; Kanel, 1993). On 16 February 1998, an estimated 403,688 ha of forest (about 13.5 % of total potential CF) had been handed-over to 6,062 CFUGs (Bhatia, 1999). About 6,000 user groups are awaiting formal hand-over of their forests (Shrestha and Britt, 1998). If this rate continues, it will take 20-30 years to hand-over all the potential CF of Nepal (Joshi, 1997). The handing-over process is slower in the Tarai region. By the end of May 1996, only 31,596 ha of forest had been handed-over to 64,293 (12 % of total) households in Tarai (Joshi, 1997). Although the handing-over process is quite slow, significant achievements have been gained in policies, philosophies and practices of CF in Nepal (Gilmour and Fisher, 1991). The formation of user groups and writing of operational plans alone are not the indicators of the success of CF; the functioning of user groups for the implementation of operational plans is very crucial (Bartlett, 1992).

### **2.6.2.2 The management system**

CF management in the hills of Nepal is protection-oriented and passive (Acharya, 1998). However, many CFUGs have realized that protection of the forest alone is not sufficient to fulfill their demand or to increase the forest productivity (Tamrakar and Sharma, 1998). Forestry Research Division (FRD) has emphasized the particular research areas like natural forest silviculture, agro-forestry and fodder trees to support CF program (Danbury and Bowen, 1993). Some research is being conducted in subtropical *Schima-Castanopsis* forest type to determine appropriate silvicultural systems with a focus on CF (Danbury and Tamrakar, 1997).

On the other hand, user groups are also encouraged to adopt appropriate silviculture for their forests through the establishment of demonstration plots. Participatory Action Research (PAR) has been recently introduced with collaboration of CFUGs (Acharya, 1998; Sattaur, 1998; Tamrakar and Sharma, 1998). In PAR, users are recognized as researchers and their responsibility is to identify research questions, conduct research, examine the results and apply the learning in practice (Sattaur, 1998).

### **2.6.2.3 Utilization of User groups' fund and benefit-sharing**

The utilization of user groups' fund is one of the challenging responsibilities for many CFUGs. In many cases, substantial amounts of CF funds are being utilized for community development activities (Dongol, 1999). For example, Bagmare CFUG of Dang District is running a secondary school (Joshi, 1997) and Shankarnagar CFUG of Rupandehi District has invested 0.78 million NRs (24.4% of total expenditure) in community development works like road construction and support for local schools (Pokharel et al., 1999). In Sindhupalchok District, CFUG funds were utilized in developing the infrastructure like bridges, schools, irrigation canals, water supply schemes and temples (Gautam, 1997). Besides the production and sale of forest products for their income, many CFUGs are also practicing income-generating activities. In Srijana CFUG, inter-cropping of turmeric has been introduced as an income-generating activity and the poorest households of the CFUG are receiving quick cash returns (Pokharel, 2000).

Utilization of CFUG funds to raise socio-economic conditions as well as to develop the long-term plan to reduce the pressure on resources is common in many CFUGs. For example, Shankarnagar CFUG is providing a subsidy of NRs 1,000 per household for the installment of biogas plants. The CFUG also has a provision to provide a grant (NRs 2500) to any family with one or two daughters (but no son) who decide to adopt a permanent family planning device (Pokharel et al., 1999). Similarly, many CFUGs are utilizing their funds for small loans within their groups. Such loans are cheaper, more easily managed and refunded by CFUGs (Joshi, 1997). Joshi (1997) compiled district-wise income and expenditure of CFUGs of 38 districts (Table 2-3).

**Table 2-3: Expenditure of CFUGs from 38 districts, 1996 (adapted from Joshi, 1997)**

Income NRs	Expenditure (NRs) under different headings			
	Forest development	Community development	Miscellaneous (admin. costs)	Total expenses
25,138,361	3,675,063	726,937	6,870,051	11,272,051

As Table 2-3 indicates, the total expenses are less than half (44.8%) of total income. Among the expenses, costs of miscellaneous items which include administration are quite high (61%) in comparison to forest development (32.6%) and community development (6.4%). Few user groups are only using their funds for welfare activities or the benefit of poor and DAG members (Pokharel and Tumbahangphe, 1999).

#### **2.6.2.4 The external support**

CF program in Nepal is being supported by many projects of various capacities supported by several donors. Some of the major projects are Natural Resources Management Sector Assistance Program (NARMSAP) funded by DANIDA, Nepal-UK CF Project funded by DFID, UK, Nepal-Swiss CF Project funded by the Swiss government, Nepal-Australia Community Resource Management Project supported by Australia International Development Assistance Bureau and USAID-funded Environment and Forestry Enterprises Activity. The working modalities and levels of financial support vary greatly among different projects, which need uniformity (Shrestha, 1993).

Sharma (1993) suggested that the implementation of CF programs should be coordinated with other forestry sector programs like national and leasehold forestry programs. He argued that if the access to NFs is restricted, local people are more motivated to manage CF as well as to grow trees on private land. Similarly, implementation of a leasehold forestry program together with CF benefited the poor segment of the population within the community.

### 2.6.2.5 Community forestry and bureaucratic frailties

The present Nepali bureaucratic culture is mainly based more on a client-and-patron relationship than on work performance (Bista, 1991). That is why there are many bureaucratic frailties for the long-term vision of the CF program. For example, many CFUGs that are capable of setting up sawmills or furniture industries are not encouraged by the Forest Department (Gilmour and Fisher, 1998) because the government receives high excise duties and income tax from other industries (Joshi, 1997). Similarly, Forest Department still does not want to lose control over the Tarai region, which is an area of commercial timber production (Gilmour and Fisher, 1998; Shrestha, 1999).

### 2.6.2.6 Indicators of success

**Bhatia (1999:29) presented the key indicators for ascertaining the success of community forestry:**

- *transparency and accountability in the administration of CFUGs,*
- *increased benefit-sharing on an equitable basis,*
- *participatory decision-making within CFUGs,*
- *increased participation of women and disadvantaged groups,*
- *increase in forest cover and availability of forest products,*
- *improvement in the quality of the forest,*
- *income generation from the forests,*
- *use of CFUG funds for forestry and other community development work,*
- *ability to apply the knowledge and skills learned in training programs.*

**NUKCFP (1998:6) presented the "top seven attributes" of successful user groups:**

- *active participation of all users including disadvantaged in all CF activities and equitable benefit-sharing to all users,*
- *users feel a sense of ownership for the CF program and process,*

- *users are aware of and understand CF policy and legislation,*
- *roles, responsibilities and rights discussed, defined and understood by all members and users playing their roles and taking their responsibilities,*
- *CFUGs understand the constitution and FOP and are capable of amending them as and when necessary,*
- *CFUGs have their own effective communication, planning, monitoring and evaluation system,*
- *Sustainable management of forest resources according to CFUG priorities.*

### **2.6.3 Socio-economic aspects**

#### **2.6.3.1 Socio-economic background**

##### ***Caste and ethnicity***

Nepal is famous for diversified culture, religion and caste system throughout the Kingdom. Bista (1987) has described the details of ethnic diversity in Nepal. People of Nepal are mainly divided into Tibeto-Burman and Indo-Aryan races. The majority population including Bahun, Chhetri and other occupational castes (untouchables) belong to the Indo-Aryan race. Castes like Gurung, Magar, Sherpa, Rai and Limbu belong to the Tibeto-Burman race. The caste system has been recognized as an element of Hinduism. Although the caste system originated with the division of labor, it has been retained as a strict hierarchy of hereditary status.

The existing caste system of Nepal is vertical. The Bahuns in the top rank are followed by Chhetris and Thakuries, the mid-ranking Matwalis, and the lowest ranking untouchable castes like Kami, Sarki, Damai, Sunar, Badi, etc. The untouchable castes are found all around the country and they constitute about 15% of the total population of Nepal (CARE Nepal, 1996). Tradition and Civil Code (*Muluki Ain*) sustained the caste system in Nepal until the removal of discriminatory provisions in the Civil Code in 1963 (HMG, 1963). However, discrimination is yet to be removed in reality. Among

all ethnic groups, the socio-economic condition of occupational caste people is low, because they are mostly illiterate, extremely poor and exploited (Bista, 1991; UNDP, 1998).

### *Economic stratification and poverty*

About half of the people in Nepal are income-poor. Official statistics for 1996 estimate that more than 40% of the population is poor, while estimates based on a US\$1 a day per person standard put the figure at more than 50% (UNDP, 2000). The incidence of poverty in rural areas is 2.6 times higher than in the urban areas (UNDP, 1998); it is relatively higher in higher-altitude and less accessible regions and among lower castes and ethnic minorities. Similarly, occupation households with agricultural workers are more prone to poverty. The average income level is one of the lowest in the world. Incomes are unevenly distributed among the regional and social groups. For instance, urban income is more than double that in rural areas (UNDP, 1998).

Poverty remained a basic premise of the country's development plans since the 1950s. A separate plan formulated for poverty was the "Fulfillment of Basic Needs" during the Seventh Plan period, 1985-90. It is again the sole development objective for the Ninth Plan, for 1997-2002 (HMG, 1997). To meet this objective, government forwarded two strategies. The first advances broad-based growth to benefit principally the moderately poor (about 60% of all) and the second combines targeted programs with social mobilization to reach the extremely poor (UNDP, 2000). The government has targeted the poor through area-based programs by providing infrastructure to the more backward and isolated regions and through target peoples like lower castes, women and children. However, in practice these programs are very small and the benefits tend to go to the non-poor (UNDP, 2000).

In the recent years, the decentralization of authority, social mobilization and empowerment are acknowledged as successful strategies to meet the objective of poverty alleviation. The CF program has been prioritized as one of the potential activities to contribute to poverty reduction through increasing household income as a result of supplying adequate forest products, income generation opportunities and more

raw materials for farming and livestock rearing. The third national CF workshop (1998) endorsed poverty alleviation as a future vision of CF (HMGN, 1999).

### **2.6.3.2 Socio-economic diversification and its influences**

The socio-economic condition of the local people plays a very crucial role in the management of common property resources. The people belonging to higher economic and social status are always influential in local decision-making and their decisions may not necessarily reflect the problems of the poor and DAG (Laughed et al., 1994). The DAG people are historically dependent on village elite to work either as tenant farmers or farm laborers, so they find it difficult to voice their opinions in group meetings or assemblies (Bhatia, 1999). One of the other reasons for reluctance to DAG to speak up in public discussions may due to the lack of confidence in their own abilities to express views and ideas (Chhetri and Sigdel, 1999). Some individuals of the group manipulate the situation for their own advantage to gain wealth and power (Gilmour and Fisher, 1991; Hood et al., 1998; Mehta and Kellert, 1998).

Baral (1993) classified rich and political persons as dominant users and poor peoples as suppressed users and realized that there is a tendency to listen only to the ideas of dominant users. The outsiders or "*development tourists*" also generally focus their attention on local elites, men, the healthy and educated people and exclude the poor, the women, the sick, and the old (Chambers, 1983). The socio-economic issues are also associated with endogenous cultural factors and it is not possible to solve the problem only through external effort (Chhetri and Nurse, 1992).

The Human Index Report (1998) of Nepal prepared by UNDP states that the user groups' control over the CF is quite theoretical, while in practice disadvantaged social segments (i.e., women and low caste groups) are still unaware of their rights and responsibilities (UNDP, 1998). The same report notes that the empowerment of marginalized groups is very urgent for forest management as well as to minimize socio-economic disparities because these groups are often not included in decision-making processes. (UNDP, 1998). The alignment of user group members with particular political groups was also noticed in a study in the eastern hills of Nepal (Dahal, 1994).

Success of CF is not likely without the participation of users especially in writing the operational plan. A case study described by King et al. (1990) in Chaap Aal Danda Forest of Sindhupalchowk district highlighted the significance of detailed investigation and consultation with user group members before writing a management plan. The case study described the writing of an operational plan in a public meeting without detailed investigation of various interest groups in the community (by caste, family, sex, etc) is not appropriate. New approaches developed from the lessons learned from Chaap Aal Danda forest include small group meetings of various interest groups to understand their particular interests and to solve conflicts by consensus (King et al., 1990).

Many studies on social aspects of CF highlighted the meager participation of DAG in decision-making processes and that the decisions are not transparent to them (Chhetri and Nurse, 1992; Chhetri and Sigdel, 1999; Hood et al., 1998; Laughed et al., 1994; UNDP, 1998). The dissemination of information within user groups is very important for active participation and commitment. However, in practice the control of information is a source of power in a highly hierarchical society (Gilmour and Fisher, 1991).

The handing-over of forests to the local community in a practical sense is the shifting of power from the Forest Department to local people. Theoretically, the process of power-shifting is very successful because it is strongly backed by policy and legal documents. However, sharing the power within CFUGs is an important issue yet to be solved (Gronow, 1995). The internal power-sharing mechanism is very complicated in the heterogeneous communities of rural areas of the country, which have evolved in a semi-feudal tradition and culture.

The most important attribute of CPR-user group is the equity of access and benefits from CPR for all members (Jodha, 1995). Equity in CF is mainly perceived in three aspects: 1) equity in products distribution by type 2) equity in decision-making and 3) equity in allocation of funds (Chhetri and Nurse, 1992). The equity and benefit-sharing aspects are very crucial in a multi-ethnic society like Nepal where social and economic



disparity is quite common (Zurick, 1989). The more heterogeneous the society, the more chance of conflict arising (Paudel, 1997).

The distribution of costs and benefits to the different wealth classes of user households has been analyzed (Maharjan, 1998; Richards, et al, 1999). These studies revealed that poorer households are currently benefiting less from CF than wealthier households. In contrast to this, a study in central Nepal revealed that the CF income has gone more to the poor than rich households (Sharma, 1999a).

### 2.6.3.3 The influence of elite dominance in practice

#### *The Chuliban case*

A study of the flow and distribution of costs and benefits in the Chuliban CF of Dhankuta District of the eastern hills of Nepal identified an inequitable sharing of costs and benefits to the poor and disadvantaged users (Maharjan, 1998). As a result of inequitable distribution of costs and benefits, participation of poor and disadvantaged group users declined. In a period of four years from 1993 to 1997, 20 poor households terminated from the CFUG, while about 50 user households who were identified as potential users never joined the CFUG because of inequitable cost and benefits (Maharjan, 1998:9). The main reasons identified were:

- The forest protection system was very costly and inappropriate to the poor households. In this system, two households were required to patrol the forest every day on a rotational basis and failure to take one's turn at patrolling resulted in fine of NRs 50, equivalent to a day's wage. Most poor families could not afford their time, as the opportunity cost of foregoing an income was greater.
- Poor users with a small family size were particularly unhappy with the rules of CFUG. For example, according to FOP two *bharis* of fuelwood were distributed to each household every year, which was insufficient to meet their needs. So, the opportunity cost was very high for the poor users.

*The Shankarnagar case*

The preferences of elite dominant user groups are being observed in favor of rich people. The issues raised by Pokharel et al. (1999) in a case study of Shankarnagar CFUG of Tarai region of Nepal, where there is no representation of lower caste and poor people in the committee, are:

- Users committee from the users' fund has a provision to provide a subsidy of NRs 1000 for those households who installed a biogas plant. This program is only beneficial to the wealthier households who can afford the additional expenses to install and maintain a biogas plant. There is no alternative program or compensation for those who could not establish a biogas plant.
- As harvesting contracts are awarded to the lowest bidders, the contractors are hiring outside laborers, who are relatively cheaper. Thus the commercialization in harvesting reduced the employment opportunities of many poor users, the means of their livelihood.
- Expenditure on administrative costs including furniture, tools and office maintenance in last three years was 54.5% of the total budget, while the expenditure on development works including prizes and donations in the same period was only 24.4%.
- Prices fixed for selling forest products are not affordable to poor people. For example, the price fixed for sal log is NRs 14124.30 m<sup>3</sup>, which is double the government fixed royalty for this species.

**2.6.3.4 Socio-economic diversification and resource use pattern**

Poor and marginalized people in rural areas are more dependent on public or CFs than rich people of the same area (Hobley, 1987; Jodha, 1995; Maharjan, 1998; Sarin, 1998). People who have more agricultural land have more opportunity to grow trees on their private land (Gilmour and Fisher, 1991), which supplies supplementary forest products. Also, rich people have more alternatives for forest products like constructional materials, medicines, and agricultural implements.

Young (1994) examined the inter-relationship between the use of CF, NF and private trees in nine CFUGs of Bhojpur and Dhankuta Districts of eastern Nepal. The study revealed a general pattern that the use of CF has declined from 37% to 24%, while that of private trees has been increased from 34% to 51% after the implementation of the CF program. It shows that the use of forest resources is more restricted after transferring the responsibility of control and management to local people. A genuine question to be raised is how the poor people who have limited resources in their private land are satisfying their demands? Some of the poor people with few private trees in Bhojpur were compelled to use lower quality firewood such as crop residues and bamboo (Young, 1994).

#### **2.6.3.5 Commercialization versus subsistence use of community resources**

Commercialization versus subsistence use of the resources in CF is the subject of debate. The main questions are to what extent CFUGs should be allowed to develop market operations; many of them have great income-generation potential, which raises issues of both sustainability and equity in the distribution of benefits (Soussan et al., 1998). The CF program still emphasizes the production of basic forestry products to meet rural people's subsistence needs for fuelwood, fodder and timber (HMGN, 1988; Manandhar, 1980).

On the other hand, the greater the level of capital formation the more behavioral changes in the CFUG members, forest improvement and community development activities occurred (Dongol, 1999). High forest products' prices, sale of surplus forest products outside the group, accessibility to market and manageable mature forests were identified as the keys for capital formation by CFUGs.

Singh (1998) described the gradual movement of CF from subsistence to commercial utilization in relation to the accumulation of user groups' funds. He has pointed out some risks associated with market-oriented CF management, including the crucial role of middlemen in marketing timber and non-timber forest products, the possibility of over-exploitation of the resources to make quick money, and chances of misuse of

group funds. Such situations indicate the uncertainty of the long-term sustainability of CF (Baral and Subedi, 1999).

The changes in the rural mountain areas of the country are rapidly linking the subsistence systems of the rural areas with wider systems (Zurick, 1988). Malla (1997) discussed the rapidly increasing socio-economic changes and development of domestic markets in the hills of Nepal. The market activities are also changing the demand for forest products. The influence of market in particular areas has resulted in decreasing demand for fodder and leaf litter due to reduction in livestock numbers. On the other hand, demand for fuelwood and timber is increasing to fulfill the demands of forest-based commercial enterprises. The situation has also been reflected in CF management, because many groups are producing forest products with an aim to sell the products in local markets (Malla, 1993).

A study on the spatial effects of markets on CF suggested a reclassification of users into primary and secondary categories based on their use practice (Pandey et al., 1993). The study suggested the FOP should define primary users as subsistence users, providing them full rights and responsibilities for forest use and protection. The secondary users who are interested in benefits other than subsistence should have a right to protect and use forests for meeting their needs.

## **2.7 Chapter summary**

The concept of CF emerged globally after the 1970s. In Nepal, although there were several indigenous arrangements to manage the forests mainly in the hills for a long time, CF has been officially recognized in the 1970s. It took a decade to develop policies, legislation and to find an appropriate institution for forest management; the handing-over of forest management authority to local communities was effectively implemented after 1990. The CF policy of Nepal is very progressive and government efforts to hand-over the resources are also positive. However, still there are many problems related to policy, implementation and monitoring and evaluation approaches. The most important problem related to the socio-economic context is equity in decision-making and benefit-sharing systems of CF.

CF researchers, therefore, have recently been trying to evaluate and compare the CF benefits for different social and economic strata of users groups. These studies have been mostly conducted in central or eastern parts of the country and a standard method is lacking to identify socio-economic problems. In this context, the literature reviewed leads me to design this research to study the flow and distribution of CF benefits in the mid-western remote hills of Nepal.

### **III. RESEARCH SITES IN THE STUDY CONTEXT**

#### **3.1 Country background**

Nepal is a land-locked country with an area of 14.7 million ha located between India and China. It lies between 26<sup>0</sup>22' and 30<sup>0</sup>27' North and 80<sup>0</sup>12' and 88<sup>0</sup>12' East. Though economically it is one of the poorest countries in the world, it is not poor in ecological and cultural diversity. The country has a wide range of biological diversity with an elevation range from 161 masl to 8,848 masl (Mount Everest) and five physiographic zones including Tarai, Siwaliks, Middle Mountains, High Mountains, and High Himal (HMGN, 1988). Similarly, its 21 million people include different ethnic groups, castes, and culture of both Tibeto-Burman and Indo-Aryan races.

#### **3.2 Forests and their role in national and local level livelihood strategies**

Forest covers about 38% of the country including 59% broad-leaved stands, 24% mixed conifer broad-leaved stands and the remaining 17% conifer stands from tropical to alpine climatic zones (HMGN, 1988). Dominant species are sal, khote salla, gobre salla, thingre salla, and oak. The average growing stock of the forests is less than 100m<sup>3</sup> ha<sup>-1</sup>, and the growing stock in Middle Mountains is lower than other zones (HMGN, 1988). The forestry sector contributes to the national economy by providing 15% of the country's GDP and employing 18% of the total labor force (HMGN, 1988). It directly contributes to household and individual welfare by providing basic forest products and income and employment opportunities.

Subsistence-level farming is the major occupation of more than 90 percent of people and is intimately related to forestry and animal husbandry. Fuelwood is the major source of energy and 75% of the fuelwood is supplied from forests, shrub lands and lands adjacent to farms. Per capita annual fuelwood consumption in the mountains of Nepal has been estimated as 640 kg (TU, 1976). Timber is used for construction of

houses, bridges and other infrastructure as well as for manufacturing agricultural implements. The demand for timber in the mountains of Nepal was estimated as  $0.1\text{m}^3$  person<sup>-1</sup> year<sup>-1</sup> (Wyatt-Smith 1982). Unfortunately, the fuelwood deficit in Tarai and Middle Mountains (where eighty-five percent of the 17 million people live) was 2.6 million tonnes in 1988 projected to 3.5 million tonnes by the year 2000. Similarly, the timber deficit in Tarai and Middle Mountains was 0.25 million m<sup>3</sup> in 1988, projected to 1.2 million m<sup>3</sup> by the year 2000 (HMGN, 1988).

