COMMUNITY FOREST MANAGEMENT AND IT'S CONTRIBUTION ON SUSTAINABLE RURAL LIVELIHOODS (A Study from Baglung District, Nepal)

A Dissertation Submitted in Partial Fulfillment of the Requirements for
the Degree of Master of Anthropology in
Humanities to faculty of Humanities and social sciences,
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This piece of work is

dedicated to

my parents

Mr. Ram Prasad Poudel

&

Mrs. Sabitri Poudel

Letter of Recommendation

This is to certify that Mr. Bishnu Chandra Poudel has prepared this dissertation entitled "COMMUNITY FOREST MANAGEMENT AND ITS CONTRIBUTION ON SUSTAINABLE RURAL LIVELIHOODS", A STUDY FROM BAGLUNG DISTRICT, under my guidance and supervision. I, therefore recommend this dissertation to The Evaluation Committee for the final approval and acceptance.
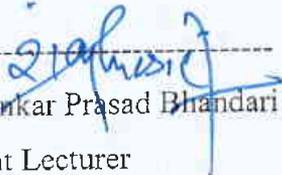
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LETTER OF ACCEPTANCE

The thesis attached hereto, entitled "COMMUNITY FOREST MANAGEMENT AND ITS CONTRIBUTION ON SUSTAINABLE RURAL LIVELIHOODS, a study from Baglung district, Nepal" prepared and submitted by Bishnu Chandra Poudel in the partial fulfillment of the requirements for the degree of Master of Anthropology in Humanities is hereby accepted.

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ABSTRACT

This study attempts to assess the socio economic condition of the user's group in relation to the contribution of Community Forestry (CF) program on their sustainable rural livelihoods. The empirical data for this study was collected from three community forests of Baglung district. Three FUGs were selected randomly from the three range posts situated in nearby the district headquarter, and then far from the first one and third is from the midpoint of the both in distance. Household sampling was done using the stratified random sampling method. The research methodology includes a review of available literature on the subject for secondary data collection, and the study of field conditions to generate primary data through wealth ranking, household questionnaire survey, focus group discussion and self observation. The study conceptualization, data collection and analysis have been guided by the sustainable livelihood framework (DFID 1999). The data were analyzed using descriptive as well as inferential statistics in SPSS 10.0 and Ms Office 2001.

At present, CF policies and institutional framework are in favor of linking forest management and development. The asset pentagon (N, P, F, S, H) has clearly revealed that poor class had relatively low access to the livelihood assets except in forest utilization and community fund mobilization activities. The community forestry has improved the forest management, created some short term employment opportunity, generated income for community development activities, developed institutional arrangements at local level, and contributed to farming system. However the contributions of CF tend to generate natural, financial, social, physical, human capitals there seems to be disparity among the different social and economic groups.

The result of the study show that CF has contributed in all livelihood assets but the trends of support have not been in a regular basis. It is due to the heterogeneity of the user's group in different levels. Poor and dalit individuals are more likely to perceive less availability except in access to the natural resources and fund for credit. Wealthier and higher caste individuals are involved in higher level of decision making as opposed to poor and lower caste individuals who participated in lower levels. However the opportunity to participate in raising awareness, training and empowerment process higher caste and rich individuals have got most of the opportunities among different socioeconomic groups, lower caste and poor did not denied in control over the access to the different assets by the former.

In order to ensure the rights of poor, women and dalit people in community forest management, proper monitoring and evaluation, management of NTFPs, skill based crafting entrepreneurship development, active forest management, guideline for fund mobilization and community development, are recommended. Further study on multiplier effect of community forestry to quantify the economic impacts in terms of gross output, net output, and employment is recommended.

Key words: Community forestry, Livelihood capitals, sustainable livelihood, vulnerability, livelihood strategy

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ANNEXES

LIST OF BOX

LIST OF MAPS

LIST OF PHOTO PLATES

GLOSSARY

Household A group of individuals related to each other by blood, marriage, or cooperation, living in one and the same residential unit, sharing a kitchen and same property.

Livelihood (s) Livelihood as a combination of the resources used and the activities undertaken in order to live. According to Ellis (2000) "A livelihood comprises the assets, the activities and the access to these (mediated by institutions, social relations and organizations) that together determine the living gained by the individuals or households."

Livelihood assets A key component in the SL framework, they are assets on which livelihoods are built and divided in to five categories (i.e. human, natural, social, financial and physical capitals).

Livelihood Outcomes Livelihood outcomes are the achievements –the results- of livelihood strategies. Outcome categories can be examined in relation to the more income, increased well-being, reduced vulnerability, improved security, sustainable use of natural resources, wildlife habitat improvement, social cohesion etc.

Livelihood strategies The term used to denote the range and combination of activities and choices that people make in order to achieve their livelihood goals. The strategies are diverse at every level. For example, members of a HH may live and work different places, engaging in various activities, either temporary or permanently to be pursuing a variety of goals.

Local people Individuals living within the same political boundary of the study sites.

Vulnerability A combination of exposure to risk, sensitivity to shock (impact when it happens) and lack of resilience (to bounce back). The key features (shocks, trends, seasonality) of the vulnerability context are not controllable by local people in the immediate or medium-term. The vulnerability or livelihood insecurities resulting from these factors are a constant reality for many poor people.

ACRONYMS

ANOVA	Analysis of variance
CBS	Central Bureau of Statistics
CC	Contingency Coefficient
CF	Community Forest
CFUG	Community Forest User's Group
CIFOR	Center for International Forestry Research
DAG	Disadvantaged Group
d f	Degree of Freedom
DDC	District Development Committee
DFO	District Forest Office
DFID	Department of International Development, UK
FGD	Focus Group Discussion
FUC	Forest User Committee
FUG	Forest User Group
Ha.	Hectare
HHs	Households
HMG/N	His Majesty's Government
IGA	Income Generation Activities
IPA	Index of Perceived Availability
IRR	Index Relative Rank
LSU	Livestock Unit
nd	not dated
NPC	National Planning Commission
NRs	Nepalese Rupees
NTFPs	Non Timber Forest products
SL	Sustainable Livelihood
SLC	School Leaving Certificate (High School Graduate)
SPSS	Statistical Packages for Social Science
UNDP	United Nations Development Program
VDC	Village Development Committee
WWF	World Wildlife Fund

Chapter 1

INTRODUCTION

1.1 Background of the study

Community-based resource-management systems often form the basis for the system of production. Among them forest resources are one of the major resources directly affecting the survival of rural people in Nepal. Large members of rural households in Nepal are still subsistence users of forests/tree products. Access to forest or tree resources can also help the rural households' diversity their livelihoods base a nd reduce their exposure to risk. Forest can thus form an important safety net for the very poor in times of hardship (Arnold, 2001). In Nepal, community forestry (CF) has long been implemented aiming to address the need of the poor and disadvantaged groups as castes, ethnic groups. women etc.

Community forestry is a major forest management program implemented by the government of Nepal. Community forestry has been implemented for almost 30 years and spread throughout the country. The principle aim of community forestry is to fulfill the basis needs of local people. A large number of forest user groups (FUGs) have been formed until now and large forest area has been handed over for the protection, management and utilization. However the management of community forests (CFs) by FUGs is passive and protection oriented resulting the policy objective is emerging towards sustainable livelihoods (Achrya, 2001).

The Master Plan for the Forestry Sector (MPFS) of Nepal 1988 has defined clear-cut guidelines to put all community forestry management under the control of Forest User Groups (FUGs). FUGs are defined as a specific group of people who share mutually recognized claims to specific use-rights to a forest (Gilmour and Fisher, 1991). So far more tan eleven thousand of FUGs with unique socioeconomic characteristics have been formed and the availability of resource in each community forest also is varied (Timsina, 2001).

The issue of sustainable livelihood through the use of forest resources depends upon socioeconomic characteristics of group (Agrawal, 2001). Participation in management of common property resources is a key to collective action (Chhetri and Pandey, 1992; Maskey et al., 2003). However, participation is dependent upon socioeconomic condition of FUGs because Nepal's social structure is still based on caste system, gender, wealth etc with prevalent discrimination.

People make use of trees for fodder, bedding materials, leaf litter for fertilizer, timber and poles and especially for fuel wood a very important, and often only the source of energy for cooking

and heating for most rural livelihoods. Besides, rural households collect diverse Non Timber Forest Products (NTFPs) for use at the household level and for cash income.

In another way, a livelihood of a person comprises the capabilities, assets and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Carney, 1998).

Sustainability is important if programs in poverty reduction are to be lasting. Sustainability of livelihoods rests on several dimensions, environmental, economic, social and institutional. Livelihoods are sustainable when they are resilient in the face of external shocks and stresses; are not dependent on external support (Ashby and Carney, 1999). The effectiveness of the community forestry program in terms of improving livelihood of the poor is still questionable and has not been examined well (Agrawal and Varughese, nd.).

Over the last two decades a plenty of researches have been done in community forestry I Nepal. Nonetheless, past studies on community forestry have indicated a mixed result. There are some common buzz words that are often used in development language as empowerment, participation, equity, gender, power devolution, bottom up approach etc and these words have frequently been used in community forestry. It has been observed in most cases that the gap between rich and poor is widened, situation of women and marginalized people is not improved, and power is caught by handful of people in community (Malla, 2001; Timsina, 2001).

Upreti (2000) argued that the need based access to forest resources to poorest and disadvantaged group is increasing, their voice and interests and their involvement in decision making are increasing. However, the level of equity and empowerment is yet inadequate (Pokharel, 2002). Nightingale (2001) argued that for community forestry to be an equitable process, women and other marginalised need to be able to influence the process and sustain the rural livelihoods.

1.2 Problem statement

Considerable studies have been carried out to understand the contribution and impacts of community forestry on natural environment, social and economic aspects (Adhikari, 2002; Chhetri and Pandey, 1992; Gentle, 2000; Hobley, 1987; Maharjan, 1998; Malla 2001, Maskey et. al., Ojha and Bhattarai, 2000; Pokharel, 2001, 2002; Sharma, 2000; Timsina, 2001; Upreti, 2000; Varughese, 2001). Often these studies take a micro view of the problem. More studies on the sustainable livelihood approach with understanding the community forestry impacts on various

social and economic strata of the community require developing strategies to reorient the program to enhance the access in livelihood assets.

The contribution of forests is measured not only by the products they provide, but also by the non-tangible services they offer. Nonetheless, the general contributions of forests to livelihood outcomes can be identified (Arnold, 1998). Forests are important natural capital. Past development efforts have primarily focused on building natural capital, without paying equal attention to how these assets, such as forests, combine with other assets to sustain livelihoods, especially among the poor. This oversight has resulted in gaps in understanding the contributions of forest products to sustainable livelihoods (DFID, 1999).

Few studies quantify the part of household inputs, labor allocation, incomes and costs attributable to forest product activities. While studies on fuel wood or specific forest products have been conducted, censuses and surveys do not usually include information on household-level use or activities for a more complete range of forest products (Byron and Arnold, 1999).

Poverty has been an underlying theme of Nepal's development plans since 1950s. Antipoverty programs have been in place subsequently. Forty two percent of the total population is compelled to live below the poverty line in Nepal (HMGN, 1998). The Tenth plan (2002-2006) has enshrined poverty alleviation as the only one principle objective. The plan aims at bringing down the population below the poverty line by the 20 years (HMGN, 2002). More prominent issues are elite domination on decision making process, lack of transparency; vested interests of powerful peoples are inequity in benefit sharing mechanism (Upreti, 2000). These might affects to the sustainable livelihood of the rural people.