Forestland provides more than forty percent of livestock nutrition as fodder. Forest litter and dung is used to enrich farm soils, crucial for agricultural productivity. For example, the annual consumption of litter and manure in the two hill districts of Sindhupalchowk and Kabhreplanchowk was 2.3 metric tones ha<sup>-1</sup> agricultural land (Mahat, 1985). However, in recent years livestock numbers have been declining, partly due to reductions in forest and fodder resources and reductions in labor availability, which ultimately decreased the cropland yields in the hills of Nepal (Robinson and Thompson, 1989). Forestry along with fisheries and agriculture combined equal sixty percent of gross domestic product, a quarter of which (15%) is contributed by forestry (HMGN, 1988). Likewise, forests play a crucial role in protecting watersheds, which are the main source of water needed for domestic and industrial purposes.

Forest provides mineral nutrients and energy that are essential for the farming systems of Nepal (Mahat, 1987). The contribution of forestlands to agricultural lands with subsistence-level farming in the hills has been estimated in various studies (Wyatt-Smith, 1982; Zurick, 1988). Essential accessible unmanaged forest needed to sustain one ha of agricultural land is 2.8 ha (Wyatt-Smith, 1982).

### **3.3 The Pyuthan District**

The Pyuthan District is one of the rural hill districts of Rapti Zone, Nepal. The District covers an area of 1309 km<sup>2</sup> in the mid-western development region of Nepal between 27<sup>o</sup> 55'-28<sup>o</sup> 25' N latitude and 82<sup>o</sup> 30'- 83<sup>o</sup> 0' E longitude (Figure3-1).

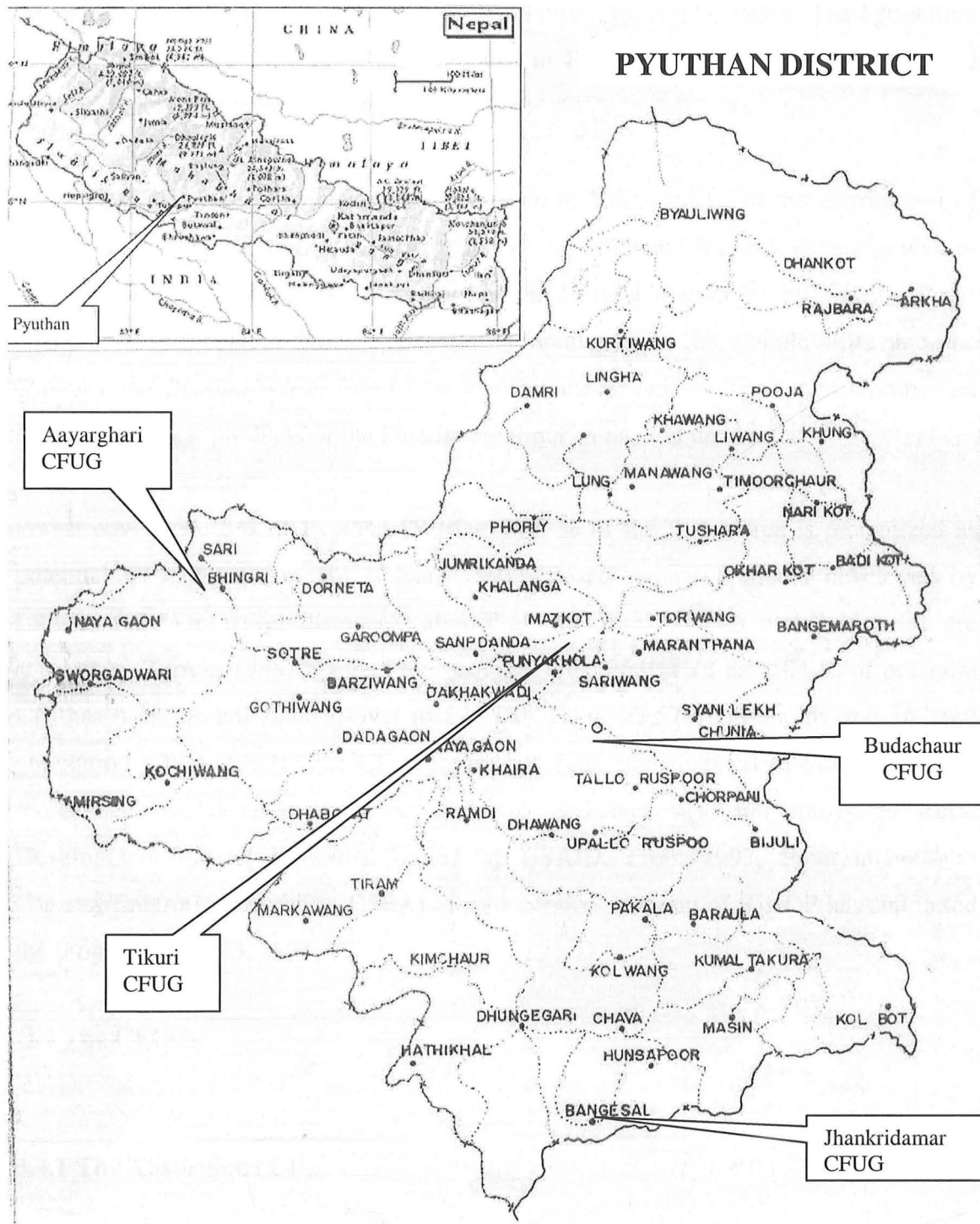


Figure 3-1: Location of Pyuthan District and CFUGs selected for study



Population according to the 1991 census is 1,75,469 people, 81,751 males and 93,718 females (CBS, 1998). The major occupation is agriculture (61.2%); other occupations include study 15.39%, service 7.16%, and other 16.25% (DFO, 1999). The agriculture land to forest land ratio in Pyuthan computed in 1985 as 1:1.7 excluding grazing land and 1:2.0 including grazing land (Zurick, 1988).

The elevation of the District varies from 305m to 3,605 masl and the distribution of forests varies with elevation. The riverbanks of the Madi and Jhimruk Rivers as well as the Siwalik Range in the southern part of the District consist of sal forests. *Pinus roxburghii* and *Schima-Castanopsis* forests dominate in the middle hills and the *Quercus* and *Rhododendron* forest type is at higher elevations. The major commercial non-timber forest products of the District are timur, ritha, and dalchini.

Forest covers 56.13% of Pyuthan District; 34.5 % of the forest area is recognized as potential CFs (Tamrakar and Nelson, 1991). Based upon the model developed by LRMP (four km travel distance), almost all the forest, shrub and grasslands are accessible (Zurick, 1988). Among the potential CFs, 26,064.78 ha (104 % of potential CF) has been already handed-over to 221 CFUGs of 27,578 households and 167,342 population (DFO, 1999). The CF program has been implemented in this District for more than two decades with the technical assistance of Rapti Integrated Rural Development Project (RIRD) funded by USAID. From 1997, Environment and Forestry Enterprises Activity (EFEA) as a succession program of RIRD has supported the program (USAID, 1995).

### **3.4 The CFUGs**

#### **3.4.1 The Aayarghari CF**

##### **3.4.1.1 Nature of the forest**

Aayarghari CF is only six ha of plantation forest (Plate 1-1). It was planted and protected by a local women's group since 1991, in an initiation of the WDO. The

plantation was handed-over by the DFO, Pyuthan to the local CFUG in 1996. Khote salla is the main species planted in this forest, but the natural regeneration of sal is emerging well (Aayarghari CFUG, 1996).

#### **3.4.1.2 Users' group**

Fifty-three households of Bhingri VDC, who were previously affiliated with a loan group assisted by WDO, formed the CFUG. Among them, 18 households belong to socially DAG, and most of them are extremely poor. In fact, all the household members of this group are not the traditional users of that particular forest, while many traditional users are not included in the CFUG. Since the basic concept of CF in Nepal is to hand-over the CF to the traditional users, this group seems a deviation from this concept.

#### **3.4.1.3 Management practices**

The CF does not have sufficient growing stock to fulfill the basic forest products needs of the group. So the users of this CF are protecting their CF and exploiting the surrounding NFs as a free access to fulfill their demand. The membership fee raised by group members and the money provided by DFO, Pyuthan for seedling production and plantation are the major sources of group funds. The user group fund is being invested to group members in low-interest loans.

### **3.4.2 The Budachaur CF**

#### **3.4.2.1 Nature of the forest**

Budachaur CF is 38 ha of forest handed-over to a 49-household (more than half hhs among them were DAG) users group for its protection, management, and utilization in 1992 (Plate 1-2). The forest is located close to Khalanga Bazaar, the district headquarters of Pyuthan District. The forest comprises conifer-broadleaf mixed natural forest dominated by khote salla, sal, saj, and chiuri.

According to the Forest Operational Plan (FOP) of Budachaur CF, the total forest area has been divided into three blocks for protection and management. The total growing

stock of timber in this CF is 2109 m<sup>3</sup> and one percent of growing stock has been prescribed for annual allowable cut (Budachaur CFUG, 1999). According to the FOP of Budachaur CFUG, about 40% of the demand for timber, fuelwood and grass is supplied from CF, and the rest from the private sector.

#### **3.4.2.2 Users' group**

The beneficiaries' population of this CFUG was 372 in 49 households in 1999. This was a heterogeneous group dominated by Kami, Sarki, Sunar, Chhetri, and Newar. The major occupation was subsistence farming and rearing of livestock. The livelihood of many poor and lower caste people before the implementation of CF was based on selling fuelwood and charcoal, which was restricted after CF.

#### **3.4.2.3 Management practices**

Households of this CFUG are allowed to collect one headload of dead and dry fuelwood once a week. Timber is being sold on fixed price for users and by auction while selling outside the group. The collection of grass and bedding materials is allowed according to decisions of the general assembly and committee meetings. Grazing is restricted in the plantation area of CF.

### **3.4.3 The Tikuri CF**

#### **3.4.3.1 Nature of the forest**

Tikuri CF is a 55-ha mixed conifer-broad leaf natural forest handed-over to CFUG in 1991 (Plate 1-3). Major tree species are sal, khote salla, and chiuri. Users did the enrichment plantation of amp, sisau, and khayer. Immature pole-sized trees dominate the forest. The CF has been divided into three blocks for management.

#### **3.4.3.2 Users' group**

This CFUG consists of 773 people in 120 households. Among them, 18 households including Damai, Sarki, and Kami belong to socially DAG (Tikuri CFUG, 1999).

### **3.4.3.3 Management practices**

User group households are allowed to collect fuelwood once a week, thatching grass, fodder, and chiuri seeds once a year and timber as decided by the committee. Timber is being sold at auction. This system seems most advantageous to rich people, who can tender higher prices. According to poor people, they never succeed in getting timber from the CF. The FOP of this group has been renewed recently with a provision for selling timber at a fixed price; however, this provision is not implemented yet.

A forest watchman is being employed for the protection of the CF, although all users are responsible to suppress forest fires voluntarily. Major income of this CFUG is forest products sale within group members and watchman's salary is the main expenditure.

### **3.4.4 The Jhankridamar CF**

#### **3.4.4.1 Nature of the forest**

Jhankridamar CF is a 197.8 ha natural sal-dominated productive forest handed-over to the users group in 1995 (Plate 1-4). Major species of this CF are sal, saj, bot dhairo, and jamun. The CF also includes a small patch of mixed tree plantations. The CF has been divided into six blocks for management (Jhankridamar CFUG, 1995).

#### **3.4.4.2 Users' group**

Jhankridamar CFUG is a heterogeneous group including many castes and religions like Dharni, Kumal, Bahun, Chhetri, Kami, and Muslim. Total beneficiary population in 1999 was 1964 in 344 households with 96 DAG households among them.

#### **3.4.4.3 Management practices**

User group households after paying annual user's fee are allowed to collect dead and dry fuelwood, fodder (except sal), grass, and bedding material all year round. Timber is sold at a fixed price according to the FOP. Many households of this CFUG are also collecting forest products from near-by NFs of Arghakhanchi District.

The majority of users were not getting timber from this CF because of high prices. At the same time, significant amounts of timber and fuelwood have been sold outside the group, although outside sale should only be allowed when the demands of all users are fulfilled. On the other hand, committee members have an opinion that the current CF area is insufficient to supply forest products to fulfill the demands of users and have already applied for an extension of forest area. It is quite controversial to sell large amounts of forest products outside the group without fulfilling the demands of the users group and then to demand more forest area.

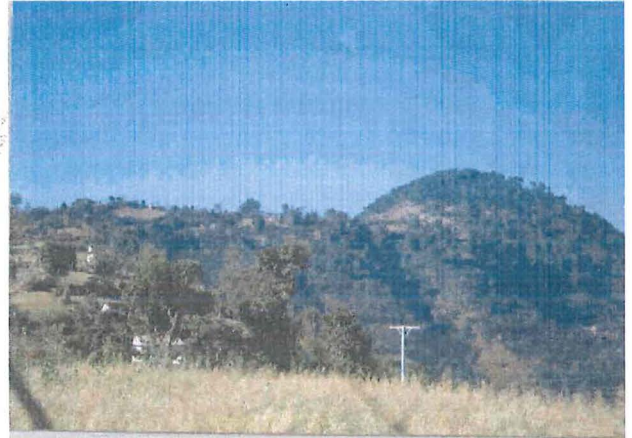
Jhankridamar CFUG is one of the rich groups in the District in terms of both green capital and users group funds. The major source of users group funds is selling timber out of the group, although their price was considerably lower than market price. Other income sources are selling products within the group and users fees. Major expenditure items are watchman's salary, office building construction, and establishment of a demonstration plot. Office records of this group revealed that financial and administrative records are not maintained properly. The entire fund is not deposited in a bank account and is even misused by some committee members.

Some of the former committee members of this CFUG, including the former chairperson, are also blamed for misusing forest products of adjoining NFs and their case has been filed in the District Court. However, it is yet to be decided by the District Court.

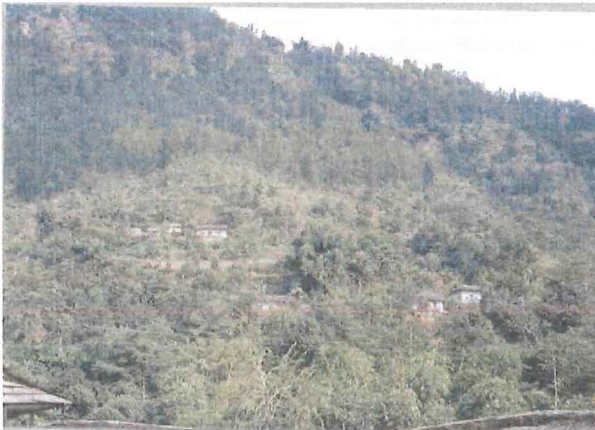
**Plate-1 Community forests selected for study**



**Plate 1-1: The Aayarghari CF**



**Plate 1-2: The Budachaur CF**



**Plate 1-3: The Tikuri CF**



**Plate 1-4: The Jhankridamar CF**

## IV. METHODOLOGY

### 4.1 Introduction

This chapter describes the methods adopted in this research. Firstly, the selection criteria of research sites and groups is discussed. Secondly, a detailed description of the research tools used in this research is given and finally, data analysis techniques and study limitations are explained.

### 4.2 Selection of study area and CFUG

The Pyuthan District, mid-western region of the country, was selected for research because it is one of the middle hill districts of the country where CF is a major forestry program. Few previous CF-related studies were conducted in the District, which was familiar to the researcher from previous work. Time and money limited the study to a single district.

Pyuthan District has 221 CFUGs (DFO, 1999) with a great diversity in natural resources and social structures among the CFUGs. The diversity in forest resources is due to their origin (plantation or natural), forest type, area, productivity, and accessibility. Similarly, diversity in social structure is due to variation in CFUG size, as well as heterogeneity in social (caste, religion) and economic (class) composition. Among this diversity, four CFUGs meeting the following criteria were randomly selected to develop a sampling frame.

- Natural forests where there has been CF management (including utilization and distribution of products) by a users group for at least four years after it was formally handed-over.
- Heterogeneous group in terms of wealth status and caste.
- Relatively stable community in terms of both inward and outward migration.

**Table 4-1: List of CFUGS selected for research**

S. N.	CFUG Name	Range-post	Yr. Handed-over	CF area (ha)	Beneficiaries		Forest area ha/person
					Households	population	
1	Aayarghari	Devisthan	January 1996	6.00	53	311	0.0193
2	Budachaur	Khalanga	April 1994	38.00	49	372	0.1022
3	Tikuri	Bijuwar	July 1992	55.00	120	773	0.0712
4	Jhankridamar	Bangesal	Sept. 1995	197.80	344	1964	0.1007
Mean				74.20	141.5	855	0.0868

Before starting research activities in each CFUG, committee members were informed about the purpose, methods, and schedule of activities and were also asked about their willingness to participate in the research. Details of field activities in each CFUG were finalized after the discussion with committee members. The fieldwork for data collection was undertaken from November 1999 to January 2000.

### 4.3 Research tools

The selection of appropriate methods is a most important part of CF research. Both qualitative and quantitative research methods are being used in CF-related research. The chief strength of qualitative methods lies in the capture of understanding of social process (Babbie, 1995; Gilmour and Fisher, 1991). These methods have a number of limitations as well. Qualitative research seldom yields precise descriptive statements about large populations. The conclusions drawn from qualitative field research are often regarded as suggestive rather than definitive (Babbie 1995). Both qualitative and quantitative social research techniques were applied in this research, including observation, focus group meetings, and a questionnaire survey. Using many research techniques is a part of the triangulation process to verify the validity of research outcomes (Kane, 1985).

Participatory monitoring and evaluation methods are widely using in CF evaluation. These methods are based on the premise that local people are the final evaluators of the project to say whether the project is a success or failure (Davis-Case, 1989). Most of the participatory methods are based on Participatory Rural Appraisal (PRA), which



developed out of Rapid Rural Appraisal (RRA) in the 1980s. Robert Chambers, a leading figure in the development of PRA, states that it is "*a family of approaches and methods to enable rural people to share, enhance, and analyze their knowledge of life and conditions, to plan and to act*" (Chambers, 1992:1).

#### **4.3.1 Wealth ranking**

Wealth ranking was used to determine the relative economic position of each household in each CFUG. Wealth ranking as defined by Mosse (1994:524) "*is a set of techniques (usually based on card sorting and scoring) designed to categorize a local population in terms of relative 'poverty' according to local criteria of wellbeing*". It has been recognized as a useful tool for the categorization of households according to their wealth level (Adams et al., 1997; Chambers, 1994; Gallardo et al., 1995). The empirical validity of this method as a means of socio-economic stratification of CFUG households has already been tested in CF-related researches in Nepal (Richards et al., 1999; Sharma, 1999b).

In this research, user committee members were involved in a wealth-ranking exercise. Ranking was done by the card method (Adams et al., 1997; Gallardo et al., 1995). The name of each household head was written on a card and ranked in an ascending or descending order. Then the cards were grouped into three categories top 1/3 as "rich", mid 1/3 as "middle", and lowest 1/3 as "poor". After the ranking exercise, respondents involved in the ranking process were asked the criteria employed for ranking. Criteria were primarily based on fixed properties like land holding size and house, supported by quality of land, food sufficiency, number and quality of livestock, income sources through service and business as well as educational status of the family. Triangulation was done separately by senior citizens who were very familiar with all CFUG members, by socially disadvantaged group members, and by elected members of the VDC. These groups of people were asked to verify the categorization made during the ranking.

#### **4.3.2 Observation**

Research activities were conducted in various places like respondents' homes, farms, and forests. User participation in discussion, forest products distribution, and decision-

making processes in meetings were observed extensively. Informal interviews and discussion supported the observations in many cases. A field journal was developed including both empirical observations and interpretations. The observation method was useful for both collection and triangulation of information. A checklist for observation is included in Appendix-3.

### **4.3.3 Focus group discussions**

Focus group meetings were conducted with members of each CFUG to discuss the research issues. Two FGDs were conducted in each group, one with both male and female DAG members, and the next exclusively with DAG women (Plates 2-1, 2-2, 2-3 & 2-4). Altogether 130 DAG people including 52 men and 78 women joined ten discussion events (Table 4-2). Four focus group meetings were conducted in Jhankridamar CFUG because the size of this group was much larger than other groups.

The average number of participants for FGD was 13, similar to the general size (7-12 individuals) recommended for FGD (Greenbaum, 1988). The discussion period in this research on average lasted about four hours, which was longer than general (about half an hour to two hours) (Greenbaum, 1988). Because of illiteracy of the majority of respondents and the pattern of discussion, FGD was conducted in a workshop style using PRA tools. For example, the participatory mapping was used for the identification of users of each CF and their dependency for forest products from community and national forests. The trend lines were drawn to observe the trend of forest products availability before and after CF. This caused long discussion periods. Respondents were asked for permission to tape record discussions; however, recording was not used since they didn't feel comfortable.

The focus group meetings provided opportunities for interaction among multiple respondents of similar background (Greenbaum, 1988). The focus groups gave DAG people and women chances to express and share their views more freely in a homogeneous group (Gilmour and Fisher, 1991; Loughhead et al., 1994). Focus group meeting in this research was a useful tool for in-depth interview and to finalize the research questions for questionnaire survey. It also gave an opportunity to the researcher

to familiarize with the field situation. The checklist for the focus group meetings is included in Appendix- 4.

**Table 4-2: Participants in focus group meetings**

S.No.	CFUG	No. of FGDs	Participants		
			Male	Female	Total
1	Aayarghari	2	8	13	21
2	Budachaur	2	10	17	27
3	Tikuri	2	8	14	22
4	Jhankridamar	4	26	34	60
Total		10	52	78	130

#### 4.3.4 Questionnaire survey

A face-to-face questionnaire survey was conducted with 141 respondent households. Since the majority of the respondents were illiterate, face-to-face interview was the only possible option to administer the questionnaire (Plates 2-5 & 2-6). This type of interview was beneficial for its high response rate and ease of explanation to respondents (de Vaus, 1991; Neuman, 1994). The questionnaire survey was conducted after observation and focus group meeting in each selected CFUG. Pilot testing and modification of the questionnaire were done before conducting the full survey. The major changes were sequential arrangement of the questions and language clarity.

The respondents for the questionnaire survey from each CFUG were selected through stratified random sampling. The household was the unit of observation. A household in Nepali society is a family who lives together and shares the same property. The households of each CFUG were divided into different strata as:

- Socially disadvantaged group/ non-disadvantaged group.
- Economical status (low, medium, and high) based on wealth ranking.

The list of CFUG households was collected from FOP of each CFUG and updated with the help of committee members. The updated list was used for wealth ranking to find the economic status of each member household. After the wealth ranking, households

were divided into three economic strata as poor, medium, or rich. Then 25% of households from each economic stratum were randomly selected for interview by using a random number table. Altogether, the total number of households from four CFUGs selected for this study was 566. Among these, 141 households (25% of total) representing 47 households from each economic stratum were interviewed through questionnaire survey.