1.3 Objectives

1.3.1 General objective:

The general objective of this study is to examine the impacts and contribution of community forestry on sustainable livelihoods of the rural people.

1.3.2 Specific objectives:

1. To analyze the social capital formation, structures, institutions, processes, shared understandings, social norms among the FUG members.

2. To search how community forestry is contributing to make change to the physical environment to help people meeting their basic needs.
3. To study the accesses of the rural people on financial resources and improvement on human capital development and natural capital formation due to community forestry implementation.
4. To analyze the relations between the contributions to rural livelihood.

1.4 Conceptual framework

Sustainable livelihood approach has been used as a tool (DFID, 1999; Ellis, 2000) for the overall research works in CFs (re: Figure2.2). It is based on literature review; field observation, record review and individual interview and group discussion by using the household questionnaire survey and participatory rural appraisal (PRA) tools.

Preliminary survey was carried out in April 2004. Some assets have been investigated using quantitative data while others such as social assets have been looked at through the use of qualitative and descriptive data. Thus, it is both a descriptive and quantitative type of study.

Figure 1.1 shows a simple schematic framework for studying benefits of and participation as well as contribution on livelihoods in community forestry in this study. This framework forms the basis for selecting variables influencing community forest management.
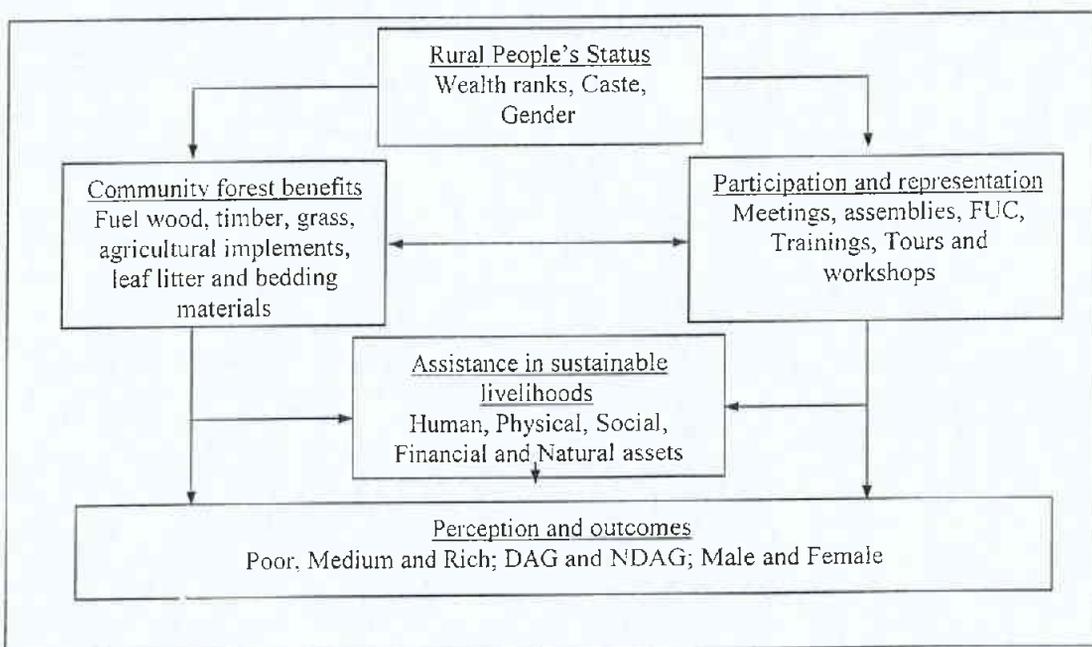
Figure 1.1 Conceptual framework of the study

1.5 Rationale of the study

It has recently been estimated that one quarter of the world's poor depend directly or indirectly on forests for their livelihood (World Bank. 2000). The nature of the dependencies varies, such as using forest environments for subsistence, income generation (Shepherd, Arnold and Bass, 1999). Reliance on forest products to fill gaps and complement other sources of subsistence inputs and income is likely to increase (Warner, 2000).

There are some problems observed in community forestry implementation process. More prominent issues are elite domination on decision making process, lack of transparency, vested interests of powerful peoples and inequality in benefit sharing mechanism (Upreti, 2000). There is a challenge to achieve the goals of sustainable resource management and the poverty reduction. To address these issues, the policy makers, planners, decision-makers, forest managers, community members and leaders need to be aware of the impact brought by the program on sustainable livelihood. Such studies would help further development of the policies of the forest management as a means to support rural life and have a direst impact and contributions in sustainable livelihoods in such areas.

Hence, the rationalization of this study is threefold. One, the study presents information on relatively understudied research topic. Although Nepal's community forests are among the more widely and intensively studied, few studies have examined the contribution of community forestry to sustainable development. Further, almost no studies examine the range of contributions from community forests to the subsistence of local residents on this regard. Two, the study represents comparative data on two districts. It examines and explains some of the variations between two districts. Finally, and most importantly, the study contributes to the analysis of the most widely prevalent assumptions that underlie the recent advocacy of community forestry policy in future so as to maximize the benefits of community forestry to all segments of the society emphasizing the poor, women, marginal and oppressed people. Although the data from the study are based on a relatively small sample of households, they are fairly unambiguous in their implications.

Furthermore, this study is envisaged to serve as a baseline study and benchmark as well as to facilitate further research on issues related to community forestry and sustainable livelihoods. In this regard, it seems logical to study the impacts of community forestry on access to different assets (Human, Physical, Social, Natural and Financial) in contribution to sustainable development. Therefore, this study is highly significant and is necessary to carry out.

1.6 Organization of the thesis

This thesis is divided into six chapters. The chapters cover Introduction; Literature review; Methodology; Study area; Findings and Discussions; Conclusion and Recommendations. This is followed by References and Annexes.

Chapter one describes the background of the thesis and the concept that conceived researcher to select this topic for the research. It includes the context of community forestry research in Nepal. Problem statement and the rationale of the study focus on the subject matter of the study. This chapter describes the objectives of the research, limitations of the study.

Chapter two describes the review of research –related literature; starting from concept of community forest management in Nepal and the concept of livelihood and livelihood assets to livelihood impact assessment, and ultimately related researches are reviewed. Chapter three describes methodology of data collection and analysis including the field-works and chapter four presents the study area including the background of the concerned district and FUG.

Chapter five describes the findings and discussions in different sections, describing contribution to each livelihood indicators of each asset. This chapter gives the relative contribution of the community forest to rural livelihoods. Chapter six draws conclusion and recommendations as research implications.

Chapter 2

LITERATURE REVIEW

2.1 Brief history of forest management in Nepal

Over the past two decades in South Asia there have been considerable changes in the institutional arrangements (Hobley and Shah, 1996) an in policy for forest management.

During Rana Regime Nepal's forestry sector was administered under the feudal system. Government encouraged the creation of new agricultural land from forests. The main reason for this policy was to increase land tax collection and agricultural production. Although, the Rana government recognized indigenous system of forest management (Shrestha, 1996), generally administration worked against sustainable management (Fisher et al., 1989).

The popular movement in 1959 overview the Rana government as the first forestry related legislation "Private Forest Nationalization Act, 1957" was abolished the private ownership of forests and transferred it into the government. As the government was unable to provide adequate supervision and control, the transfer of ownership made the access of forests easier to the public. Additional legislation in 1961 1968, 1971 and 1977 intended to improve forest management by the Ministry of Forest and Soil Conservation. These acts, which were projected to restore the government bureaucratic control of national forest by tracing offences and meting out punishment, clearly gave the impression that forests belonged to the government and it was only the government that could decide on how these resources should be used. The focus of community forestry, in 1970, was reforestation of degraded lands, but recently the emphasis is on participatory management and rural development (Baral, 1993). However, the implementation of these acts seems to have been somewhat selective (Gilmour and Fisher, 1991).

Exclusion of local people from forest resource management brought about conflicts between the local people and the government (Shrestha, 1996). At last, it became clear that forest protection will be ineffective unless the local people are involved in the decisions for its management (Dangi and Hyde, 2001). The process of deforestation was accelerated after 1960 (Dahal, 1994). Forest degradation rate was especially high during sixties and seventies.

In 1978, the government, recognizing the rapid depletion and deterioration of the country's forest resources and the Forest Department's limited capacity to handle the problem alone, introduced community forestry policy to seek local communities' cooperation in the sustainable management and use of the country's forest resource. The policy puts control of forests in the hands of users of

the resource, with the role of the Forest Department staff shifting from that of manager and controller of forests (Policing) to that of advisor for forest users (HMGN, 1988).

Realizing the importance of local people from resource conservation, the government recognized by law in 1978 with the necessity of involving local people in the management of forest resources. This initial attempt took the form of entrusting the resources to the community through the local political body called the *Panchayat*. This policy was continued over a decade until it was recognized to be ineffective and succeeded by the present form of community forestry (Shrestha, 1996).

Blaming the village people for the deterioration of forest resources (increasing population needing more farmland, pasture etc) is also a faulty judgment at best (Chhetri and Pandey, 1992). They further argued that people's participation is a solution to effective protection and management of common property resources such as forests.

Developing effective management of natural resources in Nepal without involving the people is almost impossible, as it is the people who write the county's destiny. Development is only possible and successful when people and local authorities are empowered and involved (Belbase and Regmi, 2002). Realizing this fact, the main objective of community forestry is to entrust the users with the responsibility and authority to manage and protect the forest resource.

2.2 Community Forestry policy in Nepal

Forest resources are one of the major resources directly affecting the livelihoods of rural people in Nepal. Subsistence needs of women; poor and backward people as well as commercial needs of well-off people are directly linked with and partially fulfilled by forest resources. Access to forest or tree resources can also help rural households diversify their livelihood base and reduce their exposure to risk. Forest can thus form an important safety net for the very poor in times of hardship (Arnold, 2001). Considering the paramount contribution of forest resources to the livelihood of users, MPFS (1989) envisaged to meet people's basic needs on a sustained basis, and to promote people's participation in forestry resources' development, management and utilization (HMGN, 1989).

The underlying principle of community forestry program is that the program is of the people, carried out by the people themselves, for the benefit of the community as a whole (Rao, 1994). It recognizes the key role of people's participation to sustainable development. The fundamental

premise of community forestry is that transfer of lands and land use rights from the government to local communities. Thus, it improves the sustainability of the natural resources and enhances the welfare of rural households and communities (Dangi and Hyde, 2001).

The key government policies related to community forestry, as mentioned in the Master Plan for the Forestry Sector (Barlett, 1992 and HMGN, 1988), can be summarized as follows.

1. promotion of community forestry, entering protection and management of forest to actual users.
2. community forestry will get priority in the allocation of resources.
3. all accessible forests are to be handed over to the communities, to the extent that they are able and willing to manage them.
4. forest user group shall manage and protect their forests, and benefit from it.
5. forest user group shall get all products and income from the forests.
6. retraining of forestry staff for their new role as advisors and extension workers.
7. formulation of simple management with the forest user groups as quickly as possible.
8. planning and rapid implementation of community forestry according to decentralization principle.

To facilitate the implementation of Master Plan, Forest Act, 1993 and forest Regulation, 1995 are in place. The 1993 Nepal Forest Act gives legal authority to forest user groups (FUGs0 to resume management of forest areas I the hills of Nepal. However, the policy does not question the types of power relationships that exist in the society and viewed as homogenous group with no segregation (Pokharel, 2001, a). Land ownership remains vested with HNGN but the management control rests solely with the FUGs, which legally own the trees, develop their own management plans, set prices for forest outputs and determine how surplus income is spent.