Similarly, each sampled CFUG households were divided into two social strata as DAG or NDAG based on the criteria mentioned in chapter I. The representation of DAG and NDAG sample households in the sample was 30 and 23%, respectively (Table 4-3).

**Table 4-3: Respondents of questionnaire survey**

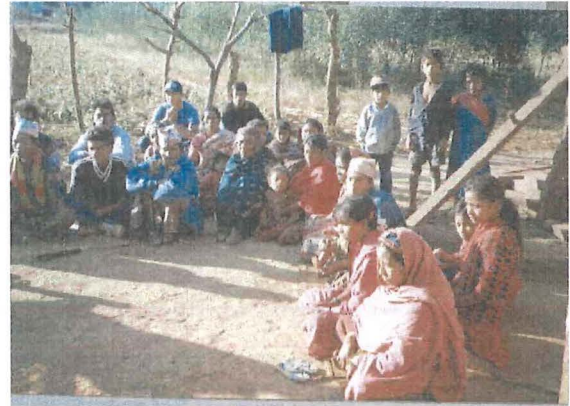
S.No.	CFUG Name	Total hhs in CFUG	No. of respondent hhs					Total
			Based on economic status			Based on social status		
			Poor	Medium	Rich	DAG	NDAG	
1	Aayarghari	53	4	5	4	7	6	13
2	Budachaur	49	4	4	4	6	6	12
3	Tikuri	120	10	10	10	10	20	30
4	Jhankridamar	344	29	28	29	24	62	86
Total		566	47	47	47	47	94	141

Interviews were conducted at the homes (80%) or farms (20%) of the respondents. The date, time, and venue of interview were negotiated in advance with each respondent. Most of the interviews were conducted in the morning (60%) followed by evening (30%), and afternoon (10%). Interviews in most cases were conducted in a group of family members, encouraging the participation of women and aged people. Of the 141 respondent households, 271 people ranging from one to five persons household<sup>1</sup> (mean 1.92, median 2, and standard deviation 0.99) attended the interviews. Although most of the questions were close-ended, in-depth interview was also conducted with some key informants like current and former committee members, forest watchmen, and VDC members with an anticipation to receive detailed information. The questionnaires were prepared in Nepali language for the convenience of respondents and the researcher. A set of questionnaires is attached in Appendix -5.

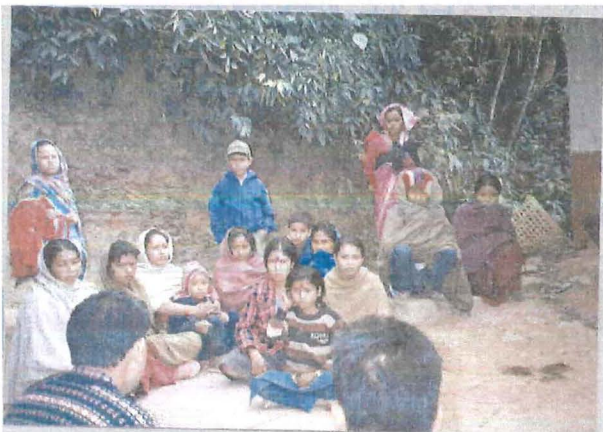
**Plate-2: Participation of CFUG members in the research**



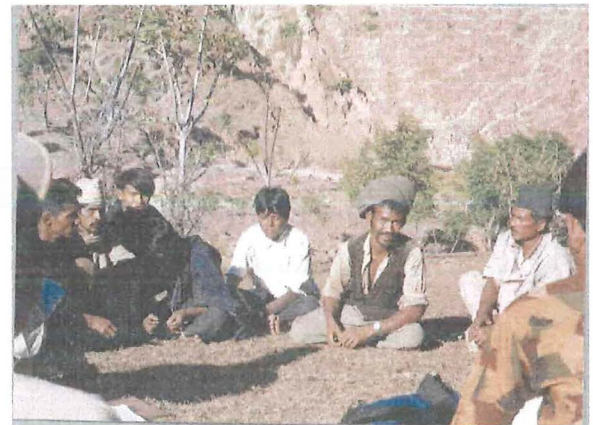
**Plate 2-1: FGD in Aayarghari CFUG (women)**



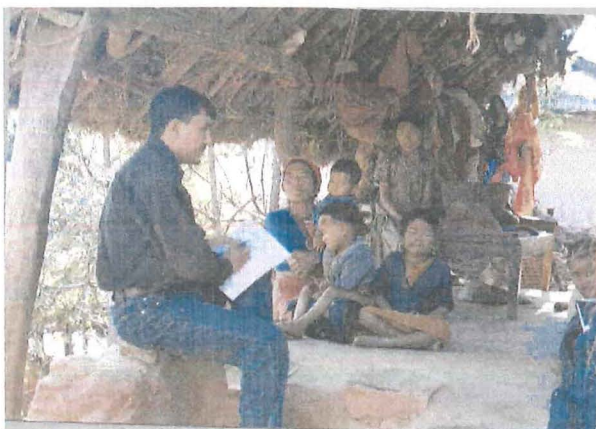
**Plate 2-2: FGD in Jhankridamar CFUG**



**Plate 2-3: FGD in Tikuri CFUG (women)**



**Plate 2-4: FGD in Aayarghari CFUG**



**Plate 2-5: Questionnaire survey in Aayarghari CFUG**



**Plate 2-6: Questionnaire survey in Jhankridamar CFUG**

#### **4.3.5 Reviewing documents**

The operational plan, minutes of committee meetings and general assemblies as well as financial and administrative records of each sampled CFUG were reviewed thoroughly. This information was also useful for interpretation, comparison, and triangulation of information gathered from other sources.

#### **4.3.6 Meeting with committee members**

After the review of relevant documents of each group, questionnaire survey and focus group meetings, a group discussion in each CFUG was organized with the committee members. The key questions related to the research and issues identified during data collection were discussed during the meeting. The committee members were asked about the strategy and approach of the committee on forests products availability and distribution system, fund collection and management system as well as the decision-making and information-dissemination systems. Committee members in each group actively participated in discussion. Some of the committee members were also asked about technical and legal issues related to their CF. A checklist for the committee meeting is included in Appendix 6.

#### **4.4 Data analysis**

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) Version 9.0. The perception of the respondents were measured in a strongly agree to strongly disagree (1-5) Likert scale format (Babbie, 1995). Simple bi-variate correlation (Coakes and Steed, 1996) was used to examine linear relationships between the social and economic condition of the respondents and distribution of family size among different social and economic strata.

The mean scores obtained on the Likert scale were compared and used to determine the perception of the respondents. The Pearson's chi-square test was applied to test the differences in the perception of the respondents according to social and economic status (Gravetter and Wallnau, 1995). The availability of forest products before and after CF was compared and the significance of mean values was tested by using ANOVA

(Coakes and Steed, 1996). Data gathered through qualitative methods were analyzed in a descriptive way using simple analyses of frequencies and proportions.

#### 4.5 Limitations

Respondents' illiteracy was the main limitation of this research. Since most of the respondents were illiterate, it took a long time to explain most of the questions. The majority of the respondents were not aware of their land holding size. They answered questions about size of their holdings by using proxy indicators like amount of any particular crop produced annually (*bali falne*), seed of any particular crop required (*biu lagne*) for that land, and amount of fertile soil (*mato muri*) belonging to that land. These traditional units still exist under local practice. For the research purposes, these units were converted into common units.

The consumption of forest products like fuelwood, fodder, and bedding materials are presented in headload. However, actual amount in a headload varies from individual to individual, especially between children and adults and men and women. For the purposes of this research, it is assumed that the ratio of children, adults, women, and men who collect the forest products is similar in each household. Record keeping and documentation functions of the CFUGs were very weak. Financial as well as records of forest products harvesting, distribution and sale were not properly maintained.

The respondents had no records on the consumption of various forest products. The consumption of forest products before CF was based on their memory, so what they recounted during the interview might have some biases. This information was only used to compare the differences in the amount consumed among different socio-economic strata of the respondents and to find the differences in consumption of forest products before and after CF. The information was triangulated with other indicators like the consumption of fodder and bedding materials was triangulated with number of livestock, the consumption of fuelwood was triangulated with family size and so on.

While interviewing, perception of the respondents was matched in the Likert scale by the researcher. Sometimes it was really difficult to rank their opinion on five-point

scale. There might have been some biases in understanding the opinions of respondents and reflecting their opinions in the proper place on the Likert scale by the researcher. It would be better if the respondents were able to complete their own questionnaire.

#### 4.6 Chapter summary

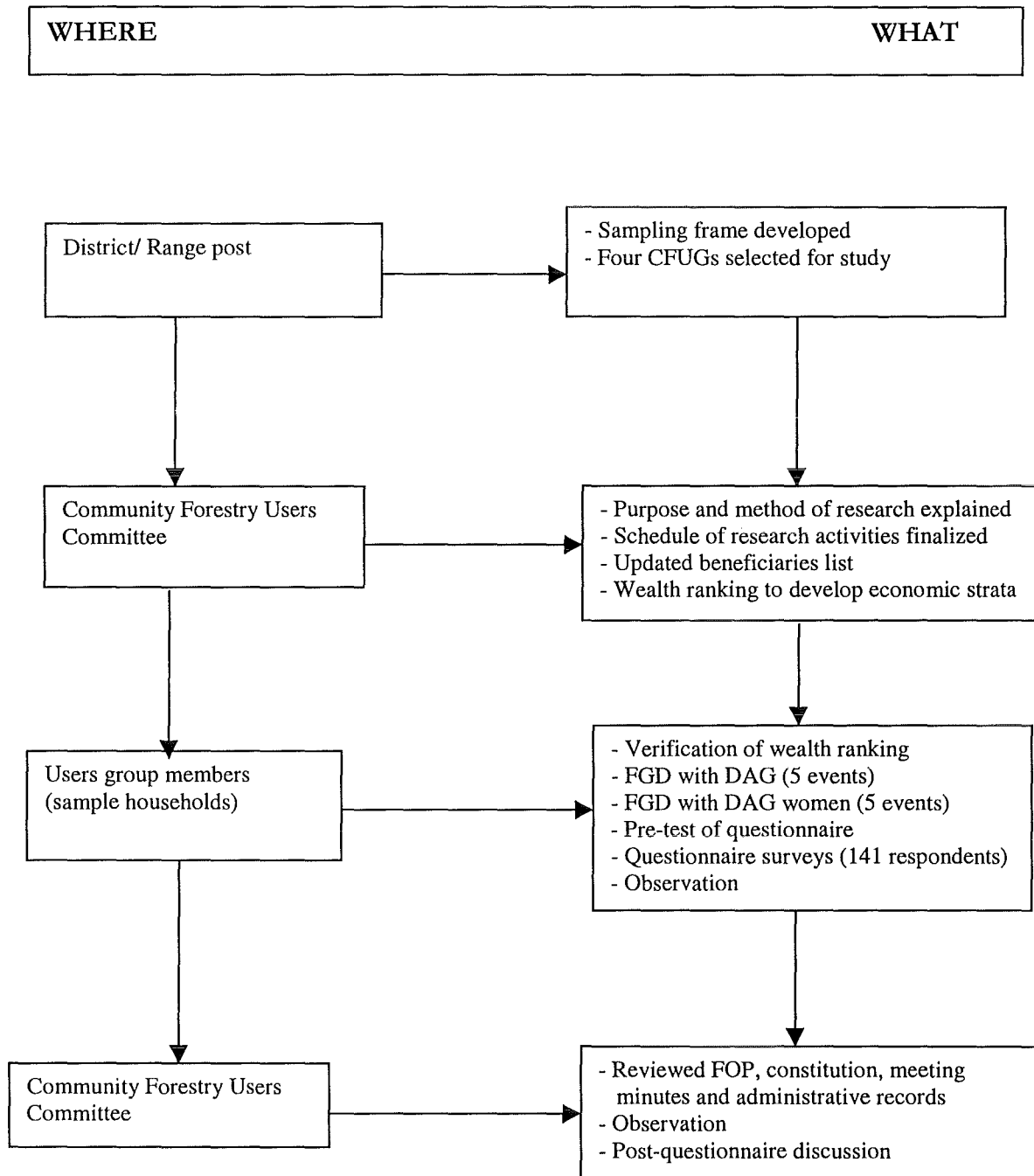


Figure 4-1: Summary of field activities.



## V. RESULTS

### 5.1 Introduction

As discussed in previous chapters, the aim of this study was to evaluate the socio-economic aspects of CF, comparing the distribution of benefits to different economic and social strata within the study area. The benefits of CF programs were compared in terms of perceived forest products availability, income and employment generation, and contribution to farming system. Forest products' availability before and after the CF for different economic and social classes has been compared. Similarly, the participation and perception of users in decision-making and benefit-sharing has been assessed with respect to economic and social status of the respondents.

The results are presented in eight sections. The first two sections introduce the results and treat the socio-economic condition of the respondents. The third section deals with the availability of major forest products. The fourth section presents the contribution of CF in the farming system. The fifth section deals with the forest products availability for forest-based occupations and the sixth, seventh and eighth sections deal with participation of users in CF, benefit-sharing system of CF, and summary of the results, respectively.

### 5.2 Socio-economic condition of the respondents

The 141 households of CFUG (25%) selected from 566 households of four CFUGs selected for this research were the respondents for questionnaire survey. Among the 141 households participated in the survey, 23 (16%) households were headed by women.

#### 5.2.1 Relationship between social and economic status of the respondents

Four CFUGs and 141 respondents were involved in the questionnaire survey. Among them, one-third of the respondents belonged to DAG and the rest belonged to NDAG. The respondents represented thirteen ethnic groups (Figure 5-1). The proportions of

respondents by economic condition (poor, medium, and rich) were equal (Figure 5-2). Since the majority (80%) of the poor were DAG and about 90% DAG were poor, correlation between social status and economic condition of the respondents was significant ( $r = .663$ , sig 2-tailed = .000).

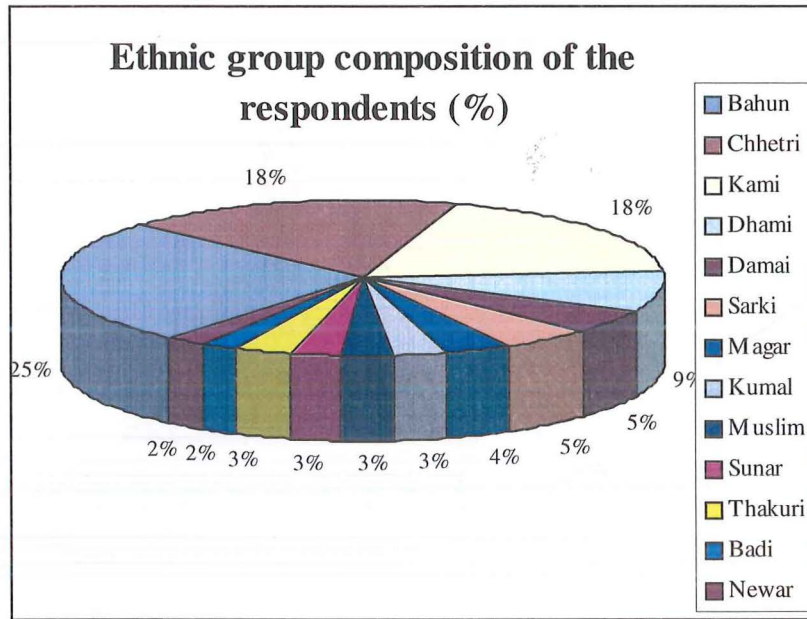


Figure 5-1: Ethnic group composition of the respondents.

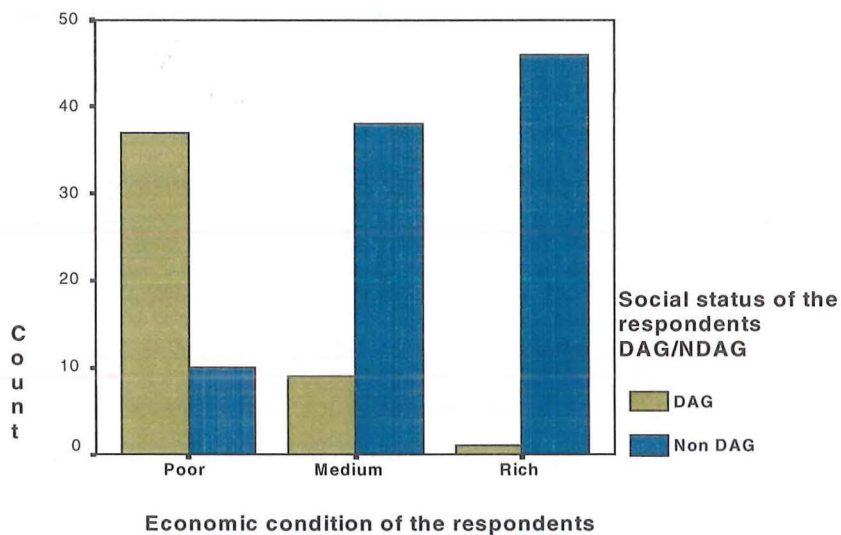


Figure 5-2: Relationship between economic and social status of the respondents.

### 5.2.2 Family size

Average family size of the respondents was 6.47 (median = 6) with minimum one, maximum 15, and standard deviation 2.45 (Figure 5-3). Family size had no significant correlation with economic ( $r = .139$ ,  $p$  2-tailed = .101), or social ( $r = .123$ ,  $p$  2-tailed = .146) status of the respondents.

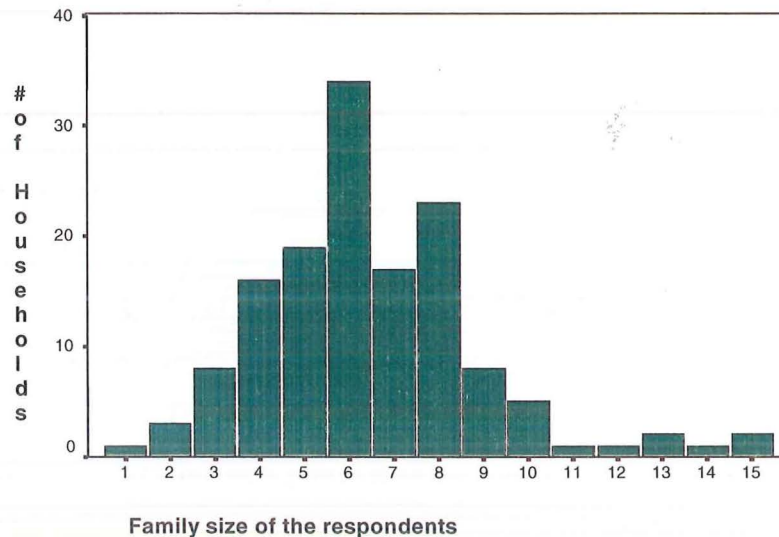


Figure 5-3: Household (family) size of the respondents.

### 5.2.3 Land holdings

The majority of respondents (45.4%) had small (<10 ropani<sup>†</sup> household<sup>-1</sup>) land holdings. Twenty-five-and one-half percent had 11-20 ropani, 12.8% had 21-30 ropani, and 16% had >30 ropani holdings. The land holding size varied with economic and social status of the respondents. The poor and DAG had not only small land holding size but also the quality of land they held was very poor. Land holding size had a significant relationship with both the social ( $\chi^2 = 46$ ;  $df=3$ ;  $p<.001$ ) and economic ( $\chi^2 = 98.542$ ;  $df= 6$ ;  $p<.001$ ) conditions of the respondents (Table 5-1). This relationship also supports the empirical validity of wealth ranking, where the ranking criteria set by users were primarily based upon land holding size of the users.

<sup>†</sup> One ropani = 0.052 ha

**Table 5-1: Distribution of land holding size**

Respondents' status		No. of hhs	Number of households by Land holding size <sup>-1</sup>			
			0-10 ropani	11-20 ropani	21-30 ropani	>30 ropani
Social	DAG	47	40	5	2	0
	NDAG	94	24	31	16	23
Economic	Poor	47	43	4	0	0
	Medium	47	18	20	8	1
	Rich	47	3	12	10	22
Total		141	64	36	18	23

### 5.2.4 Livestock

Most (94.33%) of the respondent households owned livestock. Average livestock holding was 5.6 head, ranging from 0 to 20 with standard deviation 3.68 household<sup>-1</sup>. Among the livestock categories, the percentage of cattle and buffalo was highest (61.2%) followed by goat and sheep (38.8%). Livestock ownership was significantly higher in NDAG and rich group than for medium, poor and DAG respondents (Table 5-2). The relationship also supports the validity of wealth ranking applied for economic stratification of the respondents, where both number and quality of livestock were used for stratification.

**Table 5-2: Distribution of Livestock**

Respondents' status		Average number of livestock household <sup>-1</sup>			Test statistics (differences in total number of livestock)
		Cattle/ Buffalo	Goat/ sheep	Total	
Social	DAG	2.47	1.57	4.04	F value= 14.644, df= 1, 139, sig =.000
	NDAG	3.95	2.5	6.45	
Economic	Poor	2.15	1.38	3.53	F value=15.896, df= 2, 138, sig =.000
	Medium	3.66	2.38	6.04	
	Rich	4.55	2.81	7.36	

### 5.3 Availability of forest products

#### 5.3.1 Availability of fuelwood

Fuelwood was the major source of energy used by all the respondents for cooking and heating. As reported by respondents in the questionnaire survey, average fuelwood consumption in the study area was 128 headload<sup>5</sup> household<sup>-1</sup> an<sup>-1</sup>. In general, the consumption of fuelwood was higher in medium, rich, and NDAG than poor and DAG respondents. The consumption of fuelwood decreased after the implementation of CF in all social and economic classes; however, the volume decline was greatest (although not significant) in poor (42.5%), when compared with medium (37.2%), and rich (33%) economic classes (Table 5-3).