There are main four steps to handing over a forest to a community, and these include identifying the real users of a forest; delineating the area of forest used, and preparing an operational plan which must include details of the forest, the objectives of forest management, and information on proposed income-generating activities; and penalties for now following the rural and regulations (HMGN, 1995, 1993). After receiving the DFO's approval for the operational plan, it is left to the FUG to implement the plan.

Based on Forestry Act of 1993, under 'Provisions Relating to Community Forests' the FUGs are 'entitled to develop, conserve, use and manage such forest and sell and distribute the forest

products independently fixing their prices, according to an operational plan'. This autonomy allows FUGs to gain bargaining power and effectively to generate income from forest products. In addition to this, the FUG, if capable of running an industry based on forest products according to the work plan, may do so outside the area of the community forest after obtaining the approval of concerned agencies on the recommendation of the DFO (HMGN, 1995).

It is recognized that the successes of community forestry largely depends upon successful motivation of the users, mutual cooperation among the users, and the productive involvement of the Department of Forest (DOF) staffs (Karki et al., 1994). They further stated that the effectiveness of any community forest management system may be influenced by –i) the extent of the forest resources; ii) the extent of private landholdings; iii0 caste and ethnic composition; iv) the degree and nature of local factionalism; v) proximity to local markets; vi) unit of management; vii) inter-community relations; viii) system of livestock management; ix) mode of distribution of benefits; x) government funded and/or community sanctioned forest watchers; xi) extent of ownership of private trees; and xii) the role of local forestry staffs.

2.3 Forest to support rural poor

Nepal's forest policy and its community forestry program are progressive because they recognize the primacy of local people making the decisions about local forest management and provide effective mechanisms whereby the rural poor can benefit from involvement in forest management (Barlett, 1992). Positive attitudes of local communities towards forest management practices are essential prerequisites for local participation in forest management (Obua et al, 1998). In Nepal, forest and tree resources almost always have a place in rural livelihoods. More than 90 percent of the population lives in rural areas, where most people earn a living from agriculture and livestock production activities. People rely on forests and trees for fodder and bedding materials for livestock, for leaf litter for use as fertilizer, for timber and poles for houses and agricultural implements and especially for fuel wood, which is the most important, and often the only, source of energy for cooking and heating for most rural households. In addition, rural households collect diverse NTFPs for use at the household level and for cash income.

In must cases, it has been observed that gap between rich and poor is widened, situation of women and marginalized people is not improved, and power is caught by handful of people in community (Timsina, 2001). However, successes can not be ignored. Upreti (2000) argued that the need based access to forest resources to poorest and disadvantaged group is increasing, their voice and interests and their involvement in decision making are increasing. However, the level

10

of equity and empowerment is yet inadequate. All the benefits accrued from the community forestry go to the elite (Hobley, 1996; Malla 2001). After the intervention of community forestry, the access over the forests is restricted. This has affected the poor who mostly depends on the common property forest resources (Timsina, 2001).

The richest households commonly have extensive *bari* and *khet* land and they commonly have extensive on-farm tree resources, they own substantial number of livestock and grazing land also. On the contrary, the poorest households commonly have little or no land and depend on tenuous livelihood strategies: agricultural laboring, pottering, fuel wood selling, NTFP collection and small livestock raising. All wealth ranks commonly rely on local forests for fuel wood needs. The forest resources have generally improved and indeed continue to do so. However, the livelihoods of the poorer groups have not significantly improved yet across most FUGs (Adhikari. 2001; Springate-Baginski et al. 2001; Gentle, 2000). This is largely because decision making has tended to be dominated by the village elite and middle classes, and it has tended to be their interests which been articulated.

Forest-based income is a major contributor to livelihoods for some rural people in much of the world. It is generally observed that poorer people are less influential in decision-making processes and less benefited from the community forestry. There is no doubt that through CF forest deterioration has generally been reversed and condition of most forests is improving. To answer whether and how the poor in particular have benefited from CF, we must consider how the poor situation would be without CF, and secondly to what extent the poor have shared the benefits of CF? Some poorer forest users may be excluded from the FUG altogether (Fisher, 2000). While efforts at forest rehabilitation were anticipated to have negative effects on the livelihoods of the poor in the initial period (due to new restrictions placed on their access to forests and their products), the long-term effects were expected to be more beneficial (Brown et al., 2002). But Malla (2000) found that wealthier households appear to benefit more, in terms of forest product distribution and community forest management, than the poor.

Community forestry has potential for contributing to poverty reduction and the improvement of rural livelihoods. However community forestry to be genuinely successful in sustainable poverty reduction, women as well as minorities needs to be involved and empowered (Fomete and Vermaat, 2001). Social transformation through the effective management of community forestry can be achieved in Nepal (Upreti, 2000). It is generally observed that the existing forest management strategy of CFUGs is protection-oriented (Baral, 1998; Karki et al., 1994, and

Branney, 1996). The most important impact of passive management is the declining people's participation in the community forestry activities (Acharya, 2001).

2.4 Improving the livelihoods by CF

Participation in management, extraction and decision making within the user group is a key to collective action. A study done by Pokharel (2002) found that community forestry has been successful in achieving sustainable forest and community, however, gender and equity issues are yet another challenge. Ojha and Bhattarai (2000) concluded that the poor households do not benefit from community forests as much as affluent households and are not very interested in community participation. Pokharel (2001b) concluded that the community forestry contributes to the improvement of the livelihoods of rural people in three ways by increasing the resources, by reforming the organization, agencies and policies, and by facilitating the social changes. Poudel (2000) concluded that the poor, women and DAG households are less benefited from community forestry than others.

Ghimire (2000) and Douglas (2000) reported that the women having access to community forestry have experienced more assets accumulation and improved their livelihood after the forest was handed over to the community. Gentle (2000) took a study on 'the flow and distribution of community forestry benefits: a case study from Pyuthan district, Nepal' and reported that the community forestry marginalized the oppressed people in the society.

With the initiation and the active participation of the FUG members the development works were constructed (Yadav, 1998). Therefore the community forestry is taken as a part of community development activities. The formation of FUG has once again proved its worth in social unity whereby people's participation in every development activities has increased. It has played a crucial role in "bottom up approach" to gain increased recognition of the local problem and issues (Yadav, 1998).

Varughese (1999b) examined the relationship between population, institutions, and forest conditions in the middle hills of Nepal. His study suggested that the development policy aimed at preserving the environment must recognize the significance of institutional arrangements at the local level to resource conditions at that level. Furthermore, the study suggested that government policy on participatory resource management would be more successful if it is facilitative of institutional innovation and adaptation at the village level. Therefore, the more important the

benefit of community forestry is institutional arrangements at grass root level and enhancing the social unity. Thus, social capital is created and further modifies (Varuhgese, 2001).

The institutional development of the FUGs is in well progress, user members follow their traditional systems of forest management which are also well recognized. The national level federation of FUG have also been formed all indicating that the FUG have started working as an institution. The institutional development of the FUGs has also strengthened the social ties between the members of FUGs. It is therefore, the established CF has now begun to show the positive impacts on the overall environment related to forests (Yadav, 1998).

In most of the FUGs, the principle sources of fund generation are sale of forest products, membership fee, fines from rule-violators, grants, donations, and government subsidy. FUG fund is used on forest management (Protection, seedling production, plantation and other related to forest development), running office, and community development (construction maintenance of road, school, drinking water) works. Equitable benefit sharing and decision making processes are fundamental factors in the sustained development of community forestry (Maharjan, 1998; NUKCFP, 1998 and Bhatia, 1999). According to case study, Mahajan (1998) suggests that the focus is essential on the gender equity aspect of the FUG to maintain the sustainability of community forestry. He further argues that special focus on women, poor ands disadvantaged users of community forestry should be placed, which in turn, increase the participation of these groups in community forest management.

Some households, especially poorer ones, have less access today to forest products for subsistence use and income than they had before the community forestry intervention, and that income from the forest is minor and realized only after a ling time (Malla, 2001). Forest management is governed by an executive committee: this is often dominated by wealthier, high-caste males in the key positions (Malla, 2001).

The village welfare and development activities do not necessarily benefit the entire forest user group members, especially those who are most in need, and some activities may only benefit poorer members in the long term (Malla, 2001). Malla (2001) further stated that the community forestry intervention has contributed greatly to the development of the forest resource management institutions at the grassroots level in Nepal and he suggested that there is a need to reconsider the approach to community forestry, on socio-economic objectives.

13

2.5 Concept of Livelihood

A livelihood comprises of assets (natural, social, human, financial, and physical) and activities required for the means of living. A livelihood is sustainable when it can cope with and recover from stresses and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Chamber and Conway, 1992 cited in Scoones, 1998). Sustainable livelihood is a way of thinking about the objectives, Scope and priorities for development with the ultimate aim of poverty elimination (DFID, 2001). It is a holistic approach that tries to capture, and provide a means of understanding, the vital causes and dimensions of poverty without collapsing the focus onto just a few factors (e.g. economic issues, food security, etc.). It also tries to sketch out the relationship between the different aspects (causes, manifestations) of poverty, allowing for effective prioritization of action at an operational level (figure –1) (DFID, 1999).

Here,   H= Human Capital,   N= Natural capital   F= Financial Capital
         P= Physical Capital   S= Social Capital
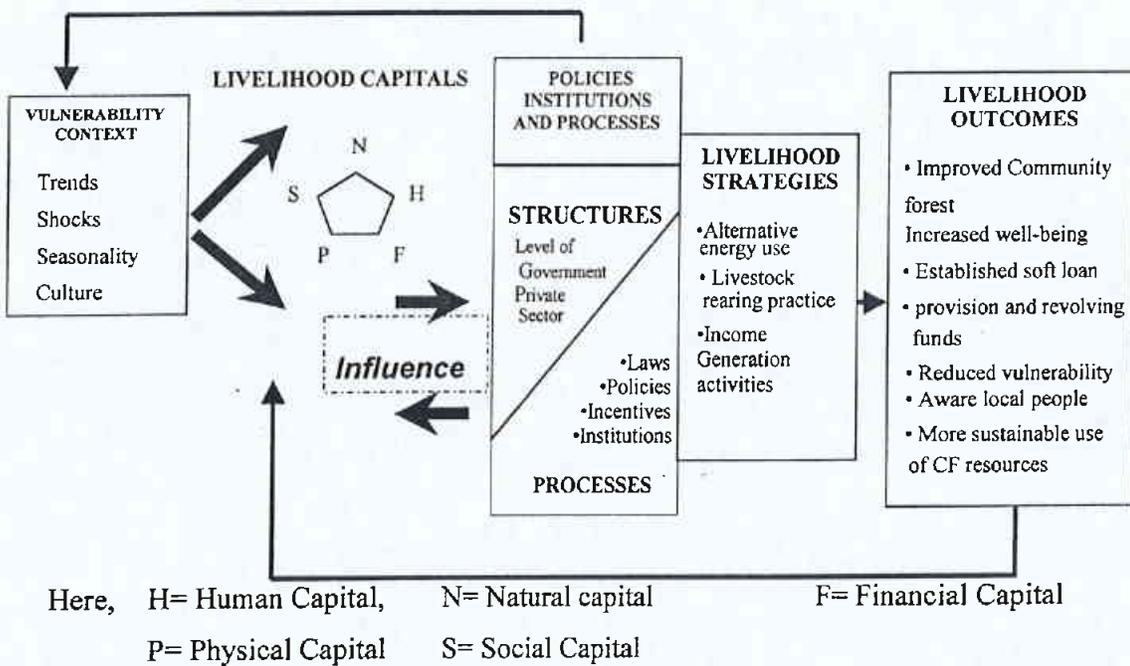
Figure 2.1: Sustainable Livelihood Framework (DFID, 1999)

The sustainable livelihood framework (figure 1) has a number of basic elements. The key question to be asked in any analysis of sustainable livelihoods is (Scoones, 1998).