**Table 5-3: Average annual consumption of fuelwood before and after CF**

Respondents' status		Average annual consumption of fuelwood before and after CF (headload household <sup>-1</sup> year <sup>-1</sup> )								
		Before CF			After CF				Difference (after-before CF)	
		NF	PF	Total	CF	NF	PF	Total	Difference %	Test statistics
Social	DAG	182.2	6.4	188.6	73.3	35.5	6.6	115.4	-38.8	F value= .140, df= 1, 139, sig =.709
	NDAG	192.0	20.6	212.6	89.2	22.6	22.2	134.0	-36.9	
Economic	Poor	197.8	1.4	199.2	78.9	32.3	3.4	114.6	-42.5	F value= .743, df= 2, 138 sig =.478
	Medium	190.8	25.8	216.6	88.4	35.1	12.5	136.0	-37.2	
	Rich	177.8	20.4	198.2	84.4	13.1	35.2	132.7	-33.0	
Average		189	16	205	84	27	17	128	-37.6	

CFs are the main source of fuelwood since the advent of CF, although pressure remains on NFs, too. The pressure on PF for fuelwood in all social and economic classes has increased since CF. The proportion of dependency on community, national, and private forests varied with the economic and social status of the respondents. For instance, dependency of poor and DAG people was higher for NFs and lower for PFs than for rich and NDAG people (Table 5-3).

<sup>5</sup> Headload is commonly called *bhari* and weighs approximately 25-30 kg.

Respondent's perceptions of the availability of fuelwood were assessed under the sub-hypothesis "fuelwood is more sufficiently available after CF". The majority of the respondents disagreed (mean score 3.49) with this statement. Perception varied according to social and economic status (Table 5-5). On average, the poor and DAG respondents strongly disagreed (mean score 4.4 and 4.3, respectively), medium disagreed (mean score 3.7), the NDAG were neutral (mean score 3.09) and the rich class respondents agreed (mean score 2.36) with the statement. Differences among responses were highly significant (Table 5-4).

**Table 5-4: Perception of the respondents on the statement "fuelwood is more sufficiently available after CF"**

Statement	Status of the respondent		Scale in %					Mean	df	$\chi^2$ value	Sig.
			St. agree		St. disagree						
			1	2	3	4	5				
Fuelwood is more sufficiently available after CF	Social	DAG	2.1	14.9	0.0	17.0	66.0	4.30	4	20.8	***
		NDAG	29.8	17.0	5.3	10.6	37.3	3.09			
	Economic	Poor	4.3	10.6	0.0	10.6	74.5	4.40	8	51.4	***
		Medium	10.6	23.4	4.3	8.5	53.2	3.70			
		Rich	46.8	14.9	6.4	19.1	12.8	2.36			
	Average		20.6	16.3	3.6	12.7	46.8	3.49			

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

The process of collection, distribution and sale of fuelwood varied with CFUGs. In Budachaur and Tikuri CFUGs, each household was allowed to collect one headload of dead and dry fuelwood once a week without using any harvesting tools. In Aayarghari CFUG, fuelwood collection was completely restricted due to lack of sufficient growing stock in the CF. While in Jhankridamar CFUG, fuelwood collection was allowed all year round except three months in the rainy season (mid-June to mid-September).

The average annual consumption of fuelwood from CF varied with CFUGs (Table 5-5). Jhankridamar CFUG had the highest consumption rate followed by Tikuri and Budachaur CFUGs. These results suggest that the fuelwood collection process adopted by user groups strongly influences fuelwood consumption rate from CF. However, the fuelwood consumption by DAG and poor was higher than rich and NDAG in Tikuri and Budachaur CFUG and lower than rich and NDAG in Jhankridamar CFUG.

**Table 5-5: Average annual consumption of fuelwood according to CFUG**

Respondents' status		Average annual (1999) consumption of fuelwood from CF according to CFUG (headload household <sup>-1</sup> year <sup>-1</sup> )			
		Aayarghari	Budachaur	Tikuri	Jhankridamar
Social	DAG	0	48	80	98
	NDAG	0	33	33	122
Economic	Poor	0	48	80	94
	Medium	0	48	33	130
	Rich	0	26	29	123
Average		0	40.7	47.3	116

### 5.3.2 Availability of timber

Construction timber was one of the valuable products in the study area. Timber is only needed during the construction of houses or animal sheds, so the amount of annual consumption varied year by year. The average annual consumption was therefore calculated from the reported average consumption over five years. The average annual consumption of timber was 0.1473 m<sup>3</sup> and the volume consumption was higher for rich and NDAG respondents than poor, medium and DAG (Table 5-6).

**Table 5-6: Utilization of timber after CF from various sources**

Respondents' status		Use of timber after CF (m <sup>3</sup> household <sup>-1</sup> year <sup>-1</sup> )			
		CF	NF	PF	Total
Social	DAG	0.0170	0.0368	0.0170	0.0708
	NDAG	0.0878	0.0510	0.0481	0.9771
Economic	Poor	0.0170	0.0142	0.0057	0.0369
	Medium	0.0453	0.0793	0.0481	0.1727
	Rich	0.1274	0.0481	0.0595	0.2350
Average		0.0632	0.0472	0.0378	0.1482

Like other forest products, a comparison of the availability of timber before and after CF was sought, but information on actual amounts of timber consumption before CF was lacking. However, perception of the respondents indicated that timber scarcity after CF has intensified.

The CF, NF, and PF were the major sources of timber for all respondents. But the proportion of dependency varied with social and economic status of the respondents. For instance, by economic status, poor and medium-class respondents had greater dependency on CF and NF than PF, while rich people were more dependent on PFs than NF (Table 5-6).

The perception of the respondents was assessed on the sub hypothesis "timber is more sufficiently available after CF". The majority of the respondents disagreed with this statement and the responses varied by economic and social status of the respondents. For instance, poor and DAG strongly disagreed (mean score 4.6 and 4.32, respectively), medium and NDAG were neutral (mean score 3.21 and 2.81, respectively), and the rich class respondents agreed (mean score 2.13) with the statement. Differences in responses were highly significant (Table 5-7).

**Table 5-7: Perception of the respondents on the statement "timber is more sufficiently available after CF"**

Statement	Status of respondent		Scale in %					Mean	df	$\chi^2$ value	Sig.
			St. agree		St. disagree						
			1	2	3	4	5				
Timber is more sufficiently available after CF	Social	DAG	2.1	8.5	12.8	8.5	68.1	4.32	4	34.8	***
		NDAG	31.9	22.1	4.4	16.1	25.5	2.81			
	Economic	Poor	0.0	6.4	4.3	12.8	76.5	4.6	8	66.3	***
		Medium	17.0	25.5	12.8	8.5	36.2	3.21			
		Rich	48.9	21.3	4.3	19.1	6.4	2.13			
	Average		22.0	17.7	7.1	13.5	39.7	3.31			

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

The timber harvesting, sale and distribution system varied with CFUGs. Timber prices varied greatly from group to group. For instance, there was no provision for timber harvesting in Aayarghari CFUG. In Tikuri CFUG, the existing practice of timber selling was through auction; this provision has been replaced by a fixed-price system, not yet implemented.

In Jhankridamar CFUG, timber collection was open all year round except three months in the rainy season. Two separate price rates for sal and miscellaneous species were



established. In each timber category (sal and miscellaneous), prices were also different according to quantity of timber required. The lowest level of prices (stumpage prices NRs. 1059.30 m<sup>-3</sup> for sal and NRs. 353.10 m<sup>-3</sup> for miscellaneous) was fixed for the first 1.1328m<sup>3</sup> household<sup>-1</sup> an<sup>-1</sup>. Medium-level prices (stumpage prices NRs. 3531.10 m<sup>-3</sup> for sal and NRs. 882.80 m<sup>-3</sup> for miscellaneous) were fixed for additional 1.1328m<sup>3</sup>, and highest prices (according to government fixed prices) were charged for additional demand.

In Budachaur CFUG, harvesting was allowed only for dead and dying trees. The prices were different for four different species as NRs. 5296.60, 3531.10, 1765.50, and 1412.40 m<sup>-3</sup> for sal, chiuri, chilaune, and khote salla, respectively. The prices were applicable for a limit of 1.2744m<sup>3</sup> timber household<sup>-1</sup> an<sup>-1</sup> including all species available. An auction system has been prescribed for the selling of surplus timber outside the group.

The timber harvesting and utilization system developed by CFUGs has a great influence on the availability of timber for users. In Budachaur CFUG, not a single poor, DAG, or medium class respondent received any timber from the CF in the last five years. In Tikuri CFUG, a few poor and DAG respondents received low quality timber from CF through an auction. In Aayarghari CFUG, timber obtained from a thinning operation in 1998 was equally distributed to the users free of cost (Table 5-8).

**Table 5-8: Average annual consumption of timber according to CFUG**

Respondents' status		Average annual consumption of timber from CF according to CFUG (m <sup>3</sup> year <sup>-1</sup> )			
		Aayarghari	Budachaur	Tikuri	Jhankridamar
Social	DAG	0.0283	0.0	0.0396	0.0085
	NDAG	0.0283	0.1897	0.0595	0.0906
Economic	Poor	0.0283	0.0	0.0396	0.0085
	Medium	0.0283	0.0	0.0227	0.0651
	Rich	0.0283	0.0832	0.0935	0.1331
Average		0.0283	0.0277	0.0519	0.0689

The office records of Jhankridamar CFUG and my interview with respondents showed that only one poor household (among 29 households) purchased 1.1328m<sup>3</sup> of timber from CF in the last five years. Eight medium (among 28), and 17 rich households (among 29) purchased 1.1328m<sup>3</sup> household<sup>-1</sup> of timber from the CF in the same period.

### 5.3.3 Availability of fodder

Fodder is the major source of livestock nutrition in the study area. Livestock rearing contributes directly to the income and health of the people. Similarly, dung and fodder residues are the major sources of compost used to enrich farm soils. The average annual consumption of fodder in the research area was 132.5 headload household<sup>-1</sup> and the average consumption rate was slightly higher for rich, medium and NDAG than poor and DAG respondents (Table 5-9). The consumption of fodder in all respondent households has decreased (average 22.8%) after CF. However, the amount decreased was greater (although not significant) for DAG (31.6%) and poor (31.1%) households than medium (21.3%), NDAG (18.3%), and rich (15.8%) respondents. Obviously, the higher the number of livestock owned by the respondents, the higher the rate of fodder consumption ( $r = .378$ , sig 2-tailed = .000).

**Table 5-9: Consumption of fodder before and after CF from various sources**

Respondents' status		Availability of fodder before and after CF (headload household <sup>-1</sup> year <sup>-1</sup> )								
		Before CF			After CF				Difference (after-before CF)	
		NF	PF	Total	CF	NF	PF	Total	Difference %	Test statistics
Social	DAG	169.6	7.0	176.6	69.6	43.7	7.5	120.8	-31.6	F value= 2.697, df=1, 139, sig =.103
	NDAG	149.1	20.1	169.2	77.8	28.5	32.0	138.3	-18.3	
Economic	Poor	174.2	1.1	175.3	74.4	45.2	1.1	120.7	-31.1	F value= 5.74, df=2, 138, sig =.280
	Medium	153.7	15.5	169.2	70.6	41.1	21.5	133.2	-21.3	
	Rich	139.9	30.7	170.6	80.1	14.5	49.0	143.6	-15.8	
Average		155.9	15.8	171.7	75.0	33.6	23.9	132.5	-22.8	

Community, national, and private forests were the major sources of fodder. The dependency upon PFs for fodder after CF increased in all social and economic classes of respondents, except the poor. But the fodder dependency among the various sources

varied with social and economic status of the respondents. For instance, PFs contributed about 34% of fodder supply to rich people, while it was less than 1% for the poor.

The perception of the respondents on the sub hypothesis "fodder is more sufficiently available after CF" was rated on a five-point Likert scale. The majority of the respondents disagreed with this statement; responses varied with economic and social status of the respondents (Table 5-10).

**Table 5-10: Perception of the respondents on "fodder is more sufficiently available after CF"**

Statement	Status of the respondent		Scale in %					Mean	df	$\chi^2$ value	Sig.
			St. agree		St. disagree						
			1	2	3	4	5				
Fodder is more sufficiently available after CF	Social	DAG	2.1	4.3	4.3	23.3	66.0	4.47	4	27.1	**
		NDAG	29.8	16.0	9.6	13.8	30.8	3.00			
	Economic	Poor	2.1	4.3	4.3	17.0	72.3	4.53	8	39.5	***
		Medium	25.5	10.6	6.4	19.1	38.4	3.34			
		Rich	34.0	21.3	12.8	14.9	17.0	2.60			
	Average		20.5	12.1	7.8	17.0	42.6	3.49			

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

### 5.3.4 Availability of agricultural implements

Many agricultural implements like plough-shares, handles, leveling tools, handles, poles, and pegs, were fully or partially based upon forest products.

The majority of the respondents (41.8% strongly disagreed and 22.7% disagreed) disagreed with the sub hypothesis "agricultural implements are more sufficiently available after CF" (Table 5-11).

**Table 5-11: Perception of the respondents on "agricultural implements are more sufficiently available after CF"**

Statement	Status of the respondent		Scale in %					Mean	df	χ <sup>2</sup> value	Sig.
			St. agree		St. disagree						
			1	2	3	4	5				
Agricultural implements more sufficiently available after CF	Social	DAG	2.1	8.5	8.5	21.3	59.6	4.28	4	14.6	**
		NDAG	21.3	16.0	6.4	23.3	33.0	3.31			
	Economic	Poor	2.1	6.4	2.1	17.0	72.4	4.51	8	39.5	***
		Medium	12.8	14.9	10.6	21.3	40.4	3.62			
		Rich	29.8	19.1	8.5	29.8	12.8	2.77			
	Average		14.8	13.5	7.1	22.7	41.9	3.63			

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

### 5.3.5 Availability of grass

Grass in the research area was used as both green and thatching grass. Green grass was harvested during the wet summer season (June-August), a fodder deficit period. The thatching grass was collected in the winter (December-February) when the grass becomes dried. Grass was the only product whose supply increased after CF. Grass supply increased due to the restriction upon free grazing and regulation in collection after CF.

Average annual consumption of grass after CF was 20.5 headload household<sup>-1</sup> and more than seventy percent was supplied from the CF. The consumption was slightly higher for the rich respondents followed by NDAG, medium, poor, and DAG. Supply of grass after CF increased for all classes of respondents. Although the increase in grass collection was slightly greater in medium class respondents followed by NDAG, poor, DAG and the rich, the differences were not significant.

Community, private, and national forests were the major sources of fodder. But the dependency rate varied with social and economic condition of the respondents. The dependency on PFs for grass was nil for poor, less than 5% for DAG and about 25% for rich respondents (Table 5-12).

**Table 5-12: Availability of grass before and after CF from various sources**

Respondents' status		Availability of grass before and after CF (headload household <sup>-1</sup> year <sup>-1</sup> )								
		Before CF			After CF			Difference (after-before CF)		
		NF	PF	Total	CF	NF	PF	Total	Difference %	Test statistics
Social	DAG	13.4	0.5	13.9	11.9	3.4	0.6	15.9	+14.4	F value= 1.202, df= 1, 139, sig =.275
	NDAG	12.6	5.4	18.0	16.5	2.2	4.2	22.9	+27.0	
Economic	Poor	15.3	0.1	15.4	15.8	2.3	0.0	18.1	+17.5	F value= .925, df= 2, 138, sig =. 399
	Medium	10.3	2.8	13.1	12.4	4.2	3.0	19.6	+49.6	
	Rich	13.0	8.4	21.4	16.6	1.3	6.1	24.0	+12.1	
Average		12.8	3.8	16.6	14.9	2.6	3.0	20.5	+26.4	

The majority of the respondents were neutral (mean score 2.9) on the sub hypothesis "grass is more sufficiently available after CF". The responses significantly varied with economic and social status of the respondents (Table 5-13).

**Table 5-13: Perception of respondents on "grass is more sufficiently available after CF"**

Statement	Status of the respondent		Scale in %					Mean	df	$\chi^2$ value	Sig.
			← St. agree St. disagree →								
			1	2	3	4	5				
Grass is more sufficiently available after CF	Social	DAG	12.8	19.1	8.5	12.8	46.8	3.62	4	16.0	**
		NDAG	39.4	17.0	13.8	9.6	20.2	2.54			
	Economic	Poor	8.5	12.8	6.4	12.8	59.5	4.02	8	52.4	***
		Medium	38.3	19.1	4.3	10.6	27.7	2.70			
		Rich	44.7	21.3	25.5	8.5	0.0	1.98			
	Average		30.5	17.7	12.1	10.6	29.1	2.90			

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

### 5.3.6 Collection process

The perception of the respondents of the forest product collection process was assessed in terms of differences in ease and time spent in the collection of products before and after CF. The majority of the respondents disagreed with both hypotheses "the process of forest products collection is easier than before" (total mean score 3.16) and "collection of forest products is less time-consuming than before" (total mean score 3.55).

The perception of the respondents varied with their economic and social status in both cases. In the case of the sub hypothesis "the process of forest products collection is easier than before", poor and DAG disagreed, NDAG and medium were neutral and the rich respondents agreed with the statement.

In the case of the sub hypothesis "the collection of forest products is less time-consuming than before " all the respondents except the rich and NDAG disagreed with the statement. The relationship between the perception of respondents and their economic and social status is significant (Table 5-14).

**Table 5-14: Perception of respondents on "The process of forest products' collection is easier and less time-consuming than before CF"**

Statement	Status of the respondent		Scale in %					Mean	df	$\chi^2$ value	Sig.
			St. agree		St. disagree						
			1	2	3	4	5				
1. The process of forest products' collection is easier than before.	Social	DAG	10.5	12.7	4.3	17.3	55.2	3.94	4	15.57	**
		NDAG	35.1	19.1	4.3	16.0	25.5	2.78			
	Economic	Poor	8.5	8.5	2.1	10.6	70.3	4.26	8	55.860	***
		Medium	23.4	27.7	0.0	19.1	29.8	3.04			
		Rich	48.9	14.9	10.6	19.1	6.5	2.19			
Average			26.9	17.0	4.2	16.3	35.5	3.16			
2. The collection of forest products is less time-consuming than before.	Social	DAG	6.4	14.9	2.1	14.9	61.7	4.11	4	10.87	*
		NDAG	24.4	16.0	4.3	19.1	36.2	3.27			
	Economic	Poor	6.4	6.4	2.1	8.5	76.6	4.43	8	45.545	***
		Medium	17.0	25.5	0.0	14.9	42.6	3.4			
		Rich	31.9	14.9	8.5	29.8	14.9	2.81			
Average			18.4	15.6	3.5	17.7	44.7	3.55			

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

### 5.3.7 Prices of forest products

According to CF legislation, CFUGs have the right to decide the prices of their forest products. That is why the prices fixed by CFUGs varied from group to group. Bedding materials, fodder, and fuelwood were distributed free of cost in all groups after paying user's fee. Grass collection was free in Jhankridamar and Aayarghari CFUG, while nominal prices were charged in Tikuri and Budachaur CFUGs. Timber was the main

economically valuable product for the users and its price was varied and controversial in all CFUGs.

The majority of users did not accept the prices fixed for forest products. When the perception of the users was assessed on a five-point Likert scale, about 70% of the users strongly disagreed or disagreed with the statement " prices of forest products are more reasonable than before CF ". The responses significantly varied according to social and economic status of the respondents (Table 5-15).

**Table 5-15: Perception of respondents on " prices of forest products are more reasonable than before CF "**

Statement	Status of the respondents		Scale in %					Mean	df	$\chi^2$ value	Sig.
			St. agree		St. disagree						
			1	2	3	4	5				
The prices for forest products are more reasonable than before	Social	DAG	0.0	4.3	6.4	38.3	51.0	4.36	4	18.4	**
		NDAG	20.2	13.8	6.4	34.1	25.5	3.31			
	Economic	Poor	0.0	2.1	2.1	27.7	68.1	4.62	8	66.3	***
		Medium	4.3	12.8	6.4	46.7	29.8	3.85			
		Rich	36.2	17.0	10.6	31.9	4.3	2.51			
	Average		13.5	10.6	6.4	35.4	34.1	3.66			

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

## 5.4 Contribution of CF in farming system

The farming system in the research area is similar to the general hill-farming system of Nepal as discussed in Chapter Three. The forestry-farming linkage is very strong. Land holding size of the majority population is very small. The farming system is primarily based on livestock and forests. Livestock are used for draught power and nutrients while the forests contribute to farmland conservation by preventing soil loss and enhancing land stability, adding nutrients (through bedding materials and fodder for compost), and providing agricultural implements.

### 5.4.1 Livestock rearing before and after CF

According to the respondents, livestock numbers decreased by about 48% in the last five years. Many factors might be responsible for this, but one of the key factors as

reported by the respondents was the restriction upon free grazing land and fodder collection after CF. The rate of decline was significantly greater for goat and sheep numbers (about 50%) than for cattle and buffalo (about 39%). The grazing of goats and sheep in forests in the research area is more common than that of buffalo.

The rate of decrease in livestock numbers is associated with economic and social status of the respondents. The rate is greater for poor (59%) followed by medium (43.2%) and rich (31.2%) respondents. Similarly, DAG livestock holdings declined more rapidly than those of NDAG (Table 5-16).

**Table 5-16: Distribution of Livestock before and after CF**

Respondents' status		Average number of livestock before and after CF								
		Cattle/ Buffalo			Goat/ sheep			Total		
		before	after	Statistical test for difference	before	after	Statistical test for difference	before	after	Statistical test for difference
Social	DAG	4.14	2.47	F value= 0.097 df= 1, 139, sig =.756	5.17	1.57	F value= 6.562 df= 1, 139, sig =.011	9.83	4.04	F value= 5.362, df= 1, 139, sig= .022
	NDAG	4.49	3.95		4.14	2.5		10.15	6.45	
Economic	Poor	5.11	2.15	F value= 0.415 df= 2, 138, sig =.661	4.49	1.38	F value= 3.066 df= 2, 138, sig =.050	8.79	3.53	F value= 1.715, df= 2, 138, sig= .184
	Medium	3.85	3.66		5.11	2.38		10.64	6.04	
	Rich	4.48	4.55		3.85	2.81		10.70	7.36	

#### 5.4.2 Availability of grazing land

The restriction of free grazing was one of the major achievements of CF. The restriction was strict in plantation areas of all CFUGs, and relatively flexible in the mature forests. According to the CFUGs, grazing was completely restricted in Aayarghari and Tikuri, and partially restricted in Budachaur and Jhankridamar.

The majority of the respondents disagreed (total mean score 3.81) with the sub hypothesis "access to grazing land is more sufficiently available after CF". The poor respondents disagreed more strongly (mean score 4.34) than the medium respondents (mean score 3.85), while the rich respondents were nearly neutral (mean score 3.23). Similarly, DAG disagreed more (mean score 4.23) than NDAG (mean score 3.56) with the sub hypothesis (Table 5-17).