Given a particular *context* (of policy setting, policies, history, agro-ecology and socio-economic conditions), what combination of *livelihood resources* (different types of capital) in the ability to follow what combination of *livelihood strategies* (Agricultural intensification/extensification,

livelihood diversification and migration) with what *outcomes*? Of particular interest in this framework are the *institutional processes* (embedded in a matrix of formal and informal institutions and organizations) which mediate the ability to carry out such *strategies* and achieve (or not) such *outcomes.*

The livelihoods framework is a tool to improve our understanding of livelihoods, particularly the livelihoods of the poor that was developed by the sustainable rural livelihoods Advisory Committee, building on earlier work by the Institute of Development Studies (amongst others) (DFID, 1999). The framework presents the main factors that affect people's livelihoods, and typical relationships between these. It can be used in both planning new development activities and assessing the contribution to livelihood sustainability made by existing activities (DFID, 1999).

In particular, the framework:

- Provides a checklist of important issues and sketches out the way these link to each other;
- Draws attention to core influence and processes; and
- Emphasizes the multiple interactions between the various factors, which affect livelihoods.

The framework is centered on people, and does not work in a linear manner and does not try to present a model of reality. Its aim is to help stakeholders with different perspectives to engage unstructured and coherent debate about the many factors that affect livelihoods, their relative importance and the away in which they interact. This in turn, should help in the identification of appropriate entry points for support of livelihoods (DFID, 1999).

The form of framework is not intended to suggest that the starting point for all livelihoods (or livelihood analysis) is the *vulnerability context*, which through a series of permutations yields *livelihoods outcomes.* Livelihoods are shaped by a multitude of different forces and factor that they constantly shifting. People-centered analysis is most likely to begin with simultaneous investigation of people's assets, their objectives (the *livelihood outcomes* which they are seeking) and the *Livelihood Strategies* which they adopt to achieve these objectives. There are important feedback relationship between *transforming structures* and *processes* and the *vulnerability context*; and *livelihood outcomes* and *livelihood assets* and others (DFID, 1999).

The framework is intended t be a versatile tool for use in planning and management. It offers a way of thinking about livelihoods that helps order complexity and makes clear the many factors that affect livelihoods.

A more important task than perfecting the framework itself is putting the ideas it represents into practice. If that calls for adaptation of certain boxes or revision of certain definitions to make the framework more useful, all the better; the framework becomes a living tool.

Use of the framework is intended to make a distinct contribution to improving DFID's ability to eliminate poverty. It is not simply a required step in project/program preparation, nor does it provide a magic solution to the problem of poverty elimination. In order to get the most from the framework:

- The core ideas that underline it should not be compromise during the process of adaptation. One of these core ideas is that (most) analysis should be conducted in a participatory manner.

- Use of the framework should be underpinned by a serious commitment to poverty elimination. This should extend to developing a meaningful dialogue with partners about how to address the underlying political and economic factors that perpetuate poverty.

- Those using the framework must have the ability to recognize deprivation in the field even when elite and others may want to disguise this and skew benefits towards themselves (this will require skill and rigor in social analysis).

2.6 Livelihood assets

The livelihood approach is concerned first and foremost with people. It seeks to gain an accurate and realistic understanding of people's strength (assets or capital endowments) and how they endeavor to convert these into positive livelihood outcomes. The approach is founded on a belief that people require a range of assets to achieve positive livelihood outcomes; no single outcomes that people seek. This is particularly true for poor people whose access to any given category of assets tends to be very limited. As a result they have to seek ways of nurturing and combining what assets they do have in innovative ways to ensure survival.

The asset pentagon lies at the core of the livelihood framework, within the vulnerability context. The pentagon was developed to enable information about people's assets to be presents visually, thereby bringing to life important inter-relationship between the various assets. The shape of the pentagon can be used to show schematically the variation in people's access to assets. The idea is

that the center point of the pentagon, where the lines meet, represents zero access to assets while the outer perimeter represents maximum access to assets. On this basis different shaped pentagons can be drawn for different communities or social groups within communities.

It is important to be noted that a single physical capital can generate multiple benefits. If someone has secured access to land (natural capital) they may also be well endowed with financial capital, as they are able to use the land and not only for direct productive but also as collateral for loans.

Pentagons can be useful as focus point for debate about suitable entry points, how these will serve the needs of different social groups and likely trade-off between different assets. However, using the pentagon in this way is necessarily representative. At a generic level there is no suggestion that we can – or-should quantify all assets.

2.6.1 Human Asset/Capital

Human capital represents the skills, knowledge, ability to labor and good health that together enable people to pursue different livelihood strategies (Carney, 1999) and achieve their livelihood objectives. At a household level human capital is a factor of the amount and quality of labor available; this varies according to household size; skill levels, leadership potential, health status, etc.

Human capital appears in the generic framework as a livelihood asset, that is, as a building block or means of achieving livelihood outcomes. Its accumulation can also be end in itself. Many people regard ill health or lack of education as core dimensions of poverty and thus overcoming these conditions may be one of their livelihood objectives.

As well as being of intrinsic value, human capital (knowledge and labor or the ability to command labor) is required in order to make use of any of the four other types of assets. It is therefore necessary, though not on its own sufficient, for the achievement of positive livelihood outcomes.

Information needed to analyze the human capital (DFID, 1999)

There are many quite well developed indicators of human health, though some such as life expectancy-may be difficult to assess at local level. Rather than focusing on exact measure, it may be more appropriate to investigate variations. Do different social groups have obviously lower or higher life expectancy? Are the children of indigenous groups, for example, more poorly

nourished than other children? Does the quality of health care available to different groups differ markedly?

Education indicators may be easier to assess. It is relatively simple to determine the average number of years a child spends in school, or the percentage of girls who are enrolled in school. What is far more difficult is understanding the quality, impact and value to livelihoods of these years in school, the correlation –if there is one-between years in school and knowledge, and the relationship between either of these and leadership potential.

Formal education is certainly not only source of knowledge-based human capital. It is equally important to understand existing local knowledge, how this is added to and what purpose it serves. For, example, some knowledge can be highly useful for production-think of knowledge about modern, intensive farming techniques – but be neutral or negative in terms of its effect upon the environment and environmental sustainability. Or some knowledge –again think of knowledge for production, either agricultural or industrial – may be effectively useless unless it is coupled with other types of knowledge (Knowledge about hoe to market, goods, about appropriate quality standards, etc).

The following types of questions are likely to be important when thinking about human capital:

- How complex is the local environment (the more complex the problems, the greater the importance of knowledge)?

- From where (what sources, networks) do people access information that they feel is valuable to their livelihoods?

- Which groups, if any, are excluded from accessing these sources?

- Does this 'exclusion' affect the nature of information available? (e.g., if women are excluded, then knowledge of traditionally female production activities may be limited.

- Are knowledge "managers" (e.g., teachers or core members of knowledge networks) from a particular social background that affects the type of knowledge that exists in the community?

- Is there a tradition of local innovations? Are technologies in use from "internal" or "external" sources?

- Do people feel that they are particularly lacking in certain types of information?

- How aware are people of their rights and of the policies, legislation and regulation that impact on their livelihoods? If they do consider themselves to be aware, how accurate is their understanding?

2.6.2 Social Asset/Capital

There is debate over the term social capital, about what are the things included in it. However, in the context of sustainable livelihoods framework, it is taken to mean social resources upon which people draw in pursuit of their objectives. These are developed through:

- Networks and connectedness, either vertical (patron/client) or horizontal (between individuals with shared interests) that increase people's trust ands ability to work together and expand their access to wider institutions, such as political or civic bodies;

- Membership of more formalized groups which often entails adherence to mutually-agreed or commonly accepted rules, norms and sanctions; and

- Relationships of trust, reciprocity and exchange that facilitate cooperation reduce transaction costs and may provide the basis for informal safety nets amongst the poor.

The above are all inter-related. Of the five livelihood capitals, social capital is the most intimately connected to *Transforming structures* and *Processes.*

Mutual trust and reciprocity lower the costs of working together. This means that social capital has a direct impact upon other types of capital:

- By improving the efficiency of economic relations, social capital can help increase people's incomes and rates of saving (financial capital). (Isolated studies have shown that communities with 'higher level' of social capital are wealthier-but questions remain about measuring social capital.)]

- Social capital can help to reduce the 'free rider' problems associated with public goods. This means that it can be effective in improving the management of common resources (natural capital) and the maintenance of shared infrastructures (physical capital).

- Social networks facilitate innovation, the development of knowledge and sharing of that knowledge. There is, therefore, a close relationship between social and human capital.

Social capital can also be valued as a good in itself. It can make a particularly important contribution to people's sense of well being (through identity, honor and belonging).

Information needed to analyze the social capital (DFID, 1999)

Levels of social capital are hard to gauge from the outside. They may be discernible only after lengthy analysis (which may be beyond project/program resources) and it is unlikely that they will be quantifiable. For example, simply counting the number of registered groups in a

community is not likely to yield a measure of social capital; group nature and quality is as important as group members. Often we will be looking at trends – whether the state of social organization appears to be becoming better or worse for livelihoods-rather than trying to gauge exact level of social capital.

It is very important not to permit these difficulties to cause neglect of social factors when working with communities. Over time it will be vital to develop an understanding of the nature of civic relations at a wider community level, of the types of social resources upon which households rely and of who is excluded from these benefits. Groups with overlapping membership can be particularly problematic if it emerges that people with a particular social profile are excluded from all groups. Another important point for observation is people's coping strategies in times of crisis and the extent to which they have relied on social resources to see them through.

2.6.3 Natural Asset/Capital

Natural capital is the term used for the natural resource stocks from which resource flows and services (e.g., nutrient cycling, erosion protection) useful for livelihoods are derived. There is wide variation in the resources that make up natural capital, from intangible public goods such as the atmosphere and Biodiversity to divisible assets used directly for production (trees, land, etc.). Within the sustainable livelihood framework, the relationship between natural capital and the vulnerability context is particularly close. Many of the shocks that devastate the livelihoods of the poor are themselves natural processes that destroy natural capital (e.g., fires that destroy forest, floods and earthquakes that destroy agricultural land) and seasonality is largely due to changes in the value or productivity of natural capital over the year.

Natural capital is very important to those who derive all part of their livelihoods from resource-based activities (farming, fishing, gathering in forests, mineral extraction, etc.). However, its importance goes beyond this. None of us would survive without the help o f key environmental services and food produced from natural capital. Human health (human capital) will tend to suffer in areas where air quality is poor as a result of industrial activities or natural disasters (e.g., forest fires). And although our understanding of linkages between resources remains limited, we know that we depend for our health and well being upon the continued functioning of complex ecosystems (which are often undervalued until the adverse effects of disturbing them apparent).

20

Information needed to analyze the natural capital (DFID, 1999)

It is not only the existence of different types of natural assets that is important, but also access, quality and how various natural assets combine and vary over time (e.g., seasonal variations in value). For example, degrade land with depleted nutrients is of less value t livelihoods than high quality, fertile land, and the value of both will be much reduced if users do not have access t water and the physical capital or infrastructure that enables them to use that water.

With natural resources it is also very important to investigate long-term trends in quality and use. This is familiar territory for those skilled in the practice of rural appraisal techniques (mapping, transect walks, etc.). Typical issues for analysis might include:

- Which groups have access to which types of natural resources?