**Table 5-17: Perception of the respondents on "access to grazing land is more sufficiently available after CF"**

Statement	Status of the respondent		Scale in %					Mean	df	$\chi^2$ value	Sig.
			St. agree		St. disagree						
			1	2	3	4	5				
Access to grazing land is more sufficiently available after CF	Social	DAG	2.1	4.3	12.8	23.4	57.4	4.30	4	12.2	*
		NDAG	7.4	12.8	26.6	22.3	30.9	3.56			
	Economic	Poor	2.1	4.3	14.9	14.9	63.8	4.34	8	24.0	**
		Medium	4.3	8.5	21.3	29.8	36.1	3.85			
		Rich	10.6	17.0	29.8	23.4	19.2	3.23			
	Average		5.7	9.9	22.0	22.7	39.7	3.81			

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

### 5.4.3 Collection of bedding materials

The sources of bedding materials for livestock in the research area were fallen dry leaf litter (*patkar*) and lopped green foliage of trees (*sottar*) collected from the forest. The collection of bedding material is common only in the rainy season (June-September), since compost formation requires water in the compost pit located outside the livestock shed. The common perception of the respondents was that bedding materials are more available after CF, suggesting that forest biomass has increased. In contrast, the actual amount collected by users decreased after CF.

Decreased bedding material collection after CF resulted from the lack of livestock feces due to decreasing numbers of livestock and installation of biogas plants by many households. In my observation during the survey, 25% of the respondent households installed a biogas plant and more than 80% of those were ranked as rich.

Decline in bedding material collection after CF was greater for poor class respondents (41%), while it was nominal for medium (7%) and rich households (1%). Similarly, the decrease was greater for DAG (41%) than NDAG (5%) (Table 5-18).

**Table 5-18: Collection of bedding materials before and after CF from various sources**

Respondent's status		Collection of bedding materials before and after CF (headload household <sup>-1</sup> year <sup>-1</sup> )								
		Before CF			After CF			Difference (after-before CF)		
		NF	PF	Total	CF	NF	PF	Total	Difference %	Test statistics
Social	DAG	94.4	0.9	95.3	45.0	10.2	0.9	56.1	-41.1	F value= 9.467, df= 1, 139, sig.=.003
	NDAG	86.9	1.1	88.0	74.4	7.7	1.4	83.5	-5.1	
Economic	Poor	91.9	0.0	91.9	44.6	6.2	0.0	50.8	-44.7	F value= 5.718, df= 2, 138, sig =.004
	Medium	86.1	0.9	87.0	67.2	12.4	1.2	80.8	-7.1	
	Rich	90.1	2.2	92.3	82.0	7.0	2.4	91.4	-1.0	
Average		89.4	1.0	90.4	64.6	8.5	1.2	74.3	-17.8	

The perception of the respondents was assessed on the sub hypothesis statement "bedding material is more utilized after CF". The poor respondents strongly disagreed (mean score 4.11), medium were neutral (mean score 2.85) and the rich respondents agreed (mean score 2.36) with the statement. Similarly, DAG disagreed (mean score 4.23) and NDAG were neutral (mean score 2.73) with the statement. The association between the perception of the respondents with their economic and social status was significant (Table 5-19).

**Table 5-19: Perception of respondents on "bedding material is more utilized after CF"**

Statement	Status of the respondent		Scale in %					Mean	df	$\chi^2$ value	Sig.
			St. agree		St. disagree						
			1	2	3	4	5				
More bedding material is more utilized after CF	Social	DAG	10.6	14.9	8.5	10.6	55.4	3.85	8	37.7	***
		NDAG	38.3	14.9	7.4	13.8	25.6	2.73			
	Economic	Poor	10.6	8.5	6.4	8.5	66.0	4.11	4	16.4	**
		Medium	34.1	19.1	6.4	8.5	31.9	2.85			
		Rich	42.6	17.0	10.6	21.3	8.5	2.36			
	Average		29.1	14.9	7.8	12.8	35.5	3.11			

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

#### 5.4.4 Compost production and its contribution to farming

Respondent's perception of compost production and its contribution to farming was assessed in two sub hypothesis statements "more compost is being collected after CF" and "agricultural production has been increased after the availability of more compost". Except the rich and NDAG, respondents disagreed with both statements. Poor respondents with smaller land holdings reported that their agricultural production had significantly decreased during the last five years. As my respondents during the FGD stated:

*... we don't need more compost, although it has been increased in the forests and available free of cost, because we have very limited and fragmented land holding and the livestock are also decreasing. So, our farm production is decreasing day by day.*

Perceptions of the respondents of both sub hypothesis statements were significantly associated with their economic and social status (Table 5-20).

**Table 5-20: Perception of respondents on "more compost is being produced after CF"**

Statement	Status of the respondent		Scale in %					Mean	df	$\chi^2$ value	Sig.
			St. agree			St. disagree					
			1	2	3	4	5				
1. More compost is being produced after CF	Social	DAG	2.1	14.9	12.8	17.0	53.2	4.04	4	11.7	*
		NDAG	16.0	14.9	21.3	19.1	28.7	3.30			
	Economic	Poor	2.1	8.5	8.5	14.9	66.0	4.34	8	40.9	***
		Medium	8.5	17.0	17.0	19.1	38.4	3.62			
		Rich	23.4	19.1	29.8	21.3	6.4	2.68			
Average			11.3	14.9	18.4	18.4	36.9	3.55			
2. Agricultural production has been increased after the availability of more compost	Social	DAG	4.3	14.9	2.1	23.4	55.3	4.11	4	19.3	**
		NDAG	28.7	17.0	10.7	14.9	28.7	2.98			
	Economic	Poor	6.4	12.8	0.0	14.8	66.0	4.21	8	50.5	***
		Medium	14.9	17.0	4.3	27.7	36.1	3.53			
		Rich	40.4	19.1	19.1	10.7	10.7	2.32			
Average			20.6	16.3	7.8	17.7	37.6	3.35			

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

## 5.5 Forest-based occupation and availability of products

### 5.5.1 Occupation based on forest products

The livelihood of about 18 % of the respondents was based on forests. Among them, about 90% were poor and DAG, while the rest of the respondents were medium and NDAG. Within forest-based occupations, fuelwood selling was the major occupation (54%) followed by selling charcoal (35%), and wood processing (11%) (Table 5-21).

**Table 5-21: Forest-based occupation of the respondents**

Status of the respondents		Forest-based occupation (Response in %)				
		No	Yes			
			Fuelwood sale	Charcoal sale	Wood processing	Yes total
Social	DAG (n=47)	51.1	29.8	19.1	0.0	48.9
	NDAG (n=94)	96.8	0.0	0.0	3.2	3.2
Economic	Poor (n=47)	51.1	27.7	19.1	2.1	48.9
	Medium (n=47)	93.6	2.1	0.0	4.3	6.4
	Rich (n=47)	100	0.0	0.0	0.0	0.0
Total (n=141)		81.6	9.9	6.4	2.1	18.4

### 5.5.2 Availability of forest products for forest-based occupation

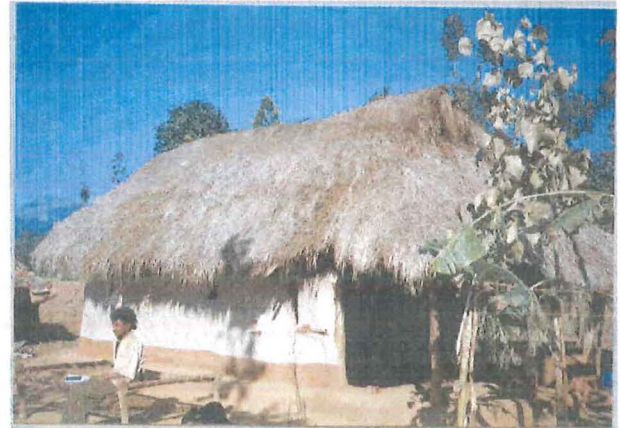
Respondents whose livelihood was based on forests strongly disagreed (96%) or disagreed (4%) with the sub hypothesis statement "availability of forest products for their particular occupation has increased after CF". Fuelwood selling is restricted in all CFUGs and the fuelwood sellers are now forced to find new occupations. Although charcoal is essential to all for its use in sharpening farm and household tools, it is not available sufficiently. The regulations developed by users groups for fuelwood were not in favor of charcoal production in many CFUGs (Plate 3-1). One of the charcoal makers during a focus group meeting said:

*...we need mature heartwood for charcoal but we are not allowed to carry out any harvesting tools in the CF during fuelwood collection, how can we collect fuelwood for charcoal?*

**Plate 3: Forest products are the sources of subsistence use and livelihood for many poor people**



**Plate 3-1: Charcoal used in aaran**



**Plate 3-2: Grass used in thatching**



**Plate 3-3: Fodder and bedding materials**



**Plate 3-4: Fodder for livestock**

## 5.6 Participation of users in community forestry

### 5.6.1 Participation in important meetings

The participation of the respondents was assessed by their physical presence at events like finalization of constitution and operational plan, formation of committee, and decision on forest products' distribution. The survey found that the participation of economically poor and socially DAG was very low in all events (Table 5-22).

**Table 5-22: Participation of users in important meetings**

Statements and attributes		Responses according to social economic status of the respondents (%)						
Statements	Attributes	Social status			Economic status			
		DAG (n=47)	NDAG (n=94)	Test statistics	Poor (n=47)	Medium (n=47)	Rich (n=47)	Test statistics
1. Attended meeting when constitution of the CFUG was finalized	Yes	48.9	67.0	df= 1 X <sup>2</sup> = 4.308 Sig. *	38.3	68.1	76.6	df= 2 X <sup>2</sup> = 15.978 Sig. ***
	No	51.1	33.0		61.7	31.9	23.4	
2. Attended meeting when committee was formed	Yes	66.0	80.9	df= 1 X <sup>2</sup> = 3.798 Sig. *	57.4	80.9	89.4	df= 2 X <sup>2</sup> = 14.030 Sig. **
	No	34.0	19.1		42.6	19.1	10.6	
3. Attended meeting when operational plan was finalized	Yes	57.4	83.0	df= 1 X <sup>2</sup> = 10.743 Sig. **	51.1	85.1	87.2	df= 2 X <sup>2</sup> = 4.308 Sig. ***
	No	42.6	17.0		48.9	14.9	12.8	
4. Attended meeting when sale and distribution of forest products was decided	Yes	66.0	75.5	df= 1 X <sup>2</sup> = 1.436 Sig. -	55.3	78.7	83.0	df= 2 X <sup>2</sup> = 10.421 Sig. **
	No	34.0	24.5		44.7	21.3	17.0	

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

### 5.6.2 Participation in general assembly

General assembly is the authorized body of the CFUG that provides opportunities for users to incorporate their voices in the decision-making process. In this regard, how often users of all economic and social classes participate in the assembly and whether their voices are actually incorporated or not is very crucial. The survey showed that the poor and DAG were attending general assembly less frequently than rich and NDAG. Although participating, more than fifty percent of poor and DAG were not feeling free to express their opinions and about a quarter of them believed that their voices were not heard, respected, or considered by others (Table 5-23).

**Table 5-23: Participation in general assembly**

Statement	Values	Responses according to social and economic status of the respondents (%)						
		Social status			Economic status			
		DAG (n=47)	NDAG (n=94)	Test statistics	Poor (n=47)	Medium (n=47)	Rich (n=47)	Test statistics
1. How often you have attended general assembly of CFUG?	Always	61.7	77.7	df= 2 X <sup>2</sup> = 8.218 Sig. *	51.1	76.6	89.4	df= 4 X <sup>2</sup> = 20.441 Sig. ***
	Some times	31.9	22.3		42.6	23.4	10.6	
	Never	6.4	0.0		6.4	0.0	0.0	
2. Did you feel free to put your views?	Yes	48.9	81.9	df= 1 X <sup>2</sup> = 16.525 Sig. ***	46.7	72.3	93.6	df= 2 X <sup>2</sup> = 25.036 Sig. ***
	No	51.1	18.1		53.3	27.7	6.4	
3. Did other people respect and consider your opinion?	Yes	27.7	71.3	df= 1 X <sup>2</sup> = 24.285 Sig. ***	19.1	61.7	89.4	df= 2 X <sup>2</sup> = 47.905 Sig. ***
	No	72.3	28.7		80.9	38.3	10.6	

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

This table shows participation of users in terms of their physical presence as mentioned above. However, as many FGDs concluded the active participation of users especially DAG and poor is far lower than the figures stated. With the provision of CF rules, the general assembly needs a two-thirds majority of the user households to pass any decision. That is why many CFUGs have made the participation of users mandatory. For example, in Tikuri CFUG, a user households that fails to participate in the assembly once must pay a fine of NRs.50, equivalent to a day's wage. While discussing this issue during FGD in Tikuri, one respondent said:

*...the fine is very high so we are now sending even our kids in the general assembly to show our participation...in many cases we had signed upon the minute book at home, to make two-thirds majority on the already-passed decisions by the assembly as requested by committee members.*

### 5.6.3 Participation in committee

The participation of the respondents was further examined in terms of their appointment to the users committee, a decision-making body of the CFUG. The result showed that about 25% of the respondents were at least once elected to the committee during the last five years. Out of the elected members, 53% were rich, 39% were medium, and only 8% were poor respondents. Similarly, according to the social status of the respondents, 86%

of elected members were NDAG and only 14% were DAG, while rich respondents captured more than 90% of the key positions<sup>6</sup> (Table 5-24).

**Table 5-24: Respondent's participation in committee**

Statement	Status of the respondent		Responses in %					Test Statistics		
			<2yr in general position	>2yr in general position	<2 yr in key position	>2 yr in key position	Not elected yet	df	χ <sup>2</sup> value	Sig
Respondent's participation in committee	Social	DAG	4.3	6.4	0.0	0.0	89.3	4	10.1	*
		NDAG	9.6	9.6	3.2	10.6	67.0			
	Econ.	Poor	4.3	2.1	0.0	0.0	93.6	8	31.3	***
		Med.	12.8	14.9	0.0	2.1	70.2			
		Rich	6.4	8.5	6.4	19.1	59.6			
	Average		7.8	8.5	2.1	7.1	74.5			

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

The poor and DAG respondents if selected were only in general positions (members) and for a short time. Most of the poor and DAG respondents in the committee were very recently selected during the revision of FOP. EFEA encouraged the participation of DAG in decision-making process (EFEA,1999), as it was one of the project's objectives; the results are yet to be observed.

The perception of the respondents was further assessed on the sub hypothesis statement "each member has an equal opportunity to become elected to committee". The perception of the respondents significantly varied according to their economic and social status (Table 5-25).

**Table 5-25: Equal opportunity to become elected to committee**

Statement	Status of the respondent		Scale in %					Mean	df	χ <sup>2</sup> value	Sig.
			St. agree		St. disagree						
			←	→	1	2	3				
Each member has an equal opportunity to become elected in the committee.	Social	DAG	6.4	19.1	0.0	6.4	68.1	4.11	8	48.7	***
		NDAG	36.2	22.3	1.1	12.7	27.7	2.73			
	Economic	Poor	2.1	17.0	0.0	8.5	72.4	4.32	4	24.9	***
		Medium	23.4	25.5	2.1	19.2	29.8	3.06			
		Rich	53.2	21.3	0.0	4.3	21.2	2.19			
	Average		26.2	21.3	0.7	10.7	41.1	3.19			

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

<sup>6</sup> Key positions include chairman, vice-chairman, secretary, joint secretary and treasurer.



### 5.6.4 Respondent's interest in selection to committee

The respondents were asked whether they were interested in selection to committee or not? Nearly half of the respondents showed their interest in committee, and no significant association was found between the respondent's responses and their economic and social status (Table 5-26).

**Table 5-26: Respondents interest in selection to committee**

Statement	Status of the respondent		Responses in %		df	$\chi^2$ value	Sig
			Yes	No			
Are you or other household members interested in serving as a committee member?	Social	DAG	42.6	57.4	1	0.513	-
		NDAG	48.9	51.1			
	Economic	Poor	38.3	61.7	2	2.7	-
		Medium	55.3	44.7			
		Rich	46.8	53.2			
Average		46.8	53.2				

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

### 5.6.5 Participation in awareness and empowerment process

About 25 % of the respondents attended CF-related training, workshops and study tours. Among them, 51% were rich respondents, followed by 37% medium and the rest 12 % poor. Most of the poor and medium class respondents participated in such events once or twice, while the respondents who participated in such events more than two times were all rich and NDAG (Table 5-27). Thus, in reality rich people who are supposed to be more educated and aware than others were utilizing 67% of the awareness and empowerment opportunities.

**Table 5-27: Participation in awareness and empowerment process**

Statement	Status of the respondent		Response in %				df	$\chi^2$ value	Sig.
			Never attended	Attended					
				once	twice	> twice			
Training, workshop, or study tour attended? If yes, how many?	Social	DAG	91.5	6.4	2.1	0.0	3	10.47	**
		NDAG	67.0	18.1	9.6	5.3			
	Economic	Poor	91.5	6.4	2.1	0.0	6	23.949	***
		Medium	72.3	23.4	4.3	0.0			
		Rich	61.7	12.8	14.9	10.6			
Average		75.2	14.2	7.1	3.5				

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

The majority of the respondents (mean score 3.53) disagreed with sub hypothesis statement "process of nomination of candidates for training, workshop or study tour is fair". The responses varied with economic and social status of the respondents. The majority of the poor and medium respondents disagreed while the rich respondents were neutral with the statement. Similarly, the DAG disagreed and NDAG were neutral with the statement (Table 5-28).

**Table 5-28: Perception of the respondents on "process of the nomination of candidates for training, workshop, and study tour is fair"**

Statement	Status of the respondent		Scale in %					Mean	df	$\chi^2$ value	Sig.
			St. agree ←			→ St. disagree					
			1	2	3	4	5				
Process of the nomination of candidates for training, workshop, or study tour is fair	Social	DAG	8.5	17.0	4.3	6.4	63.8	4.00	4	16.9	**
		NDAG	28.7	10.6	1.1	21.3	38.3	3.30			
	Economic	Poor	4.3	17.0	0.0	8.5	70.2	4.23	8	35.0	***
		Medium	19.1	10.6	6.4	21.3	42.6	3.57			
		Rich	42.6	10.6	0.0	19.1	27.7	2.79			
	Average			22.0	12.7	2.1	16.3	46.8	3.53		

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

The CF-related study tour is one of the popular and successful programs to raise awareness, especially for illiterate people. This program is, for many users, an incentive to see new places and people and sharing ideas. But committee members, their families, and other elites mainly utilized the program. So, there was great dissatisfaction of the DAG and poor respondents with this program.

## 5.7 Benefit-sharing system of CF

### 5.7.1 Forest products sale and distribution

The poor and DAG respondents disagreed (mean score 3.70 and 3.51, respectively), medium were neutral (mean score 2.64), and the NDAG and rich respondents agreed (mean score 2.29 and 1.74, respectively) with the statement "forests products sale and distribution system is good" (Table 5-29).

**Table 5-29: Forest products sale and distribution**

Statement	Status of the respondent		Scale in %					Mean	df	$\chi^2$ value	Sig.
			St. agree ←————→ St. disagree								
			1	2	3	4	5				
Forest products sale and distribution system is good.	Social	DAG	14.9	21.3	2.1	21.3	40.4	3.51	4	18.831	**
		NDAG	51.1	18.1	1.1	10.6	19.1	2.29			
	Economic	Poor	10.6	19.1	0.0	29.8	40.5	3.70	8	44.278	***
		Medium	38.3	21.3	4.3	10.6	25.5	2.64			
		Rich	68.1	17.0	0.0	2.1	12.8	1.74			
	Average			39.0	19.1	1.4	14.2	26.3	2.70		

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

### 5.7.2 Collection and utilization of user groups' fund

Forest products sale was one of the major sources of income for CFUGs. Other sources of income were annual user's fees, support from DFO and other donors and interest from the money loaned out. Similarly, the major expenditure items were remuneration followed by infrastructure, forest development and funds loans out. The detail of the four sample CFUGs income and expenditure in fiscal year 1998/99 is presented in Appendices 7&8, and summarized in Table 5-30.

**Table 5-30: Major sources of income and expenditure items in four CFUGs (1998/99)**

S.N.	Major income sources	Income %	Major expenditure items	Expenditure %
1	Forest products sale	57	Remuneration to watchmen, committee members and technicians	36
2	Annual user's fees, fines and others	16	Infrastructure and office goods	24
3	Support from DFO/others	14	Forest development and extension	20
4	Interest from the loans	13	Loans out	19
Total		100	Total	100

The respondents' perceptions were assessed in fund collection and utilization aspects of CFUGs. The poor and DAG respondents disagreed (mean score 3.79 and 3.70, respectively), while medium, NDAG, and rich respondents agreed (mean score 2.45,

2.16, and 1.79, respectively) with the sub hypothesis statement "fund collection system is satisfactory".

Similarly, poor and DAG disagreed (mean score 4.15 and 3.94, respectively) and the rich, medium and NDAG were neutral (mean score 2.77, 2.98 and 2.98, respectively) with sub hypothesis statement " user group's fund is properly utilized".

The majority of the respondents disagreed (total mean score 3.35) with the sub hypothesis statement "expenditure of CFUG fund covers the interest of most users ". The poor and DAG disagreed (mean score 4.38 and 4.13, respectively), medium and NDAG were neutral (mean score 3.19 and 2.96, respectively), and the rich respondents agreed (mean score 2.47) with the sub hypothesis (Table 5-31).

**Table 5-31: Collection and utilization of user group's fund**

Statement	Status of the respondent		Scale in %					Mean	df	$\chi^2$ value	Sig.
			St. agree		St. disagree						
			1	2	3	4	5				
1. Fund collection system is satisfactory	Social	DAG	10.6	21.3	0.0	23.4	44.7	3.70	3	28.44	**
		NDAG	54.3	19.1	0.0	9.6	17.0	2.16			
	Economic	Poor	8.5	23.4	0.0	17.0	51.1	3.79	6	39.833	***
		Medium	44.6	21.3	0.0	12.8	21.3	2.45			
		Rich	66.0	14.8	0.0	12.8	6.4	1.79			
Average		39.7	19.8	0.0	14.2	26.3	2.67				
2. User group's fund is properly utilized	Social	DAG	4.3	19.1	8.5	14.9	53.2	3.94	4	15.206	**
		NDAG	30.8	18.1	4.3	16.0	30.8	2.98			
	Economic	Poor	2.1	14.9	8.5	14.9	59.6	4.15	8	28.474	***
		Medium	23.4	27.7	4.3	17.0	27.6	2.98			
		Rich	40.4	12.8	4.3	14.9	27.6	2.77			
Average		22.0	18.4	5.7	15.6	38.3	3.30				
3. Expenditure of the fund covers interest of most users	Social	DAG	4.3	14.9	4.3	17.0	59.6	4.13	4	21.474	***
		NDAG	27.7	20.2	4.3	24.5	23.4	2.96			
	Economic	Poor	2.1	10.6	0.0	21.3	66.0	4.38	8	46.675	***
		Medium	14.9	27.7	6.4	25.5	25.5	3.19			
		Rich	42.6	17.0	6.4	19.1	14.9	2.47			
Average		19.9	18.4	4.3	22.0	35.5	3.35				

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

The main dissatisfaction of users with the fund collection system was the high price of timber and high fine rates (in Tikuri CFUG) as discussed earlier. In the case of expenditure items, the majority of the users criticized the greater expenditure in remuneration and administrative items than forest development activities.

Most of the users were in favor of the implementation of forest-based income-generating activities. The majority of the poor and DAG respondents strongly disagreed that the loan distribution programs implemented in Tikuri CFUG at present and in Budachaur in the past was in favor of them. They were disgruntled with this activity for not providing loans to them with an assumption that they did not have sufficient property to return the loan. Rim Bahadur Sunar, a DAG and extremely poor respondent of Budachaur CFUG said:

*... before five years, my wife gave birth to a daughter and she died immediately... I had no money to buy a cup of milk for my newly born, motherless baby. So I went to meet CFUG committee members and asked NRs. 500 loan from CFUG fund ..., but they denied providing that and said you have not enough property to convince us that you will return this money. Ultimately my daughter also died after 17 days.*

### **5.7.3 Discrimination in benefit-sharing system**

About 35% of the respondents have an opinion that there is discrimination in the benefit-sharing system of CFUGs. Those who said there is discrimination were mainly poor and DAG (68%) followed by medium (26%) and the rich (6%) class respondents. Among the respondents who alleged that there is discrimination, 54% said the discrimination was because of economic condition, 22% said because of caste and the rest 24% said both economic condition and caste are the reasons for discrimination (Table 5-32).

**Table 5-32: Respondent's perception of discrimination in benefit-sharing system**

Statement	Status of respondent		Response in %				df	$\chi^2$ value	Sig.
			No	Yes					
				Because of caste	Because of economic condition	Because of both			
Is there any discrimination in benefit-sharing system because of economic or social status of users?	Social	DAG	29.8	17.0	31.9	21.3	3	40.374	***
		NDAG	81.9	3.2	12.8	2.1			
	Economic	Poor	27.7	17.0	36.2	19.1	6	47.470	***
		Medium	72.3	6.4	14.9	6.4			
		Rich	93.6	0.0	6.4	0.0			
	Average		64.5	7.8	19.2	8.5			

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

## 5.8 Chapter summary

### 5.8.1 Socio-economic condition of the respondents

- A significant relationship was observed between the social and economic condition of the respondents. About 90% of socially DAG respondents were economically poor and more than 90% of rich respondents were socially NDAG.
- Average family size (median=6) has no relationship with social and economic status of the respondents.
- Land holding size was significantly related to both social and economic condition of the respondents.
- Most of the respondents own livestock. Average number of livestock was 5.6 household<sup>-1</sup> and the rich and NDAG respondents reared more livestock than poor and DAG.

### 5.8.2 Availability of forest products

- The use of major forest products (timber, fuelwood, fodder, and agricultural implements) except grass has decreased with the implementation of CF for all social and economic classes of respondents. But the difference in the consumption of

forest products before and after CF was greater for poor and DAG than rich and NDAG respondents.

- The perception of the respondents of the availability of forest products was similar for all the products. On average, rich and NDAG were in favor and poor and DAG were against the statements that forest products are more sufficiently available after CF. Greatest disparity was observed in the availability of timber.
- The sale and distribution of forest products varied among the CFUGs. In general, fuelwood, fodder and bedding materials were free of cost after paying user's fee. Timber sold at fixed price and at auction.
- More than 70% of the respondents disagreed that the price of forest products is more reasonable than before.
- Poor and DAG were more dependent on community and NFs than the NDAG and rich respondents for their basic requirements of forest products.
- As a result of the restriction on the exploitation of resources in CFs, pressure on PFs has increased significantly.

**Table 5-33: Summary of the perception of respondents on availability of forest products (Mean score responses in strongly agree to strongly disagree, 1-5 scale)**

Statement	Mean score of the perception according to social and economic status of the respondents							Average response
	Social			Economic				
	DAG	NDAG	Sig.	Poor	Medium	Rich	Sig.	
1. Fuelwood is more sufficiently available after CF	4.30	3.09	***	4.40	3.70	2.36	***	3.49
2. Timber is more sufficiently available after CF	4.32	2.81	***	4.6	3.21	2.13	***	3.31
3. Fodder is more sufficiently available after CF	4.47	3.00	***	4.53	3.34	2.60	***	3.49
4. Agricultural implements are more sufficiently available after CF	4.28	3.31	**	4.51	3.62	2.77	***	3.63
5. Grass is more sufficiently available after CF	3.62	2.54	**	4.02	2.70	1.98	***	2.90
6. The process of forest products collection is easier than before	3.94	2.78	**	4.26	3.04	2.19	***	3.16
7. The collection of forest products is less time-consuming than before	4.11	3.27	*	4.43	3.4	2.81	***	3.55
8. The price of forest product is more reasonable than before	4.36	3.31	**	4.62	3.85	2.51	***	3.66

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

### 5.8.3 Contribution of CF in farming

- The farming system is primarily based on livestock for draught power and nutrients and on forests for farming inputs, and agricultural implements.

- Livestock numbers have decreased 48% in the last five years (after CF) in the research area. The rate of decrease was greater for goats and sheep than for cattle and buffalo. Similarly, the decrease in livestock numbers was greater for poor and DAG than for rich and NDAG respondents. Restriction upon free grazing land after CF is one of the major causes stated.
- Users have a general perception that bedding material is more available after CF as a result of biomass increment. But the utilization of bedding material for compost is declining. Part of this is due to decreased number of livestock and installment of biogas plants by many households.

**Table 5-34: Perception of respondents of contribution of CF to farming (Responses in strongly agree to strongly disagree, 1-5 scale)**

Statement	Mean score of the perception according to social and economic status of the respondents							Average response
	Social			Economic				
	DAG	NDAG	Sig.	Poor	Medium	Rich	Sig.	
1. Access to grazing land is more sufficiently available after CF	4.3	3.56	*	4.34	3.85	3.23	**	3.81
2. Bedding material is more utilized after CF	3.85	2.73	**	4.11	2.85	2.36	***	3.11
3. More compost is being produced after CF	4.04	3.30	*	4.34	3.62	2.68	***	3.55
4. Agricultural production has been increased after the availability of more compost	4.11	2.98	**	4.21	3.53	2.32	***	3.35

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

#### 5.8.4 Forest-based occupation and livelihood

- Eighteen percent of the respondents' (more than 90% of which were poor and DAG) livelihoods were primarily based on forest products before CF. The majority of them were fuelwood sellers followed by charcoal makers and those involved in timber processing.
- Almost all the respondents whose livelihood was based on forest products disagreed that the availability of forest products for their particular occupation has been increased after CF.



### **5.8.5 Participation in meetings and general assembly**

- Participation of poor and DAG was very low in important events like finalization of constitution and FOP, committee formation, and decision-making about the sale and distribution of forest products.
- The majority of poor and DAG didn't participate in the general assembly of CFUG; the majority of those who participated didn't feel free to state their opinions and two-thirds of them believed that their opinions were not respected or considered by others.

### **5.8.6 Participation in committee**

Among the CFUG members elected to committee in the last five years after CF, 53% were rich and only 8% were poor respondents. Poor and DAG if elected to committee were only in general positions and for short periods.

### **5.8.7 Participation in awareness and empowerment opportunities**

The rich and NDAG respondents mostly captured the opportunities for awareness and empowerment of users. Among the total opportunities available in the last five years, more than 60% were enjoyed by the rich class members while only 8% of opportunities went to poor respondents, who were relatively less empowered.

### **5.8.8 Benefit-sharing system**

About one-third of the respondents (68% of them were poor and DAG) reported that there is discrimination in the benefit-sharing system of CF. More than half of them felt that the discrimination was because of their economic condition.

**Table 5-35: Summary of the perception of the respondents on benefit-sharing system (responses in 1 strongly agree to 5 strongly disagree scale)**

Statement	Mean score of the perception according to social and economic status of the respondents							Average response
	Social			Economic				
	DAG	NDAG	Sig.	Poor	Medium	Rich	Sig.	
1.Forest products sale and distribution system is good	3.51	2.29	**	3.70	2.64	1.74	***	2.70
2.Fund collection system is satisfactory	3.70	2.16	**	3.79	2.45	1.79	***	2.67
3.User group's fund is properly utilized	3.94	2.98	**	4.15	2.98	2.77	***	3.30
4.Expenditure of the fund covers interest of most users	4.13	2.96	***	4.38	3.19	2.47	***	3.35

Significance levels: - none, \* <0.05, \*\*<0.01, \*\*\*<0.001

## VI. DISCUSSION

### 6.1 Introduction

This chapter discusses the results presented in the previous chapter with respect to possible causes and consequences. Results are also compared with those of similar studies. This chapter has been divided into seven sections. The second section deals with forest products availability, the third with the contribution of CF in the farming system and the fourth with CF and livelihood. The fifth section presents the discussion on participation of users in decision-making processes, the sixth presents the benefit-sharing system of CF and the seventh and final section presents the chapter summary.

### 6.2 Availability of forest products

#### 6.2.1 Forest products availability: the before hand-over situation

The CFs before being formally handed-over to the local communities were NFs, a state property resource where both land ownership and management control (at least in theory) were held by the nation. Local power structures had little or no influence on access to and control over forest resources. However, several patches of forest were either informally protected by local people on their own initiative (for example, Tikuri for about 10 years and Aayarghari for four years before hand-over) or remained as open-accesses resources (Jhankridamar and Budachaur) for a long time.

Although user rights were not guaranteed, local people were collecting forest products for their basic needs from the adjoining forests. The access was open in Jhankridamar CF with plentiful resources. Villagers only feared forestry officials while collecting timber. Budachaur CF also had open access for all, but the resources were inadequate. This forest was a means of livelihood for many poor families for their income by selling fuelwood to Khalanga Bazaar.

In Aayarghari, the present CF area was partly covered by a degraded forest and the rest was barren land. The villagers depended upon the adjoining NF areas for forest products. In Tikuri, forest protection was started a decade prior to hand-over, when the alluvial fans originating from the forest slopes silted the fertile cultivated lands located at the bottom of the forest. Forest protection was the major aim of those villagers who had farmlands beneath the forest, while it was not a priority for those who had no farmlands in that particular area. Thus, there was a conflict in resource utilization and protection.

### 6.2.2 Forest products availability after hand-over

Forest protection through the restricted use of resources was the main approach of all CFUGs following hand-over. Although restrictions on use and management of resources were urgent to check further degradation of the resources, it has variously impacted on the resource availability and livelihoods of many people (Figure 6-1 & 6-2).

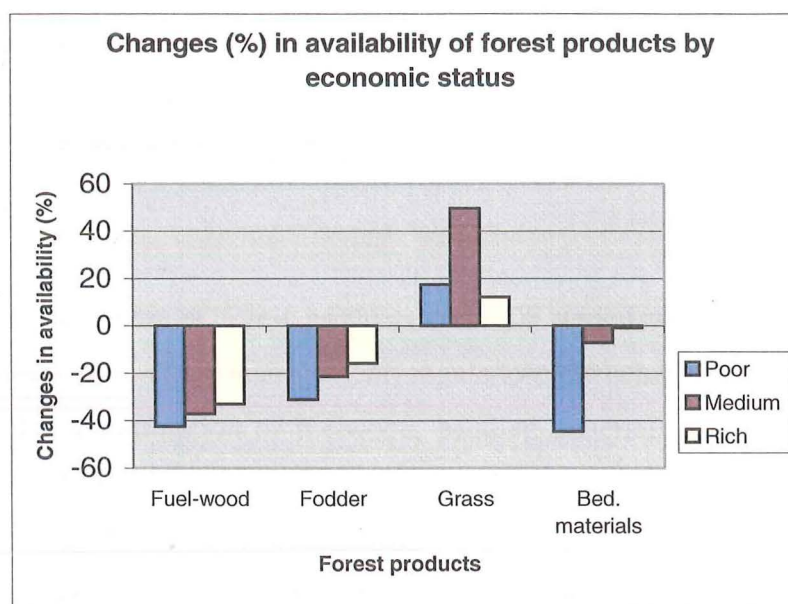


Figure 6-1: Comparison of the availability of forest products from all sources before and after CF by economic status of respondents.

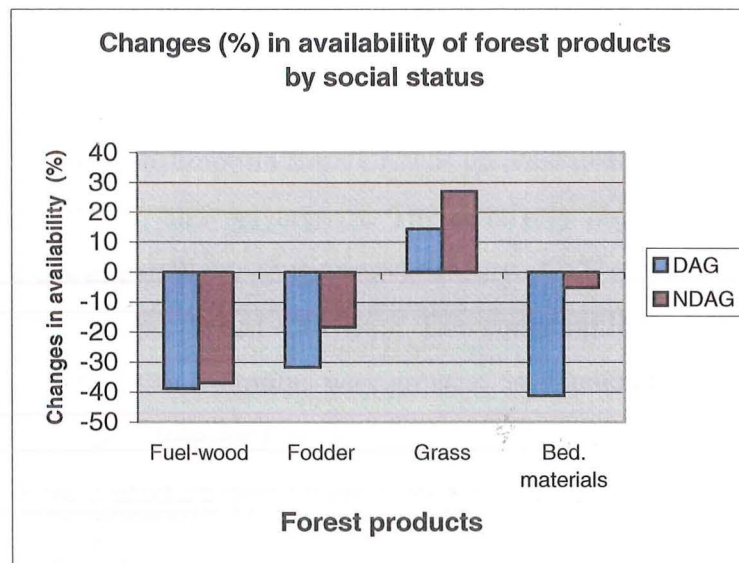


Figure 6-2: Comparison of the availability of forest products from all sources before and after CF by social status of respondents.

As the results of this study show, the dependency of poor and DAG people on national and CFs was greater than that of rich and NDAG. Impacts of use restriction with CF varied with economic and social status. The poor, who had no immediate alternative to public or community resources, faced more scarcity of resources than others did. The different levels of dependence on forest resources have major implications for the sustainability of CF.

The average consumption of forest products from CF varied with CFUGs. CF areas, their productivity and their management regulations structured potential resource consumption. The consumption of fuelwood, bedding materials and grass followed a similar trend with the highest consumption in Jhankridamar followed by Tikuri, Budachaur and Aayarghari. This trend resulted from the regulations developed by the CFUGs for the collection of forest products, ultimately based on area and growing-stock of the CF. The harvesting and utilization system developed by CFUGs has a great influence on the availability of forest products for users. As discussed earlier, the collection of fuelwood, bedding materials and fodder was completely restricted in

Aayarghari, open every week or certain periods of the year in Budachaur and Tikuri and open all year round in Jhankridamar CFUG.

The per capita timber consumption from CF was greatest in Budachaur CFUG followed by Jhankridamar, Tikuri, and Aayarghari. The relatively high timber consumption in Budachaur CFUG was partly due to the unavailability of NF and lower prices for timber than in Jhankridamar and Tikuri CFUGs. The consumption of fodder varied with management practices. Consumption was greatest in Jhankridamar, where collection was open all year round; followed by Budachaur, where collection was allowed once a week; Tikuri where collection was allowed only for 15 days per year, and Aayarghari with complete restriction.

The proportional decline in availability of forest products after the implementation of CF was greatest for the poor, followed by medium and rich respondents and DAG lost proportionally more than NDAG. Grass was the single forest product more available after CF than before, and the difference in the consumption of grass was greater for medium than rich or poor. However, the total amount of grass consumed was greater for rich than medium both before and after CF. As mentioned earlier, the greater availability of grass after CF was the result of restrictions on free grazing and grass collection. Grass production was mainly increased initially in the open areas after forest protection; however, plantation and natural regeneration gradually covered these open lands, and the grass production is also gradually diminishing.

Consistency between the perceptions of forest products availability of respondents and reported consumption of forest products was observed in most cases. In general, poor and DAG respondents disagreed, while rich and NDAG respondents agreed or were neutral to the statement "forest products (fuelwood, timber, fodder, bedding materials, grass) are more available after CF". Besides the availability of forest products for their consumption, the perceptions of the respondents were influenced by their involvement in the decision-making process. The rich and NDAG, who had better control in the decision-making processes, showed positive responses, while poor and DAG with very low participation in decision-making showed negative responses towards the results of

the CF program. For instance, the consumption of grass had been increased for all social and economic classes, but the poor and DAG still disagreed in their responses to the statement that grass was more available after CF. A common perception among many poor and DAG respondents was that the CF benefits are mainly for committee members.

### **6.2.3 Disparity in the consumption of forest products**

The rich consumed greater amounts of timber, fodder, grass and bedding materials from CF than the poor and medium, but they consumed less fuelwood than medium respondents. The rich consumed less fuelwood because alternatives like kerosene stoves and biogas were available to them. As discussed earlier, 25 % of the respondent households (80% of which were rich) installed a biogas plant.

The poor consumed less fuelwood, timber and bedding materials than the rich and medium from CF, but they consumed slightly greater amounts of grass and fodder than medium respondents. However, the total consumption of grass and fodder was greater for rich and medium than poor since they consumed greater amounts of grass and fodder from their PF. The poor mainly consumed grass for thatching houses and livestock sheds, since most of the poor households had thatched roofs, while many medium and rich used slate, tile and galvanized iron roofs and consumed grass only for livestock feed. The consumption of greater amounts of grass and fodder by the poor was due to a lack of alternatives and the consumption was greater in those CFUGs where access was open for a reasonable price.

Disparity in availability of forest products by economic and social class has been demonstrated. For example, the rich respondents (33% of total) utilized 67.1% of timber from CF in the last five years. Timber is the most valuable forest product in the study area in terms of its commercial value and scarcity. Similarly, rich respondents annually utilized more than the average amount of bedding materials (42.3%), grass (37%), fodder (35.5%), and fuelwood (33.6%) from the CF. Poor respondents who have very limited access to private resources, consumed only 9% of total timber utilization (Figure

6-3). A similar trend was observed in the consumption of forest products according to social status of the respondents (Figure 6-4).

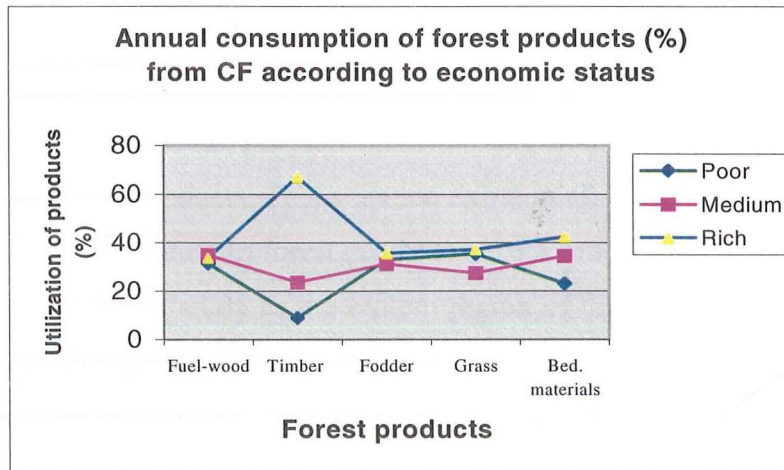


Figure 6-3: Consumption of resources from CF according to economic status of the respondents (1999).

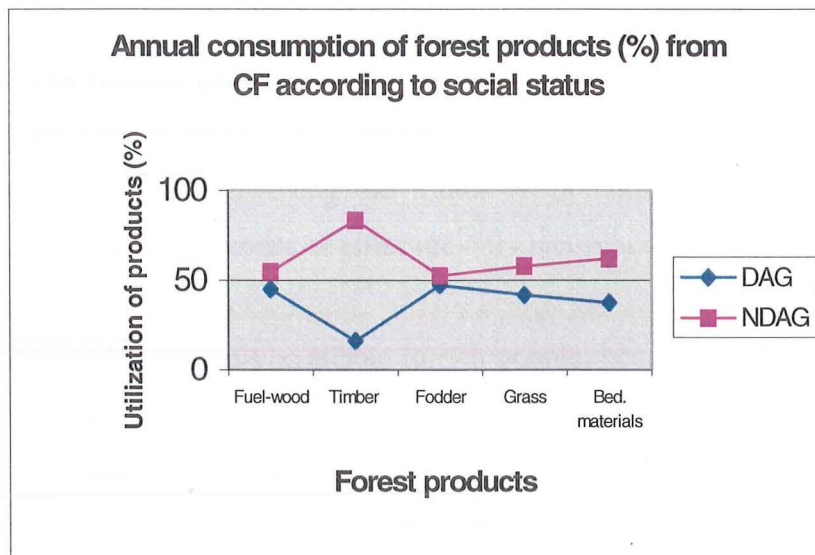


Figure 6-4: Consumption of resources from CF according to social status of the respondents (1999).



### 6.2.4 The causes for disparity in the availability of forest products

The following points partly explain why there is disparity in the availability of forest products from CF.

1) Forests are a major part of the hill farming system. Current CF management is also oriented towards the production of intermediate products supportive of the farming system. In this circumstance, people who have more livestock and farmlands obviously consume more forest products. This situation exists in all CFUGs, and is pronounced in Jhankridamar, where access to forest products except timber is open all year round at a nominal price. A recent study in the eastern region of the country based on economic analysis of the benefits of CF also revealed that poor households are less benefited from CF than wealthier households. One of the major causes reported was the production of intermediate products to support subsistence-level farming rather than cash generation (Richards et al., 1999).

2) Although user-group members have a right to decide how to manage their forests and how to distribute benefits, the distribution of the products is inequitable and the interests of poor and DAG people are not properly incorporated while making management arrangements. The meager participation of poor and socially DAG in decision-making processes may be a cause for this. No democratic process is being followed by CFUGs in decision-making process including the formation of committees. In the name of decisions by consensus the interests of elites are only incorporated.