- What is the nature of access rights (e.g., private ownership, rental, common ownership and highly contested access)? How secure are they? Can they be defended against encroachment?

- Is there evidence of significant conflict over resources?

- How productive is the resource 9issues of soil fertility, structure, Salinization, value of different tree species, etc.)? How has this been changing over time (e.g., variation in yields)?

- Is there much spatial variability in the quality of the resources?

- How is the resource affected by externalities? (For example, the productivity potential of different part of watershed is affected by the activities of other user. And the way in which resource systems operate; the value if fisheries depends upon the number if other users who have access and the choices they make about their catches; Biodiversity is often damaged by intensive agriculture.)

- How versatile is the resource? Can it be used for multiple purposes? (This can be important in cushioning users against particular shocks).

Environmental economists have invested considerable effort in trying to determine overall values for natural assets that take into account:

- Direct use value (e.g., of land used for agricultural production or of recreation areas);

- Indirect use value (e.g., Biodiversity, erosion protection and other ecological services) and

- Non-use value or existence value (often calculated on the basis of amount people would be willing to pay to see the continued existence of a given resources, regardless of whether they use it).

This type of valuation exercise helps remind us of the many uses of natural resources and also of our obligations as 'custodians' rather than 'owners'. However, most livelihood analysis of natural capital will not go this far. Indirect use values are likely to feature prominently in calculations only when they are problematic or where they offer significant income prospects for example:

- Problem might arise where tree felling has caused knock0on erosion problems, or over exploitation of coastal areas is leading to increase storm damage in adjacent areas.

- Significant income earning opportunities might exist in areas of high natural biodiversity.

2.6.4 Physical Asset/Capital

Physical capital comprises the basic infrastructure and producer goods needed to support livelihoods.

- Infrastructures consist of changes to the physical environment that help people to meet their basic needs and to be more productive.

- Producer goods are the tools and equipment that people use to gathering more productivity.

Following components of infrastructure are usually essential for sustainable livelihoods:

- Affordable transport;

- Secure shelter and buildings;

- Adequate water supply and sanitation;

- Clean, affordable energy; and

- Access to information (communication)

Infrastructure is commonly a public good that is used without direct payment. Exceptions include shelter, which is often privately owned, and some other infrastructure that is accessed for a fee related to usage (e.g., toll roads and energy supplies). Producer goods may be owned on an individual or group basis or accessed through rental or fee for markets, the latter being common with more sophisticated equipment.

Information needed to analyze the physical capital (DFID, 1999)

The approach to analyze physical capital must be participatory. Users may place a greater importance on some services than others and these priorities must be taken into account. For example, people may prefer to use a surface water supply a long away rather than to pump a well near at hand.

- Does the infrastructure support a long service? There is little benefit in a school building if there are no teachers, or the pupils can not get to it when classes are being held.

- Is the infrastructure appropriate? Can the physical capital provided meet the needs of the users in the long term? This involves not just the sustainability of the services as it stands but an analysis of the ability of the capital to be adapted and upgraded in response to changing demand.

Access is also a key concern. Sometimes costly infrastructure exists in an area, but this does not mean that the poor have access to it. This might be because the user-free are too expensive for them, or because richer groups use their and influence to control or monopolize access.

2.6.5 Financial Asset/Capital

Financial capital denotes the financial resources that people use to achieve their livelihood objectives. The definition used here is not economically robust in that it includes flows as well as stocks and it can contribute to consumption as well as production. However, it has been adopted to try to capture an important livelihood building block, namely the availability of cash or equivalent, which enables people to adopt different livelihood strategies.

There are two main sources of financial capital:

- Available stocks: Savings are the preferred types of financial capital because they do not have liabilities attached and usually do no entail reliance on others. They can be held in several forms: cash, bank deposits or liquid assets such as livestock and jewelry. Financial resources can also be obtained through credit-providing institutions.

- Regular inflows of money: Excluding earned income, the most common types of inflow are pensions, or other transfers from the state, and remittances. In order to make a positive contribution to financial capital these inflows must be reliable (while complete reliability can never be guaranteed, there is a difference between a one-off payment and a regular transfer on the basis of which people can plan investment).

Information needed to analyze the financial capital (DFID, 1999)

First it is important to gain a straightforward understanding of:

- Which types of financial service organizations exist both formal and informal)?

- What services do they provide, under what conditions (interest rates, collateral requirements, etc.)?

- Who-which groups or types of people-has access? What prevents others from gaining access?
- What are the current levels of savings and loans?

Understanding the nature of saving behavior requires finding answers to questions such as:

- In what form do people currently keep their savings (livestock, jewelry, cash, bank deposits, etc.)?
- What are the risks of these different options? How liquid are they? How subject to changes in value depending upon when they are liquidated?

In past, the existence and effects of what can be quite sizable flows of remittance income have often been over-looked. To correct this, it is important to understand:

- How many households (and what type of family members living away who remit money?
- How is remittance income transmitted?
- How reliable are remittances? Do they vary by season? How much money is involved?
- Who controls remittance income when it arrives? How is it used? Is it reinvested?

2.7 Impact assessment methods

Assessing impact can also be used to study the impact of Community forest on the livelihoods of local people; and following methods (Bond, 2001) were used:

i) Livelihood Asset Status Tracking (LAST)

LAST was used as a rapid means of scoring the combined livelihood asset status of households that can be used as a proxy for impact on livelihoods. The tool was applied for a reasonably homogenous area in terms of residents from the area. They create 'word pictures' for a number of stages from worst to best situation known locally, of each livelihood capital in turn. These incorporate locally meaningful indicators selected to have a balance between productivity equity and sustainability. The resultant tool is used in household enumeration as a guide or observation and discussion until the household can be 'placed' on the scale for each capital using the judgments of the enumerator which is then converted to a percentage score.

Blind precision tests of the method seem to give a margin of error of 5-19% between enumerators; accuracy can be tested by a sample of in-depth studies. The tool can be used for various purposes but a repeat panel survey in a large program can give useful pointers of trends in emerging impacts. These can be used to target follow-up by Ad hoc Learning Exercises (ALEX), small internally initiated studies and reviews. The LAST provides management with a cost-

effective system for detecting and learning from changes in the impact on beneficiary's livelihoods.

ii) Most Significant Change

This wholly qualitative method of impact assessment has been used on selected brief accounts of what staff at various levels considers being the most significant changes taking place in their areas of responsibility within a fixed period. These are open-ended and can be either positive or negative. This system is simple and has been used to supplement more quantitative methods of reporting on projects and encourage ongoing reflection of good and bad impacts amongst various stakeholders.

iii) Social Accounting

This system has been used to incorporate various other methods but in a systematic way. With social audit, it is taken a stage further and independent audit is one for public scrutiny that can have commercial advantages in verifying the non-profit purpose of an organization or in verifying ethical standards for market advantage. Social accounting is done in six steps. Social objectives and ethical standards are identified (mission statement), stakeholder groups are identified, in consultation social performance indicators are established, performance is measured and record in accounts, independent audit is done and results published.

iv) Rolling Baseline

Lack of baseline information is a perennial problem in Impact Assessment. One way round this difficulty is to construct retrospective baseline information. The rolling baseline uses the initial needs-assessment, Participatory Poverty Assessment, village profile or application data that is carried out as group, village or individual joins the project and compares with others using the same methods over time as they join.

v) Group Development/ Sustainability Self-Assessment:

Many rural micro-enterprise and micro-finance initiatives are based on small autonomous groups of beneficiaries and depend on the success and sustainability of those groups. These can be monitored independently, but much is to be gained for the groups themselves from periodic self-assessment. Even without the monitoring aspect, self-assessment raises key issues for reflective discussion and future action. The peoples Participation Project of the FAO developed this method. A participatory workshop explores with experienced group members what are the important criteria for group development and sustainability. These can be subdivided into elements and even given relative weightings if desired. Each criterion or element is then

converted into four graded questions for the group to self-assess. These are framed to present a range of questions from a completely unacceptable situation with great need for improvement, scored respectively from 0 – 3. The group poses these questions to itself periodically to stimulate discussion and reflection, recording a consensus score each time. This method is an example of a quantitative assessment converted to a quantitative score capable of analysis over time and wider areas (Uphoff, 1991 and Bond & Mukherjee 2000 in Bond, 2001).

vi) PRA/ PLA

Participatory Rural Appraisal (PRA) and Participatory Learning and Action (PLA) are approach as and family of techniques used to facilitate the participation and control of marginalized and/ or illiterate people in change. PRA encourages their analysis while PLA is for them to take control, learn and change from that analysis. These popular methods are included in many of the points above to ensure genuine participation.

Chapter 3
METHODOLOGY

3.1 Study area/Research site selection

The empirical data for this study was collected from Baglung district of western mid-hills of Nepal where CF program has been implemented for the last two decades. Three FUGs were selected to minimize biases and to a large extent and to ensure that the entire spectrum of spatial and socio-economic variations is adequately represented.

At the first stage, list of handed over CFs was prepared from the database maintained by the Livelihood and Forestry Program (LFP). From the list of handed over CFs, which are from Kharbang Rangepost, Dobilla Rangepost and Baglung Rangepost was sampled. After discussion with District Forest Office (DFO) staff and FUG records on DFO and LFP, considering the following criteria, a list of FUGs was prepared.

- Socio-economic criteria
- Ethnicity/caste representation
- Accessibility/remoteness of the area
- Age of user groups
- Resource status

Then, from the list, three FUGs were selected. The following table gives some details of selected FUGs for this research.

Table 3.1 Selected CFUGs for this research

S. No	Name of FUG	Area of CF (ha)	User HHs	Distance from the district Headquarter (Km).
1.	Lattekhoriya	115.00	165	22
2.	Juredhunga	10.28	80	39
3.	Jograni	22.5	183	7
	Average	49.27	142.6	23.66