The valuable products were only available to rich people, because of their higher price and biased management practices. The high price of timber is one of the best examples to support this. As mentioned before, the price of timber was very high in Jhankridamar and Budachaur CFUGs. The majority of the respondents perceived that the price was not affordable to them and in reality none or few poor and DAG respondents obtained timber from these CFs in the last five years (Chapter 5.2.2). A similar situation was observed in Tikuri, where quality timber was never available to poor and DAG people because of the auction system.

The fine rates fixed for failure to participate in the assembly were quite high for poor people in many CFUGs. Since the prior payment of fines was a prerequisite for forest products' collection in some CFUGs like Tikuri, several poor and DAG users had no further access to the CF. I observed the thatching grass collection and distribution process in Tikuri CFUG during my fieldwork. The grass collection was open in Tikuri CF for two days in December 1999. In the first day, representatives of each household assembled in a common place to share the regulations to be followed during grass collection. One of the major provisions was to pay all fines levied on each household before collecting the grass. Many poor and DAG users couldn't pay their accumulated fines, since this provision was new for them. Ultimately, they were prohibited their user right to collect grass.

The USAID-funded EFEA project implemented in the research area has a focus on empowerment of poor and DAG to incorporate their voices in decision-making processes of CF management (EFEA, 1999; USAID,1995). This project had positive effects in some areas. For example, the FOP of Tikuri CFUG, which was renewed recently, has decided to distribute a certain quantity (up to 0.57 m<sup>3</sup>) of timber free of cost to the users making a new houses and to sell additional quantity at a fixed price (Tikuri CFUG, 1999). This provision replaced the auction system, which was not in favor of poor people.

3) The CF policy is flexible in handing-over the forests to the users. No provision states how much forest area should be handed-over to how many households (Pardo, 1993). Similarly, within similar-sized forests, productivity and allowable cut vary greatly. Among the CFUGs selected for this research, the per capita forest area varied from 0.0193 in Aayarghari to 0.1022 in Budachaur.

The condition of the forests at the hand-over time varied from the barren lands and degraded forest of Aayarghari to the highly productive sal forest of Jhankridamar. On the one hand, CFUG households of Aayarghari had invested a lot of money for the establishment of a plantation and protection of CF without any immediate return. While in Jhankridamar, users were utilizing plenty of resources without their prior investment

in the establishment of CF. They were even selling forest products outside the group and generating a fund. They have a right to invest that money in community development activities as decided by the group. So there is a controversy over benefit-sharing systems due to unclear forest policy, which is ultimately creating resource-poor and resource-rich groups.

In this context, it is appropriate to analyze whether the resource-poor or resource-rich condition of the CF is relatively better to provide more benefits to poor and DAG people. The results show that both conditions in extreme are not in favor of poor and DAG people. The poor and DAG were less benefited in resource-poor conditions because of their high dependency on CFs and limited access to PFs. The resource-poor condition has a general trend of drastic restriction upon resource supply during management as discussed above. Such a situation is not beneficial to poor and DAG, whose livelihood is based upon the selling or processing of forest products.

In general, resource-rich conditions should be beneficial to all users of CFUG. Such a general trend was not found in this research, especially in the distribution of high-value commercial products and utilization of user groups' funds. As discussed above, Budachaur and Jhankridamar CFs are relatively resource-rich groups in terms of their greater per capita forest area. Jhankridamar is the richest one in terms of its productivity and allowable cut. Unfortunately, the availability of timber to the poor and DAG people was lower in these CFUGs than in the others.

In contrast to the greater scarcity of timber for users, especially for the poor and DAG, Jhankridamar CFUG had sold a significant amount of timber outside the group. According to the office records of this CFUG, about 43.3 m<sup>3</sup> of sal timber and five-*chatta*<sup>7</sup> (stack) of fuelwood were sold outside the group and earned NRs. 3,78,540. The price of timber was around the government royalty, but it was about three times lower than the market price. Exporting timber outside the group was only possible after permission was granted by the DFO as requested by the CFUG. For this purpose, the

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<sup>7</sup> One chatta = 14.16 m<sup>3</sup> of fuelwood of 20'x5'x5' size (500 ft<sup>3</sup>)

CFUG applied to the DFO with a declaration that the demand for timber within the group was fulfilled.

According to the opinions of my respondents during interviews, FGD and committee meetings, some of the former committee members, forestry officials and timber contractors were jointly involved in this process for their mutual benefit. This process is now stopped after a case filed against the committee members and timber contractors alleging timber smuggling from the adjoining NF. This situation is contrary to the CF concept, philosophy, and practice. If this situation continues, poor and DAG members will never meet their subsistence needs and the sustainability of CF will be questionable.

Many researchers (Baral and Subedi, 1999; Singh, 1998) have rightly judged that commercialization of CF products negatively impacts equity in CF. Some specific problems in Tarai that are different from hills include identification of users due to heterogeneous social and economic conditions and location of forests far from villages. The commercialization of CF, although with more scope in Tarai because of access to transport and markets for forest products, is a problem of CF generally. However, the commercialization of CF is the continuation of the same exploitative trend that timber contractors and their associates were following in these forests before hand-over.

4) The hand-over process has been taken as a physical target of DFO and the hand-over area and number of beneficial households are taken as key indicators of the success of CF program. The physical hand-over has been prioritized over the identification of users, negotiation of their disputes, and the incorporation of all stakeholders' viewpoints in CFUG constitutions and FOPs. The institutional aspects of post-formation support have been less emphasized.

The CF handing-over rate in the research area (Rapti Zone) has been the highest in the country. For instance, by 1993, hand-over process of a CF on average in Rapti Zone took only three days, which was the fastest in the country (Soussan et al., 1998). In Pyuthan District, 26,064.78 ha of forest had been handed-over to 27,578 hhs of users

groups by 1999, which exceeded (104%) the allocated potential forest area (DFO, 1999). Although the handed-over area exceeded the potential CF area, only 82% of the households are getting benefit from CF. On average nationally, only 13.5% of potential forests had been handed-over by February 1998 (Bhatia, 1999). In concordance with Bartlett (1992), I find that the formation of user groups and writing of FOP alone is not an indicator of success; the functioning of users' group for the implementation of operational plans is very important.

Several problems are associated with the quick and target-oriented CF hand-over. One problem is that groups originally formed for other purposes have become designated CFUGs. For example, a micro-credit group formed by the WDO was handed-over a small patch of forest in Aayarghari. Users with customary rights to this forest who were not members of the micro-credit group have not been included in the CFUG, while others without customary rights who were in the micro-credit group have become CFUG members with forest use-rights. Hand-over to groups formed originally for other purposes seems to be increasing.

In Aayarghari CF, the CFUG members have already invested a great sum of their time and money to establish the plantation and protect the forest. So according to them, the inclusion of other users in the CFUG is only fair if they pay the equivalent of their contribution. The poor and DAG, who can not pay the cumulative cost over the last eight years, are thus denied their customary use right over these resources.

Two major impacts were observed associated with the implementation of CF program in the research area.

### **1. Increasing dependency on private forests and unsustainable exploitation of the resources**

Dependency upon PFs for many products except grass has significantly increased after CF. The observation and opinion of respondents during FGD showed the felling of private trees accelerated in the last five years, especially for timber, which is more

restricted in the CF because of its shortage and high price. Both perception of the respondents and researchers' observation showed that the massive felling of private trees in the last five years was only to relieve immediate scarcity of timber rather than its sustainable utilization. The felling of immature trees in many cases supports this argument. At the same time, private trees with high commercial value are being felled for commercial utilization. Most of the private trees in the research area were grown naturally around the *kharbari* (pastureland), boundaries of cultivated land and around homesteads.

A trend of increasing private tree plantation was also observed in the research area, which can be an alternative for future supply, mainly for those people who have enough land to plant trees. However, the majority of the population who have very limited land for cultivation have less opportunity for private tree planting. The supply rate from the PF could be decreased for many years in the future, since most of the mature trees and even some immature trees have already been harvested in the last five years.

Young (1994), who studied the inter-relationships among the use of CF, NF and PF in the eastern hills of Nepal, also reported the declining use of CF and increased dependency on PFs. However, he was silent on the sustainability of the utilization of private trees.

## **2. Over-exploitation of the adjoining national forests**

A general trend observed in the research area was that the CFs are well protected, but adjoining NFs are being degraded day by day. This situation was extreme in Aayarghari CFUG, where only a six-ha forest area has been handed-over to a 53-household users group (per capita forest area = 0.0193 ha). The CF includes a degraded forestland and newly established plantation, which is insufficient to supply the demands for forest products at present or in future. As a result, all the users of this CF are collecting forest products from adjoining NFs, which is accelerating the degradation. The Aayarghari CFUG requested the inclusion of additional adjoining forest area into the CF; authority never considered their request.

A similar situation existed in Jhankridamar CFUG, with most of the users collecting forest products from the nearby NF of Arghakhanchi District. Jhankridamar CF is among the largest CFs in the district with a dense sal forest of high commercial value (per capita forest area = 0.1007 ha). Although this group in the past has exported timber outside the group, about 43% of the timber consumed was still supplied from NF. In the cases of Budachaur and Tikuri CFUGs, there was no dependency upon the NF since all the adjoining NFs are already handed-over to the CFUGs (Figure 6-5). The dependency upon the NF was higher for poor respondents than for rich, who have better access to CF and PF (Table 6-1).

**Table 6-1: Forest products dependency upon the various sources according to social and economic condition of the respondents**

Economic status	Dependency for forest products from different sources (% of total consumption)														
	Fuelwood			Timber			Fodder			Grass			Bedding materials		
	CF	NF	PF	CF	NF	PF	CF	NF	PF	CF	NF	PF	CF	NF	PF
Poor	69	28	3	43	42	15	62	37	1	87	13	0	88	12	0
Medium	65	26	9	26	46	28	53	31	16	63	22	15	83	15	2
Rich	64	10	26	54	21	25	56	10	34	69	5	26	90	8	2
Average	66	21	13	41	36	23	57	26	17	73	13	14	87	11	2

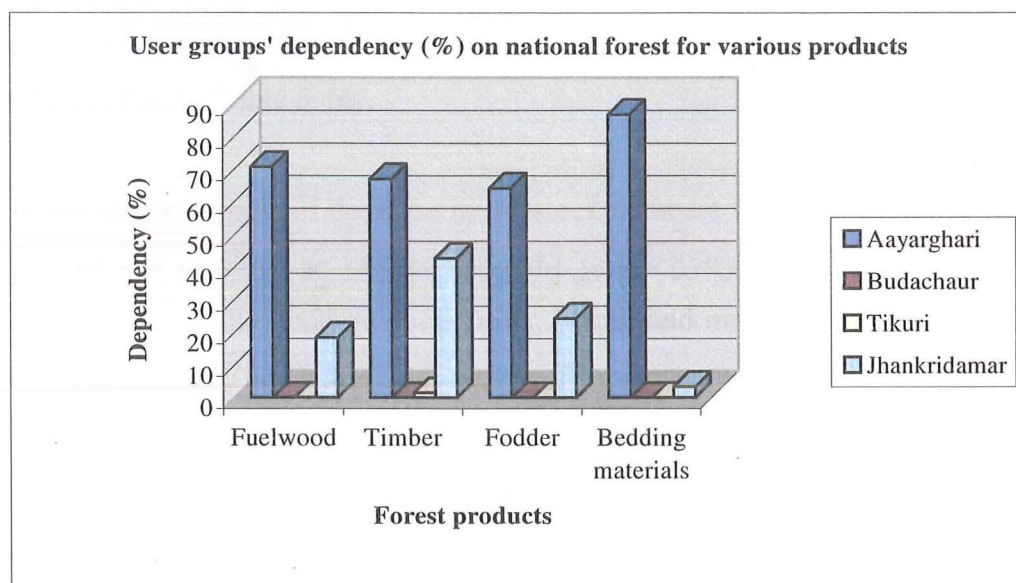


Figure 6-5: Dependency upon the NFs (% of total consumption) for various forest products.

Sharma (1993) stated that the proper management of CF depends upon the successful management of NFs, since community and private forests can not succeed if resources are provided freely from NFs. The results of this research also confirm his opinion. The NFs adjoining to CF were found to be over-exploited because the protection of CF was more effective than that of the government-managed NFs.

### **6.3 Contribution of CF in farming system**

The contribution of CF to the farming system was explored on the basis of opportunity for animal husbandry and availability of bedding materials for compost production and its contribution to increase agricultural productivity and household income.

#### **6.3.1 Opportunity for animal husbandry after CF**

Results (Chapter V, 5.4.1) clearly demonstrated that livestock holdings have decreased markedly with the implementation of CF. The reduced availability of fodder and grazing land was found responsible for decreasing livestock holdings after CF. Access to grazing land, which was open all year round in all CFs before hand-over, has been restricted to a great extent after CF. Subsequently, the grazing of goats, sheep and cattle was found to be more common than that of buffalo. A greater decline in goat and sheep numbers over cattle and buffalo numbers was observed. Thus, with decreasing supply of fodder and grazing lands, the poor and DAG are losing more livestock than rich and NDAG households (Table 5-16).

One of the major impacts of decrease in livestock numbers was the reduced production of compost and its ultimate impact upon the productivity of agricultural crops and household income. Livestock products (milk, butter, and meat) significantly contribute to nutrient availability and household income of rural people.

The practice of stall-feeding has increased following restriction upon grazing land and compensated in compost formation to some extent by providing more animal excreta. But the compensation is relatively low when compared to rapidly decreasing livestock numbers and alternative grazing practice on private farmlands and NFs. The stall-



feeding practice was initiated for goats, sheep and cattle, while buffalo were mostly reared in stall-feeding before CF. The contribution of goats and sheep in compost formation is relatively lower than buffalo, which produce an average of two tons of feces head<sup>-1</sup> year<sup>-1</sup> (Panday, 1982).

### **6.3.2 Availability of bedding materials and its contribution in farming**

The majority of the respondents had a perception that bedding material is more sufficiently available after CF as a result of biomass increment. But the amount consumed after CF was around the same as consumed before CF for the rich, NDAG and medium classes, while it significantly decreased for poor and DAG respondents. The reduced consumption of bedding materials after CF is related to decreasing numbers of livestock, since both play equal roles in compost-making.

The majority of the respondents (except rich and NDAG) disagreed that they are making more compost after CF because of more availability of bedding materials. Only rich respondents agreed that their agricultural production has increased over the last five years. However, rich respondents said that the availability of more compost after CF is not the only reason for increased production. The other reasons they mentioned were chemical fertilizer, improved seed varieties, and pesticides.

The contribution of CF in the farming system has been supposed to play a significant role in increasing agricultural production and household income of rural people. In reality, the present contribution of CF has no direct role in increasing agricultural productivity and thus household income, especially for poor people. However, the indirect contributions like farmland conservation and nutrient flow through irrigated water has been increased with increasing biomass in CF (Kanel, 1997).

## **6.4 Community forestry and livelihood**

Forest is also providing livelihood for many people in the hills of Nepal. In this study, 18 % of the respondents reported that their main occupation was based on forest use. More than half (54%) of them were fuelwood sellers, about 35% were charcoal makers

and about 11% were involved in timber processing. Among the respondents whose livelihoods were based on forest or forest products, over 90% were poor and DAG.

After CF, the fuelwood sellers were suffering most, because the fuelwood obtained from CF was not even enough for their household consumption. For instance, in Tikuri and Budachaur CFUGs, users were only allowed to collect one headload of fuelwood household<sup>-1</sup> week<sup>-1</sup>, which was not enough to meet the demands of any households, and extremely low for poor and DAG households, who are relatively more dependent on CF as discussed earlier. In Aayarghari, some of them were still selling fuelwood collected from NF, while in Jhankridamar there was no market for fuelwood.

Charcoal-making is still common because there is no alternative to charcoal yet which is used in the *aaran* (local furnace) to sharpen household and agricultural tools and to fix broken pots. Only blacksmiths, who are ethnically DAG, do this work and they require heartwood to make the charcoal. I visited five local *aarans* to observe the availability of forest products; all were suffering from the scarcity of forest products.

The timber-processing job is being diminished with low consumption of construction timber. Commercial timber processing by the contractor in Jhankridamar CFUG was not in favor of poor and DAG, as they employed outside labor (mainly Indians), supposed to be cheaper than local labor.

## **6.5 Participation of users in decision-making process**

### **6.5.1 Participation in meetings and general assembly**

General assembly is the common forum of users to discuss CFUG issues and to make decisions. The finalization of the user groups' constitution, FOP and formation of users' committee are the main functions of the general assembly at the beginning. Similarly, the assembly has a crucial role to approve the decisions taken by the users' committee.

Many studies revealed that the participation of poor and DAG people in decision-making processes of CF is very low (Chhetri and Nurse, 1992; Loughhead, et al. 1994; UNDP, 1998). This study confirmed these findings. It has been shown that even the physical presence of poor and DAG in the assemblies and meetings was lower than rich and NDAG. Since the consensus of two-thirds majority of the user households is required to pass decisions in the general assembly, the participation of users has been elevated in the statistics compiled. In practice, the participation of poor and DAG is extremely low and although participating, their voices were not heard. The high fine rate imposed by CFUGs (for example in Tikuri as discussed in Chapter-V) for failure to join an assembly is itself an example of low participation of users.

### **6.5.2 Participation in users' committee**

The rich and NDAG (local elites) mostly captured the users' committees. Among the total positions available in the four users' committees in the last five years, the rich (one third of the users) captured 53% of the total positions and more than 90 % of key positions. The participation of poor and DAG in the committee was less than 10% and never in key positions.

Nomination to the committee has been recognized as a way to gain power and social prestige. Local elites are more attracted towards CFUG than other local institutions and user groups, because the CFUG is a permanent and sustainable institution. As a consequence of the low representation of poor and DAG in decision-making processes of CF, their voices are not represented in the decisions. The high price of forest products, inequity in distribution, priority in timber production and negligence in income-generating programs, and unfairness and non-transparency in fund utilization are some examples of non-representation of poor and DAG members.

A rumor among users was that only an educated and talkative person could contribute on the committee. However, in reality, nearly half of the respondents irrespective of their social and economic status showed their interest for nomination to the committee.

### 6.5.3 Participation in awareness and empowerment process

The government, donor agencies and NGOs are organizing CF-related training, workshops and study tours for the awareness and empowerment of users. These programs in theory were targeted to poor and DAG members of CFUG, who are relatively less educated, less aware and less empowered. But in practice, the rich and NDAG (commonly by committee members and their families) mostly captured such opportunities.

Why there is an attraction to participate in such events is interesting. Some of the points observed were:

- 1) Training allowances are an attraction. For example, at the time of my fieldwork, daily allowances for the training, workshop and study tour in addition to tea and snacks was NRs. 120, which was equivalent to two days' wages in the same area. In many cases, the committee members who received the letter joined such training without prior notice or a decision of the committee.
- 2) Some attraction was also for CF-related knowledge and skill. Some of the training like nursery management was found applicable for private entrepreneurs, too.
- 3) The study tour program was very attractive to experience new places, new people, and new program.

As one respondent related:

*I have experienced a three-day CF workshop for women, where the participants were only women, the letter from DFO was also sent out accordingly. Unfortunately a male participant (who was in the key position of users' committee) came to join the workshop with a formal letter of users' committee. This experience made it clear to me how training allowances are attractive to them.*

## 6.6 Benefit-sharing system of CF

The user groups' fund and committee decisions were not transparent to group members. The situation was extreme in Jhankridamar and Budachaur CFUG. For instance, the funds mentioned in the official records of the CFUG were different from the actual amounts deposited in the bank account of CFUG in Jhankridamar. The committee members agreed that some former committee members had misused the fund (around NRs. 30,000). My respondents reported that the amount misused was more than that.

During my fieldwork, about NRs. 340,000 was just deposited in the bank account for a long time. A small fraction of that was invested in office building construction and maintenance. But the majority of respondents were not in favor of the expenditures made by committee. According to Forest Regulation 1995, the annual accounts of income and expenditure of the users group shall be audited and the audit report should be submitted to the concerned DFO; the practice was found only in Tikuri CFUG.

As a result of the lack of guidelines in the utilization of user group's funds, the fund utilization process was not uniform among the groups. More than one-third of the expenditures on average was invested in salary and remuneration of watchmen, committee members, and forestry technicians while investment in forest development was relatively low. There was no investment in income-generating activities, which can be a potential source of income and employment generation for poor and DAG people. The results of this research do not match the research conducted by Dongol (1999), who stated that the greater the capital formation in CFUG, the greater the peoples' interest and awareness in CF, forest improvement and community development activities.

A loan program was initiated by Aayarghari and Budachaur CFUGs and provided loans to the users at a low interest rate. They have no guidelines or regulations that determine the criteria of loan distribution, fixing interest rate, or procedures to punish members who fail to pay back the money loaned. The activity was oriented towards profit-making to user groups rather than to support the poor users to raise their household income. In reality, the loan was given to those users who were assumed to have sufficient property to return the loan. Thus, the loan distribution program in reality was not as simple as

described by Joshi (1997) that the loans provided by CFUGs are cheaper, more easily managed and refunded by CFUGs.

About one-third of the respondents (68% of which were poor and DAG) reported that there was discrimination in benefit-sharing of CF and more than half of poor and DAG believed that the discrimination was because of their economic condition. The majority of DAG also responded that the discrimination in benefit-sharing of CF was because of their poor economic condition rather than their social status. It is very difficult to say who are more disadvantaged among the social and economic groups of the respondents, since 90% of DAG were poor and 80% of poor were DAG.

### **6.7 Chapter summary**

Following the handing-over of management authority to local people, the forests were better protected with restrictions upon access to several resources. While the local-level power structures became active, control over the resources was captured by local elites, and the interests of poor and DAG were undermined. As a result, the poor and DAG users who had more dependency on public forests lost more than other users while shifting to CF and encountered more scarcity of resources than before.

The government and donor agencies prioritized handing-over forest resources and hand-over has been supposed as a final destination of CF. The hand-over process is being made as quickly as possible, even without proper identification of users, negotiating the conflicts of different interest groups, and without any regulations to determine per capita forest area and growing-stock.

Several problems have emerged in the handed-over forests. The protection of CF has resulted in over-exploitation of national and private forest resources. Similarly, the distribution of benefits for the subsistence use of users is being replaced by commercialization of the resources. Similarly, due to lack of appropriate fund-utilization mechanisms, the expenditures are not utilized in favor of poor and DAG and the funds are even misused in many CFUGs.