3.2 Research Design

The whole methodology is divided into different steps. It is presented below. Thus the research design is particularly shows the data types and the collection procedures with analysis criteria. The output declaration procedures were shown in the research design.
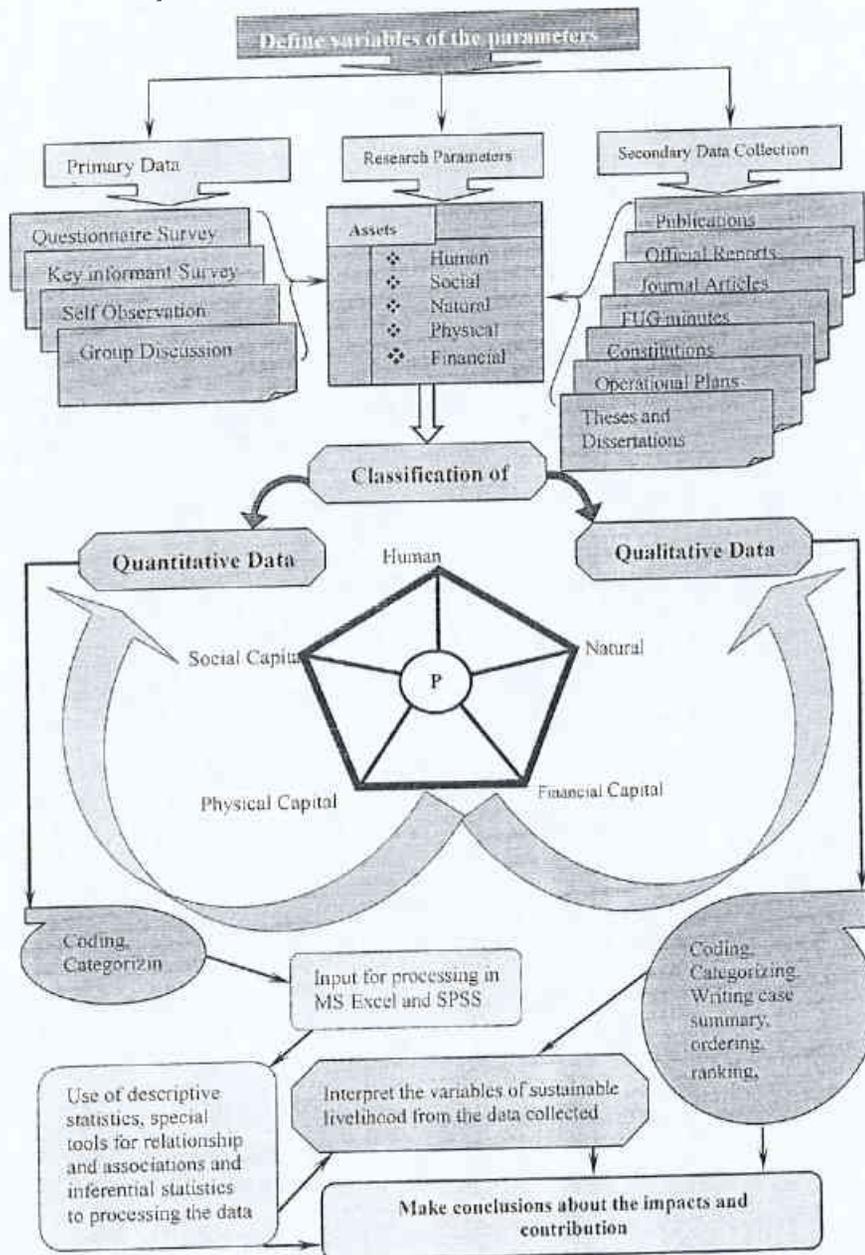
* Denotes people is in center

Figure-3.1: The research Design

3.3 Nature and sources of data

The concept of livelihoods encompasses varied ways of living that meet individual, household, and community needs. Needs, in this context, are understood holistically, and would include the social, economic, cultural, and spiritual. For a livelihood to be sustainable, safeguarding resources and opportunities for future generations, it must be adaptive and able to withstand stress, and provides individuals with means for food, shelter and an acceptable quality of life and the availability and accessibility of options are ecological, socio-cultural, economic, political, and predicated on equity, ownership of resources and participatory, decision-making.

There were following variables selected from each livelihood components of the conceptual/ SL framework. The selected variables were drawn from DFID, 1999, HMG/N, 1997 and Chamber, 1983 by using appropriate data collection tools for the assessment of rural livelihoods of the community forest.

3.3.1 Primary data

Contribution made to local livelihood by the community forestry was found by the key informants interviews, group discussions, perception analysis and questionnaire survey in terms of five capitals of livelihood, as described below.

a) *Natural Capital*: Resource of the community forestry is itself an asset. In this, answers to the following question were found out:
   i)   What is the condition of community forest after its hand over (Increasing or Decreasing)?
   ii) Is the resource of community forest accessible to all the wealth ranks equally?
   iii) What is the perception of users about the use of forest products?

b) *Human Capital*: Contribution to human capital was measured in terms of :
   i)   Awareness about policies, regulations, etc.
   ii) Feeling about lack of information.
   iii) Human health improvement
   iv) Human skill and knowledge improvement.
   v)   Education sector improvement.

c) *Social Capital*: Contribution to social capital was measured in terms of:
   i)   Membership of some organization due to the community forestry.
   ii) Networking between and among the organizations due to the community forestry.
   iii) Group cohesion

iv)　Equity in the collection, and carriage of community forest products.

v)　Publicity due to the community forestry.

d) *Physical Capital*: Contribution to the physical capital by community forestry was analyzed in terms of:

i)　road building

ii)　electricity

iii)　water supply

iv)　telephone, and other services

v)　Contribution to other physical facilities such as to the production equipment and means that enable peoples to pursue their livelihood.

e) *Financial Capital*: Contribution to annual income of the households (HHs) was found out in terms of:

i)　Money income (average annual income per household)

ii)　Indirect money value to the local people.

The financial contribution was analyzed by the shadow pricing.

3.3.2 Secondary data

It includes a review of available existing literatures on the subject for secondary data collection. FUG minutes of committee meetings and assemblies, constitutions and operational plans as well as financial and administrative records of each FUG were reviewed.

3.4 Universe and Sampling

Different types of sampling methods were applied for the selection of the households for the questionnaire survey. Stratified random sampling was chosen for the selection of the households to be surveyed. All the sampling procedures are illustrated below.

Household Sample Design: stratified random sampling Households

At the second stage, based on records of FUG, a statistically reliable sampling frame was made incorporating all of the user's households. The household was considered as the lowest unit for sampling. Out of the total households in the study site, at 95% confidence level with 98% expected rate of occurrence and at a reliability of + (or -) 5%, households was selected using following sample size determination formula (Kothari, 1990).

30

$$n = \frac{Z^2 \cdot p \cdot q \cdot N}{e^2 (N-1) + Z^2 \cdot p \cdot q}$$

Where

n = sample size

Z = the value of the standard variate

p = proportion of sample of population estimate

$q = 1-p$

N = population

e = the margin of error

Household sampling was done using the stratified random sampling method. The economic and social stratification was made in each FUG. 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).

The sample from each category was selected by adopting following formula (Cochran, 1977).

$$n_i = \frac{N_i * n}{N}$$

Where,

n = total sample size of the study area

N = total population in that study site

N_i = population size of each stratum

n_i = sample size for that stratum

In ordered to identify the households to be surveyed, simple random sampling was applied. To do so, a running number starting from 1 was assigned to all households in strata (N_i). The required number of household (n_i) was drawn using a random number table. An additional 10% was sampled for reserve, which is supposed to be used in any case where a respondent from the regional sample refused to answer or is not available for interviewing. The heads of the households was identified using the FUG constitution, in some cases, from community meeting also.

3.5 Data Collection

The research methodology includes a review of available literature on the subject for secondary data collection, and the study of field conditions to generate primary data for the study.

3.5.1 Wealth ranking

Wealth ranking is useful tool for the grouping of households according to their relative wealth level (Chamber, 1994). Mostly user committee members were involved in a wealth ranking exercise for this study. The name of each household head was written and people involved in the wealth ranking were asked to place the households into three groups representing different wealth strata. Based on this, all households were grouped into three classes: richer, medium and poorer households. Primarily the criteria adopted were based on land holding size, and supported by number of livestock, educational status, service and business and house of the users. Triangulation to verify the grouping was done separately by senior citizens, which were familiar with all users.

3.5.2 Questionnaire Survey

Self-Administered questionnaire survey with standardized questionnaires was done to elicit information from the respondent.

Well-designed door to door household survey was designed to acquire relatively detail information on the socio-economic condition and the CF contributions to livelihood indicators. Literature review and field knowledge was used to develop the survey questionnaire. The model of questionnaire is presented in Annex 1.

A checklist was prepared to collect additional information regarding the VDC, the CFs etc., which is presented in Annex 2.

Table 3.2 Respondents of questionnaire survey

S. No	Name of CFUGs	Total HHs	No. of respondent households			
			Based on economic condition			Total
			Rich	Medium	Poor	
1.	Lattekhoriya	165	8	10	12	30
2.	Jograni	183	8	12	7	27
3.	Jograni	80	3	7	13	23
Total		428	19	29	32	80

Source: Field survey, 2004

3.5.3 Focus Group Discussion (FGD)

Altogether 6 Focus Group Discussions (FGD) were organized with selected community sub-groups to collect a variety of information and ideas. It involved the researcher asking the questions and raising the issues and seeking responses from community members. Discussion focused on the contributions of the CF in the livelihood assets, livelihood strategies and outcomes. The average number of participants in focus group discussion was 8, similar to size (7-12 individuals) recommended for FGD (gentle, 2000 after Green Baum, 1988). The discussion period lasted on average about two hours.

Table 3.3 Participation in focus group discussions

S. No	Name of CFUGs	No of FGDs	Participants		
			Male	Female	Total
1.	Lattekhoriya	2	9	5	14
2.	Jure Dhunga	2	4	14	18
3.	Jograni	2	9	7	16
Total		6	22	26	48

Source: Field survey, 2004

3.5.4 Observation

Systematic self-observation was made during the research. Physical environment data were derived from observations. Topics including crop varieties, cropping pattern, livestock types or aspects not covered in questionnaire survey were appraised through direct observation. The community development works and their suitability and benefits to different categories of the respondents were analyzed from observation.

3.6 Data Analysis

The data recorded during the questionnaire survey and focus group discussions, key informant interview were first coded, categorized and fed for processing and analysis using SPSS (Statistical Packages for Social Science) ver.-10.0 and Ms Excel XP software.

Table 3.4 Basis of analysis

Variables	Categorization of variables		
Economic Status	Rich	Medium	Poor
Ethnic Group	DAG	NDAG	
Household headship	Male headed	Female headed	
Ethnic Group	Brahmins and Chhettri	Dalits	Others

Descriptive statistics, frequency distribution, mean distribution, standard deviation, percentage were widely used to describe the variables under study. Special tools, correlation coefficient, and cross tabulation analyses were carried out to find out the relationship and association among the variables. Pie charts, histograms and bar diagrams were used. Inferential statistics particularly chi-square, t-test, ANOVA, Post hoc tests were used. Scales and indexes were used for the quantitative interpretation of the qualitative data.

3.6.1 Index of Perceived Availability (IPA):

IPA of forest products was calculated as follows.

$$IPA = SD\ (0.10) + D\ (0.30) + N\ (0.50) + A\ (0.75) + SA\ (1.0)\ /n$$

(Poudel, B. S. 2003)

Where,

IPA= Index of perceived availability

SD= Strongly Disagree

D= Disagree

N= Neutral

A= Agree

SA= Strongly Agree

n= Number of responses

3.6.2 Index of Relative Ranking (IRR)

The respondents' responses or perception, decision making role, priority ranking were performed in Likert scale to interpret it in quantitative way using Index of Relative Ranking (IRR). Scales (from one to five i.e., strongly agree to strongly disagree) were developed to fond out the perception of respondents regarding the hypothesis. From the scales, the IRR was calculated. The scales and indexes are used for the quantitative interpretation of qualitative data, particularly ranking and scaling. They can be used to measure or assess attitude and other forms qualitative reactions. Their use in the social sciences is common, and they "are significant because they provide quantitative measures that are amenable to greater precision, statistical manipulation, and explicit interpretation" (Miller, 1983 cited in Tiwari, 1998). The IRR value thus, obtained was categorized into several strata, which is the relationship:

$$IRR = R_1 S_1 + R_2 S_2 + \ldots \ldots R_n S_n /nr$$

Where,

R_1 = Rank of 1st order, S_1 = Score of 1st order, R_n = Rank of last order, S_n = Score of last order

n = no. of observation, r = no of order

The scales of perception was given value from 1 to 5 indicating strongly agree to strongly disagree. Then, the value of 0.1 was given to perception 1 (i.e., strongly agree) and 1.0 to perception 5 (strongly disagree). Then, the difference between strongly disagree and strongly agree (i.e., 1.0 – 0.1) was divided by four to find out the equal intervals to calculate coefficient for other perception scales. In this way, 0.90 was divided by 4 to obtain the equal interval of 0.225. Then index value 0.1 + 0.225 = 0.325 was obtained for perception scale 2, and similarly 0.55 and 0.775 were the value for perception scale 3 and 4. Thus, the coefficient of each of the perception scale was found out. Each coefficient of each perception scale was multiplied by the respective frequency and divided by the total of the frequency to obtain the index value (IRR).

3.6.3 Radial graph for capital plotting (Ellis, 2000)

The selected capital categories were plotted in the radial graphs for well being classes using following procedures:

- To standardize the scales for each asset were measured out of 10;
- This involves allocation of 10 points for each asset sub variable finding the maximum value of that variable, for example if one asset variable have four sub variables then each sub variable get 2.5 marks.
- Each sub variables provide weighted value with full marks of 2.5 for what is the status of that sub variables in the perceptions of the respondents.
- Add the each weighted value for particular asset variable to get total marks and the asset pentagon, average value of each capital have been determined and plotted in the radial graph.

The asset pentagon (Fig. 3.2) lies at the core of the sustainable livelihood framework, within the vulnerability context. The pentagon was developed to enable information about people's assets to be presented visually, thereby bringing to life important inter-relationships between the various assets. The shape of the pentagon can be used to show

Fig.3.2: The asset pentagon of sustainable livelihood

schematically the variation in people's access to assets. The center point of the pentagon, where

the lines meet. represented zero access to assets while the outer perimeter represents maximum access to assets (DFID, 1999). On this basis different shaped pentagons were drawn for different communities or social groups within communities.

ANOVA test: ANOVA measures the statistical significance of the difference of the differences between means.

3.7 Limitations of the Study

State of emergency

This study was affected by the unstable political circumstances caused by the Maoist insurgency in the country. The fieldwork was conducted immediately after the end of state of emergency when the socio-political environment was very tense. Local people were highly suffering from both the actors: State securities and Maoist rebels. Suspicion prevailed towards any outsiders, where more time was consumed in rapport building with the respondents' village communities hesitate to extend any help. These might have, in some instances, affected the accuracy of the information.

Time and resource

Due to the shortage of time and financial resources, investigator had to adjust within limited resources; hence the study was limited to only three FUGs however a much larger sample would have been desirable.

Reliance on memory re-calls method

The researcher has assumed that the respondents still remember well as to what was their situation before CF, some 8 to 10 years ago. They had no records on the condition of forest. The availability of the forest products before CF was based on the memory, so what they remembered during the interview might have some biases therefore. therefore if they did not remember the details, this might have influenced the results of this study. For this research, the information was triangulated with other indicators and careful observation.

Chapter 4

THE STUDY AREAS

4.1 Baglung District:

Baglung district headquarter of Doulagiri Zone lies in mid-hills of western development region of Nepal. The geographical position of the district is between altitude $28^0 15'$ N to $28^0 37'$ N and Longitude $82^0 00'$ E to $83^0 36'$ E. The district is characterized by the fragile mountain topography ranging altitude from 583 m to 4690 m from the sea level. It covers 1841.29 square kilometer, bordering with Parbat district in the east, Rukum, Rolpa and Pyuthan in the West, Myagdi in the North and Pyuthan and Gulmi in the south. District map is presented here in page no 38. The main types of climate in the district are humid warm temperate and humid cool temperate with the range of mean annual temperature of 12 to 18^0 C respectively. The district receives mean annual rainfall of 2200 mm (DDC, Baglung).

Tributaries of the Kaligandaki River drain the major portion of Baglung district and only the Uttarganga River occupies some west northern portion. Baglung district occupied by 25.45% of cultivated land, 53.73% of forestland, 15.51% of grazing land 2.8% of drainage system and other land is 2.51%. The total population is 3,185,941 in which the female being 160001 (50.225) and male 158593 (49.78%) consisting of major ethnic groups as Magar (28.225), Bramhin (23.51%), Chhettri (18.51), Kami (12.60%) etc. About 91% of the total population are engaged in farming the 18% of total arable land and 76% of farmers have land holdings of less than 0.5 hectares per family (CBS, 2001).

Rank according to the poverty and deprivation index developed by the International center for Integrated Mountain Development (ICIMOD, 1998), Baglung district is on the 39th place. Similarly women empowerment index puts districts on 60th place and Natural resource endowment index puts it on 49th place. The child literacy rate is 28.78% and child labor rate is 276.38%. The overall literacy rate is 40.51% and drinking water coverage 37.19%. Farm size of the people is of 0.75ha/ household and livestock per farm household is 3.78 in number. Percentage of irrigated area is 6.01% and the area with slope more than 30^0 is 62.15%. The gross rural population density is of 1.27.

The district has total 98046 ha. Forest land of which, coniferous forest is of 16486.10 ha (16.81%); hard wood forest 50757.40 (51.77%); Mixed forest 23186.20 (23.64%); Shrub land 7565.30 ha (7.71%) and other forest land 51.00 (0.05). Up to the Fiscal Year, 059/060 total 2158.96 ha forest has been hand over to 322 CFUGs for 37674 households (DFO, 2004).

Map 1: Baglung district with VDC boundaries

BAGLUNG DISTRICT

Myagdi District

Rukum District

Rolpa District

Pyuthan District

Gulmi District

Parbat District

District Headquarter

Legend

District Boundary

VDCs

10000   0   10000   20000   Kilometers

Map Source: DDC Baglung

Designed by Researcher

38
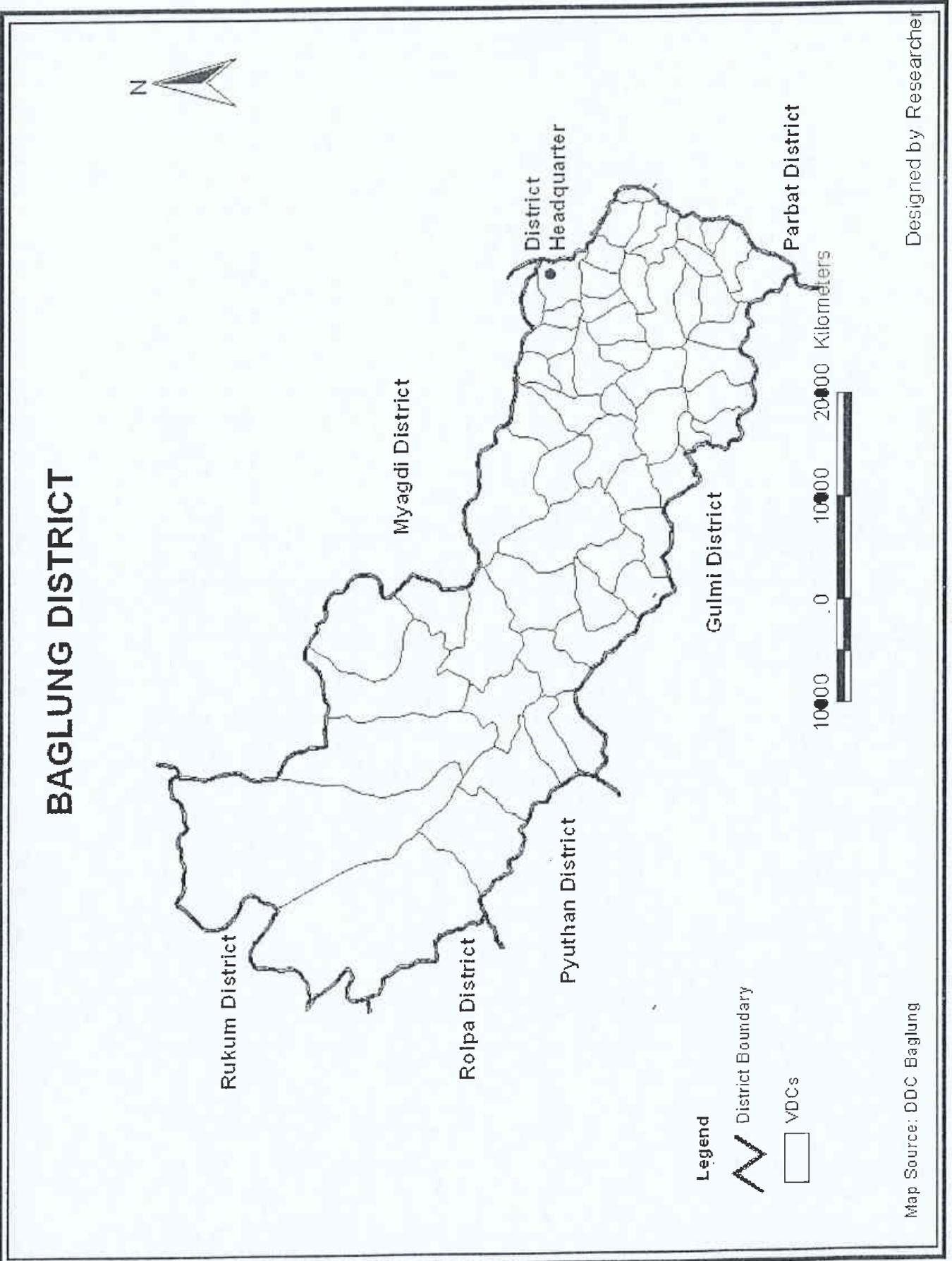
4.1.1 The Lattekhoriya CF

The Lattekhoriya CF is located in ward no-7 of Binhunkot Village Development Committee (VDC) in Baglung. The Lattekhoriya CF is of 115.0 ha natural forest, with some plantation, handed over to a 165 households for its protection and, management and utilization in 1996. The community forest is dominated by Kharsu (*Quercus* Spp), Sallo (*Pinus* Spp.) and Nigalo (*Arundinaria* Spp.). The Community forest has been divided into 4 (four) blocks for management. Lattekhoriya CFUG is a heterogeneous group including many castes like Brahmin, Chhetri, Magar, Kami, and Damai. The forest is being protected by people by the alternative watchman hiring from the user's group. Users are allowed to collect fuel wood and grasses once a year as decided by the committee. Major income of this forest users group is forest product, particularly grass sale within group members.

The community forest is in 15 Km distance from the District headquarter. It has some possibility of the business about the Non Timber Forest Products (NTFPs) management, cultivation and timber processing for the future income for community forest user's group. Altitudinal variation makes possibility of the advanced cultivation of the NTFPs in the community forest.

4.1.2 The Jograni CF

The Jograni CF is located in ward no-9 of Painyupata VDC in Baglung. The Jograni CF is of 22.55 ha natural forest handed over to a 183 households for its protection and, management and utilization in 1999. The community forest is dominated by Sal (*Shorea* Spp), Katus (*Castanopsis* Spp.) and Chilaune (*Schima* Spp.). The Community forest has been divided into 4 (four) blocks for management. Jograni CFUG is a heterogeneous group including many castes like Brahmin, Chhetri, and Magar. The forest is being protected by people by their own effort without the forest watchman. Users are allowed to collect fuel wood and grasses over the year as decided by the committee.

The community forest is in 8 Km distance from the District headquarter. It has some possibility of the business about the Sal Timber processing and selling, for the future income for community forest user's group. Nearby blacktopped road give more chances to the accessibility for the business of the timber as well as the probability of the encroachment from the outsiders.

4.1.3 The Jure Dhunga CF

The Jure Dhunga Mahila CF is located in ward no-4 of Righa VDC in Baglung. The Juredhunga Mahila CF is of 10.58 ha natural forest handed over to an 80 households for its protection and,

management and utilization in 2001. The community forest is dominated by Katus (*Castanopsis* Spp.) and Chilaune (*Schima* Spp.). The Community forest is divided into four blocks for the well management of the forest. Community of Juredhunga is a homogeneous group formed by the indigenous castes like Magar and Dalits. The forest is being protected by people by their own effort without the forest watchman. Users are allowed to collect fuel wood and grasses at the fixed time of the year as decided by the committee. Major income of this forest users group is income from outsiders visit to the forest and program budget from the other developmental organizations.