## VII. CONCLUSION AND RECOMMENDATIONS

### 7.1 Forest products' availability

Community forestry in Nepal is aiming at local control and management of forest resources for equitable and sustainable utilization. The handing-over of forest management authority from government to local user groups is a key activity. Forest protection through restriction of illicit felling and collection of forest products and uncontrolled grazing is an initial activity of user groups immediately following hand-over. Restriction upon the resource access, which were in practice open-access resources before, created two major impacts, first gradual improvement in forest condition through better soil coverage, biomass increment and regeneration, and second more scarcity of the resources as a result of restrictions on access. The scarcity of resources has placed tremendous pressure upon the alternative sources of supply as well as changed resource-use patterns.

Both perceptions of the respondents and the information reported by respondents showed that the scarcity of forest products for the majority of users in general and poor and DAG in particular increased in comparison to the situation before CF. Greater scarcity was observed for timber, fuelwood and fodder. The consumption of bedding materials was found to be nearly the same for the rich, NDAG and medium, while it was significantly decreased for poor and DAG respondents. Grass was the only product more available after CF.

The consequences of the restriction varied according to socio-economic status of the population; the poor and DAG were more deprived than the rich and NDAG households. Greater scarcity of resources was encountered by poor and DAG, who have greater dependency upon public or CFs for their subsistence needs and livelihood, while they have neither enough access to private resources nor can they afford the high prices for the commodities produced from CF. Thus, the results confirm the first research

hypothesis *"poor and DAG have greater scarcity of forest products after handing-over the CF than before, and than that of rich and non-DAG of the same CFUG"*.

## **7.2 Contribution of CF in farming system**

Following the decreasing supply of forest products and restriction upon free grazing after CF, livestock numbers have decreased. The decline was greater for poor and DAG owners, since their dependency upon the public or CFs was greater than that of other users for fodder collection and livestock grazing. The results confirm the second research hypothesis that the *"poor and DAG have less opportunity for animal husbandry, due to reduced availability of grazing land and fodder in the forest than before CF and than that of rich and non-DAG of the same CFUG"*.

The reduced consumption of bedding materials because of decreasing numbers of livestock and small landholdings ultimately resulted in more reduced amounts of compost and organic manure to enrich the farmlands of poor and DAG than rich and NDAG. The results confirm the third research hypothesis, *"the availability of leaf litter for bedding material ultimately for compost has no significant impact upon the farming system of poor and DAG people"*.

## **7.3 Community Forestry and livelihood**

The restriction upon the access to forest products has affected the livelihood of many poor and DAG people whose primary income was based on forest products. No alternative means of livelihood has been enhanced. In addition to losing their occupations, the poor and DAG are compelled to pay forest management costs (annual users' fee), costs for buying forest products, and opportunity cost of their participation in meetings and assemblies.

The utilization of groups' funds was not transparent and committee members in some cases misused funds. Most of the groups' funds were being invested in remuneration, allowances and infrastructure development, while the investment in forestry development and income-generating activities was low. Similarly, the micro-credit



program operated by some groups did not benefit most of the poor and DAG households. Thus, results confirm the fourth research hypothesis, *"the income from employment in CF is negligible for poor and DAG, when compared with their time investment in forest management, costs of forest products and forest management"*.

#### **7.4 Decision-making and benefit-sharing system of CF**

The participation of poor and DAG was very low in decision-making and benefit-sharing processes. Rich and NDAG users captured most of the key positions of the users' committees as well as the opportunities for awareness and empowerment-related activities like training, workshops and study tours. The participation of poor and DAG was lower than NDAG during the constitution and FOP finalization, committee formation and general assemblies. Although they participated, the majority of them could not speak in the assemblies and if they spoke, their voices were not heard by others. The lower participation of poor and DAG in decision-making processes has resulted in less representation of their interests in CFUG decisions. The results thus confirm the fifth research hypothesis, *"local elites are capturing the decision-making and benefit-sharing system of most of the community forests"*.

#### **7.5 Recommendations and research implications**

##### **1. Production of diversified product matches and income generation**

The present timber-oriented forest protection approach should shift towards an active management approach with an emphasis on supplying diverse products to match the needs of local communities. The need to emphasize the production of intermediate products for cash and employment generation for poor and DAG households is urgent. Appropriate silvicultural and forest management techniques for the ecologically diverse environments of Nepal are needed.

The smaller the land and livestock holdings of the households, the fewer benefits from CF are being contributed to their farming system. Those who have no farmland or livestock have a very narrow linkage with CF. CF management should be more

sensitive towards the needs and desires of these people, either through the production of appropriate commodities or through direct or indirect compensation measures.

## **2. Incorporate the voices of poor and DAG in decision-making**

The present tendency of forest products sale through auctions and high prices encourages the supply of forest products only to wealthier households who have high purchasing power, and marginalizes the poor and DAG households, who have a higher dependency upon the community resources for their subsistence use and livelihood. It is not possible without empowering poor and DAG households to reflect their voices in decision-making processes, at least to incorporate their voices in the constitution and FOP of CFUGs.

## **3. The hand-over process**

The forest hand-over process is disorganized and the policy is very flexible. The result is the exclusion of customary use rights of many poor and DAG households, unbalanced distribution of forest area and capital, and the exploitation of adjoining national and private forests.

3.1 The tendency of handing-over the forests to groups already formed for other purposes might make the hand-over process quick and easy but may not be sensitive to actual users as defined by forest policy and legislation. The proper identification of users and negotiation of the interests of users is essential before hand-over.

3.2 Regulations are needed to designate the limitations of handing-over size based on forest growing-stock and site productivity. The implementation of such provisions is to minimize the gap between the resource-poor and resource-rich groups. Similarly, it may also be helpful to prohibit the commercialization of the products prior to subsistence use and to establish equity within and among the CFUGs.

3.3 The research has revealed the over-exploitation of national and private forests in the name of protecting CF, where nearby forests were not handed-over. The handing-over of a patch of forest without handing-over or at least identification and formation of users' group of adjoining forests causes the over-exploitation of adjoining NFs. DFOs should prepare a Range Post level plan indicating the status of each forest area and a list of prioritized hand-over areas to avoid such problems. If the adjoining forests are intended to be managed by government, prior to handing-over the adjoining CFs authorities should make appropriate protection or management arrangements for those NFs. Similarly, FOP of each user group should incorporate an estimation of the sustainable supply of forest products from private forests.

#### **4. Subsistence use of the resources before commercialization**

The commercialization of community resources prior to satisfaction of subsistence needs of many users (especially poor and DAG) has emerged. The district and regional forest offices should develop regular monitoring mechanisms to minimize such anomalies. Similarly, the NGO/INGOs should play an advocacy role to empower user-group members for the sustainable and equitable utilization of the resources. The awareness and empowerment of users is very essential to avoid such activities. The surplus resources should only be sold outside the group on a transparent and competitive basis considering the issues of secondary users and inter-group equity.

#### **5. Empowerment and awareness program to poor and DAG**

The low participation of poor and DAG in meetings, assemblies and committees reflects low awareness and empowerment of these households. The awareness and empowerment programs within CF are captured by the non-poor and NDAG. Development of specific criteria is needed to define the participants of each awareness and empowerment activity. Similarly, the training and workshops should be decentralized at the Range Posts and CFUG levels to increase the participation of poor,

DAG and women. The study tour program should be targeted to illiterate, DAG and poor users.

## **6. Guidelines for fund utilization**

Guidelines and monitoring mechanisms are needed to make the fund utilization process more meaningful, transparent and beneficial to the poor and DAG households. There is a need to allocate certain amounts of user group funds to poverty alleviation programs to link the contribution of CF to poverty alleviation. Periodic review of CF and related policies is essential in relation to the benefits of CF in the livelihoods of poor and DAG.

### **Further research is recommended:**

- to extend this research to different geographic, socio-economic and ecological zones of the country to generalize the research problems and their solutions,
- to carry out PAR in selected CFUGs of various ecological and socio-economic conditions to devise appropriate forest management and silvicultural methods beneficial to poor and DAG,
- to study the social dynamics of communities in relation to power structures to control the decision-making and benefit-sharing processes of CFUGs.

## **7.6 Chapter summary**

The research concluded that the present practice of CF in the research area is less favorable to the poor and DAG than wealthier and NDAG households to fulfill the needs for basic forestry products, income generation and to support their livelihoods. In spite of the intention to provide the forest products on a sustainable and equitable basis, poor and DAG households lost more from the switch to CF than did other households.

Thus, the present practice of CF is widening the gap between poor and wealthier and DAG and NDAG households rather than contributing to poverty alleviation as intended by the CF policy. These problems do not mean that CF is in a wrong direction that can not be improved; rather, the recommendations are urgent to improve the policy, implementation strategy, and approaches to maximize CF benefits to poor and disadvantaged groups.

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## Appendices

## Appendix 1: Glossary of Nepali terms

S.No.	Nepali	English
1	Aaran	Local furnace used by blacksmiths for
2	Badi	Untouchable caste (so called), the entertainers
3	Bahun	Brahmin, a higher caste according to Hindu religion
4	Banbatika	forest plots, allowed to keep by private owners according to forest Act 1961
5	Bhari	Headload
6	Birta	Land granted by the state
7	Chhetri	Dominant caste in the hills also common in Tarai
8	Chowkidar	watchmen
9	Damai	Untouchable caste (so called), the tailors
10	Dhami	Ethnic group mainly found in low hills and Tarai of east Nepal
11	Gaine	Untouchable caste (so called), the singers
12	Guthi	1. Religious funds for association 2. A form of tax-free land tenure for holdings dedicated to religious purposes
13	Jimmuwal	Headman, revenue collector
14	Kami	Untouchable caste (so called), the blacksmiths
15	Kipat	An ancient type of land tenure for Limbu and other ethnic groups of Eastern Nepal
16	Kumal	Ethnic group in the Tarai and hills traditionally working as porters
17	Lalmohar	(lit. 'red seal'); royal decree
18	Magar	Ethnic group inhabiting the western hills of Nepal
19	Newar	Ethnic group, mainly based in Kathmandu Valley
20	Panchayat	Town or village council operating under the Panchayat system
21	Patkar	Fallen dry leaf litter
22	Ropani	Unit of land measurement in the hills equivalent to one twentieth of a hectare
23	Sarki	Untouchable (so called) caste, the cobblers
24	Singa naua	Locally appointed officials in the Sherpa communities of eastern Nepal with responsibility for allocating forest resources and ensuring that individuals adhered to the rules for forest use.
25	Sottar	Green foliage of trees
26	Sunar	Untouchable (so called) caste, the goldsmiths
27	Talukdar	Unofficial functionary
28	Tarai	Lowlands between the Himalayan foothills and the southern border with India
29	Thakuri	Ethnic group
30	Thami	Small ethnic group, common in eastern hills

**Appendix 2: Nepali and scientific names of the tree species**

S.No.	Local name	Scientific name
1	Amp	<i>Mangifera indica</i>
2	Bot dhairo	<i>Lagerstroemia parviflora</i>
3	Chilaune	<i>Schima wallichii</i>
4	Chiuri	<i>Aesandra butyracea</i>
5	Dalchini	<i>Cinnamomum tamala</i>
6	Gobre salla	<i>Pinus wallichiana</i>
7	Jamun	<i>Syzygium cumini</i>
8	Katus	<i>Castanopsis</i> spp.
9	Kharsu	<i>Quercus semecarpifolia</i>
10	Khayer	<i>Acacia catechu</i>
11	Khote salla	<i>Pinus roxburghii</i>
12	Lali Gurans	<i>Rhododendron arboreum</i>
13	Ritha	<i>Sapindus mukorossi</i>
14	Saj	<i>Terminalia alata</i>
15	Sal	<i>Shorea robusta</i>
16	Sisau	<i>Dalbergia sissoo</i>
17	Thingre salla	<i>Abies</i> spp.
18	Timur	<i>Zanthozylum</i> spp.

### **Appendix 3: Checklist for Observation**

#### **1. Observation at home and homestead**

- Energy source (type, quality, quantity, source)
- Use of timber and non-timber forest products in house and household goods
- Fodder and Bedding materials (type, quality, quantity, source)
- No./type of livestock, farming pattern (stall feeding, grazing)
- Preparation and use of compost
- General observation of private trees (type, quantity)

#### **2. Observation on farming lands**

- Private trees on farm
- use of compost

#### **3. Observation on forests (if any related activities are going on)**

- Forestry development works (eg nursery, plantation etc)- what, by whom, when, how?
- Harvesting and utilization activities- what, by whom, when, how?
- Distribution of products- How?

#### **4. Observation on meeting/assembly**

- participation (DAG, women)
- discussion and information sharing process
- decision making process
- minuting/recording process

#### **5. Other places (tea shops/markets)**

- source of fuelwood, and timber
- price
- source (CF, national forests, private forests)
- general opinion about CF

#### Appendix 4: Checklist for focus group discussion

Participants: Disadvantaged group people (one mixed and one women's group).

Group size: 8-12 participants, a facilitator and a rapporteur.

Time: approximately 4 hours.

Method: PRA tools like informal discussion, ranking, trend line.

Materials: Locally available materials for PRA exercise, Flip chart, marker, and tape recorder.

Objectives and methods:

S.N.	Objectives	Methods
1	Identify access and control of forest products before and after CF.	Group discussion, participatory mapping, ranking, trend line.
2	Assess income and employment before and after CF.	Group discussion, trend line.
3	Assess decision-making and benefit-sharing system in CF.	Group discussion
4	Identify major problems their causes and consequences.	Group discussion, ranking.

### Appendix 5: List of the questionnaires

#### PART I: AVAILABILITY OF FOREST PRODUCTS

Please indicate your agreement or dis-agreement with the following statements as;

(1) Strongly disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly agree

#### 1. How would you perceive the availability of forest products after the implementation of CF?

No.	Statements	Agreement				
		1	2	3	4	5
1.1	Fuel wood is more sufficiently available than before					
1.2	Timber is more sufficiently available than before					
1.3	Non-timber forest products (please specify) are more sufficiently available than before					
1.4	Agricultural implements (including Kila, Jhinkra) are more sufficiently available than before					
1.5	Green and thatching grass is more sufficiently available than before					
1.6	The process of forest products collection is easier than before					
1.7	The collection of forest products is less time consuming than before					
1.8	The price rate of forest products is more reasonable now					

#### 2. How would you perceive the availability of fodder and grazing land, and their contribution in livestock farming after the implementation of CF?

No.	Statements	Agreement				
		1	2	3	4	5
2.1	Fodder is more sufficiently available from the forest					
2.2	Fodder collection process is easy					
2.3	Quality of fodder has improved					
2.4	Price of fodder is reasonable					
2.5	Access to grazing land is better					
2.6	Your household's income from sale of milk and meat has been increased					
2.7	There are more livestock now because of CF					



**3. How would you perceive the availability of raw materials and use of compost after the implementation of CF?**

No.	Statements	Agreement				
		1	2	3	4	5
3.1	Bedding material and leaf litter are more utilized after CF					
3.2	Collection process is easy and less time consuming					
3.3	Quality of bedding material for compost has been improved					
3.4	More compost is being produced because of more availability of leaf-litter and bedding material					
3.5	Agricultural production has been increased after the availability of more compost					

**4. Other occupation based on forest products**

4.1) Do you have other occupation (besides agriculture) based on forests or forest products?

- a) Yes  
b) No

If Yes,

4.2) Please list out your occupation and related forest products?

S.No.	Occupation	Related forest products
1		
2		
3		

4.3) The availability of forest products for your occupations has been more available after CF. Would you: a) Strongly disagree b) Disagree c) Neutral d) Agree e) Strongly agree

**5.0 Collection of forest products from different sources (annual).**

How much forest products have you collected before (before 5 years) and after (last year) from community (CF), national (NF) and private forests (PF)?

SN	Types of forest products	Amount of forest products consumed				
		Before CF		After CF		
		NF	PF	CF	NF	PF
5.1	Fuel wood (Bhari)					
5.2	Fodder (Bhari)					
5.3	Timber (m <sup>3</sup> )					
5.4	Bedding material (Bhari)					
5.5	Leaf litter (Bhari)					
5.6	Thatching grass (Bhari)					
5.7	Other 1 (please specify)					
5.8	Other 2 (please specify)					

**PART II: INCOME AND EMPLOYMENT FROM CF****6.0 Income and employment from CF**

6.1 Do you have any new employment in CF related job after CF?

- a) Yes  
b) No

6.2 If Yes, What is your employment status and income from CF related job in last two years?

S. No.	Employment source	Year	Family members involved (1,2,3,4) and frequency	Time spent (Day/hour)	Income (NRs.)
1	Nursery work				
2	Plantation/ weeding/				
3	Thin/Prun/Sing/Cleaning				
4	Harvesting and distribution of products				
5	Informal meeting				
6	Committee meeting				
7	General assembly				
8	Protection work (Heralu/others)				
9	Collection/ processing of NTFPs				
10	Participation in training workshop/study tour				
11	Other (specify) 11.1 11.2				

Family member involved

1. Adult male
2. Adult female
3. Children male/female (10-15 years)
4. Over-aged male/female (over 60 years)

**7.0 Investment in CF**

7.1 Do you have any cash investment in CF related work during last two years?

- a) Yes  
b) No

7.2 If yes, how much you have invested in various sources?

Sources of investment	Year	Investment NRs.
1. Salary for watchmen		
2. other (please specify)		
3.		

(The investment in grains converted into cash on local rate of the same time)

**PART III: PARTICIPATION IN DECISION MAKING AND BENEFIT SHARING PROCESS**

**8. Did you/your household members attend any of the following events?**

S.No.	Events	Participation	
		Yes	No
8.1	Meeting when constitution was finalized		
8.2	Meeting when committee was formed		
8.3	Meeting when operational plan was finalized		
8.4	Last meeting when distribution of forest products was decided		

**9. Meeting/assembly attended**

9.1 How often you have attended the general assembly of your users group?

- a) always
- b) sometimes
- c) Never

9.2 Did you feel free to put own view at general assembly?

- a) Yes
- b) No

9.3 Did other people respect and consider your opinion?

- a) Yes
- b) No

9.4 If you do not participate the meeting/assembly, how did you know the decisions of committee?

- a) by other people
- b) by committee members
- c) never knew
- d) other (please specify)

**10. Participation in User's committee**

10.1 Have you or any members of your household been selected in user's committee?

- a) Yes
- b) No

10.2 If yes, how long and in which position?

Who	Which position	How long? (From-to)

10.3 If not, are you or any HH members are interested in serving in such a position?

- a) Yes
- b) No

**11. Benefit sharing system**

11.1 Do you think there is any discrimination in benefit sharing system?

- a) Yes
- b) No

If yes,

11.2 Is there any discrimination because of any particular caste, or economic condition of people?

- a) Yes
- b) No

11.3 If yes, please explain how?

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**12. Participation in training, workshop, and study tour**

12.1 have you or any household members attended any training, workshop or study tour related to CF?

- a) Yes
- b) No

12.2 If no, why not?

12.3 If yes, please specify as follows:

S. No.	Training/ workshop type	No. participated
1	Training/ workshop less than one day within district	
2	Training/workshop more than one day within district	
3	Training/ workshop outside district	
3	Study tour within district	
4	Study tour outside district	
5	Other please specify	

**13. Please indicate your agreement or disagreement with the following statements as;**

(1) Strongly disagree, (2) Disagree, (3) Neutral, (4) Agree, (5) Strongly agree

S.No.	Statements	Agreement				
		1	2	3	4	5
13.1	Products sale and distribution system is good					
13.2	Fund collection system is satisfactory					
13.3	User groups fund is properly utilized					
13.4	Expenditure of funds covers the interests of most of the users.					
13.5	Process of the nomination of candidates for training, workshop, study tour is fair					
13.6	Each member has an equal opportunity to become elected in committee					
13.7	Decisions of the committee are in favor of users					

**PART IV: DEMOGRAPHIC AND SOCIO-ECONOMIC INFORMATION OF RESPONDENTS**

14 Name (HH head)

15 No. of household members attended the interview (including gender and age)

16. HH size

17. DAG/NDAG

18. Land belongs to the respondents

Land use category	Area (Ropani)
Khet (Irrigated land)	
Bari (Non-irrigated upland)	
Pakho/ Kharyan	
Private forest	
Land on rent (Khet/Bari)	
Land renting out to others	
Total	

19. How many livestock you have now and before?

S.N	Livestock type	Number	
		Now	Before CF
1	Cattle/Buffalo		
2	Goat/sheep		
3	Other (specify)		
4	Total		

**Appendix 6: Checklist for committee meeting**

Participants: Users committee members.

Group size: 10-15 participants, a facilitator and a rapporteur.

Time: approximately 4 hours

Method: Group discussion

Materials: Flip chart, marker, and tape recorder

Objectives:

1) Identify progress on:

- i) Distribution/ sale of forest products
- ii) income and employment generation
- iii) collection and utilization of CF fund
- iv) training and empowerment
- v) other

1) Identify the process of

- i) forest protection
- ii) harvesting and distribution of products
- iii) fund collection and utilization
- iv) decision making (role of committee, assembly)

2) Identify the problems perceived by committee members

3) Problem analysis

4)

uses	Problems	Consequences

Recommendations and conclusion

**Appendix 7: Annual income sources in different CFUGs**

SN	Income source	Annual income (%) in different CFUGs				
		Aayarghari	Budachaur	Tikuri	Jhankridamar	Total
1	Annual user's fees			39.6	3.8	13.9
2	Fines			7.0		2.1
3	Forest products sale		100	4.7	96.2	56.5
4	Support from DFO/other donors			47.5		14.4
5	Interest from loans	100				12.7
6	Miscellaneous expenses			1.2		0.3
Total		100	100	100	100	100

**Appendix 8: Annual expenditure of CFUGs on different items (1999)**

SN	Expenditure items	Expenditure (%) in different CFUGs				
		Aayarghari	Budachaur	Tikuri	Jhankridamar	Total
1	Remuneration to watchmen		72.82	77.55	10.5	18.2
2	Remuneration to forestry technician				16.74	10.0
3	Remuneration to committee members				13.08	7.8
4	Infrastructure development (office building construction, hiring)			4.217	24.83	15.2
5	Forest development (Nursery, demonstration plot)			3.936	15.86	9.8
6	Loan out	100				24.8
7	Forestry extension (training, workshop)			2.811	8.19	5.2
8	Harvesting cost				8.34	5.0
9	Office goods and stationary			7.708	1.66	1.8
10	Office expenses (tea and snacks)		27.18	2.676	0.16	1.8
11	Miscellaneous			1.101	0.64	0.5
	Total	100	100	100	100	100