The community forest is about 39 Km distance from the District headquarter. It has no possibility of the business about the Timber processing and selling, for the future income for community forest user's group. But the possibility of the NTFPs cultivation is high. The forest has been selected as the best community forest of the year 2002 from the District forest Office (DFO). DFO has recommended this forest for the "Sarvamanya Ganesh Man Singh Ban Puraskar".

Map-2 VDCs representing the studied FUGs

Baglung District with Studied VDCs

N

Rukum District

Rolpa District

Myagdi District

Baglung Bazzar

PAIYUNPATA

UKOT

Parbat District

RIGHA

Pyuthan District

Gulmi District
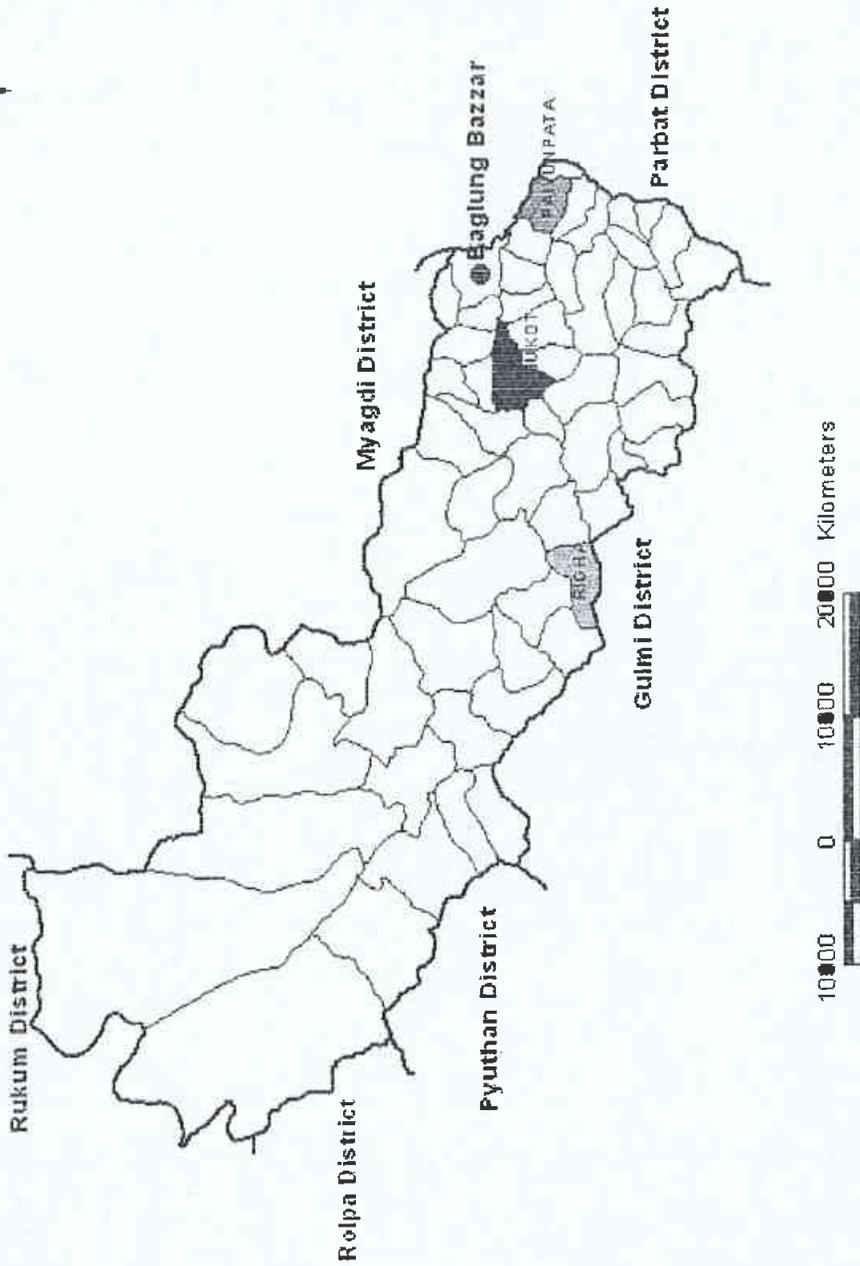
Legend

● Baglung Bazzar
/\ District Boundary

- BIHUKOT
- PAIYUNPATA
- RIGHA
- Remaining VDCs

10000   0   10000   20000   Kilometers

Map Source: DDC, Baglung

Layout By: Researcher

41

Chapter 5

Results and Discussions

5.1 Socioeconomic Condition

5.1.1 Socioeconomic differences within forest user groups

Differences in wealth may be associated with differences of interests among users of a common forest resource. In the middle hills of Nepal, differences in wealth relate directly to the extent of economic stratification within the group which, in turn partially depends upon the occupation or livelihood strategy of each household (Varughese, 1999a). Economic condition of the respondents was determined by obtaining information on the local definition of wealth, the number of households who were wealthy and poor by that definition. Social condition in a group was determined by information obtained on a caste and ethnic types.

Table 5.1: Social and Economic status of the respondents

			Wealth rank of the respondents household			Total
			Rich	Medium	Poor	
Ethnic Group of respondents	Brahmin and Chhetris	Count	15	19	11	45
		% within Ethnic Group of respondents	33.3%	42.2%	24.4%	100.0%
	Dalits	Count	1	3	12	16
		% within Ethnic Group of respondents	6.3%	18.8%	75.0%	100.0%
	Others	Count	3	7	9	19
		% within Ethnic Group of respondents	15.8%	36.8%	47.4%	100.0%
Total		Count	19	29	32	80
		% within Ethnic Group of respondents	23.8%	36.3%	40.0%	100.0%

Source: Field survey, 2004

Three FUGs and 80 households were involved in the questionnaire survey. Of total, 23.8% of the respondents belonged to rich, 36.3% medium and 40.0% poor. The percentage of Brahmins and Chhetris was 56.25%, Dalits 20% and 23.75% others. Most of the Dalits families were poor (75%) and percentage of rich is only 6.3% of those families (Table 5.1).

5.1.2 Sex of the respondents

Three FUGs studied are more or less representative for equal respondents in the case of gender. In total 44 respondents are male and 36 respondents are female (Table 5.2) which represents for 55% and 45% respectively.

Table 5.2: Sex of the respondents

			Sex of respondents		Total
			Male	Female	
CFUG of respondents	Lattekhoriya	Nos.	21	9	30
		% of Total	26.3%	11.3%	37.5%
	Jograni	Nos.	16	11	27
		% of Total	20.0%	13.8%	33.8%
	Juredhunga	Nos.	7	16	23
		% of Total	8.8%	20.0%	28.8%
Total		Nos.	44	36	80
		% of Total	55.0%	45.0%	100.0%

Source: Field survey, 2004

5.1.3 Family size

Average family size (Figure 5.1) of the respondents was 7.68 (i. e., 7) with minimum three, maximum 20, having median 7, range 17, and standard deviation 3.58.

Table 5.3: Correlations of household size with caste and wealth ranks

		Ethnic Group	Wealth	Household size
Household size	Pearson Correlation	-.108	.164	1.000
	Sig. (2-tailed)	.341	.147	.
	N	80	80	80

Household size has no significant relationship with social and economic status of the respondents.
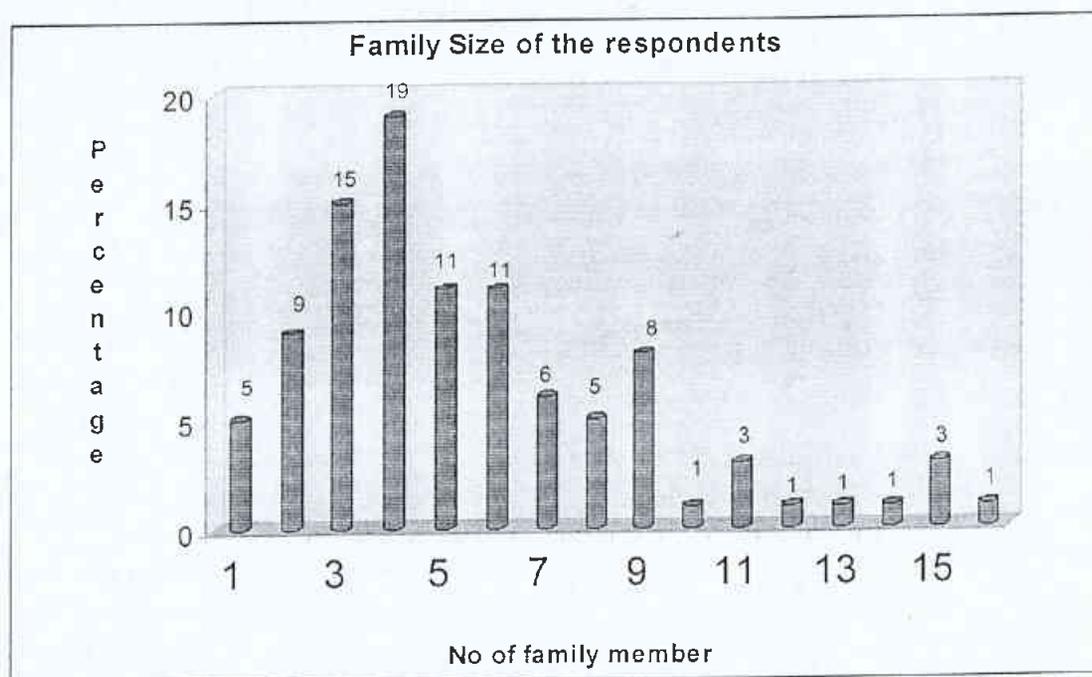
Source: Field survey, 2004

Figure 5.1: Household sizes of the respondents

The Pearson correlation coefficient 'r' is 0.164 with wealth rank (sig. 2 tailed = 0.147) and -0.108 with ethnic group (where sig. 2 tailed = 0.341). Family size had positive but weaker relation with wealth rank, but not significant. Similarly, it had negative, insignificant and weaker correlation with e thnic g roup o f t he r espondents i n r elation to t he h ypothesis ' Brahmin a nd C hhetri h ave small household size than other ethnic group'.

5.1.4 Age Structure of the respondents

Table 5.4 shows that respondents less than 15 years were only 7.5 % and more than 45 years were 31.3%. Most of the respondents (61.3%) belonged to the middle aged class (i. e., 15-45 yrs).

Table 5.4: Percentage of the respondents of age groups

			Age of respondents			Total
			<15 Years	15-45 Years	45> Years	
CFUG of respondents	Lattekhoriya	Nos.	3	14	13	30
		% of Total	3.8%	17.5%	16.3%	37.5%
	Jograni	Count	1	14	12	27
		% of Total	1.3%	17.5%	15.0%	33.8%
	Juredhunga	Nos.	2	21	-	23
		% of Total	2.5%	26.3%	-	28.8%
Total		Nos.	6	49	25	80
		% of Total	7.5%	61.3%	31.3%	100.0%

Source: Field survey, 2004

5.1.5 Education status of the respondents

Fifty nine respondents had literate up to intermediate level education, of which thirty five (43.75%) respondents are literate either from the informal education or the governmental education institutions. The respondents who are illiterate are thirty (37.5%) among all respondents. Literacy up to the SLC is fourteen (17.5%) among the total and only one respondents is from the category intermediate level education with 1.25% of representation among the total respondents (Table 5.5).

Table 5.5: Education status of the respondents in each site

Education Level of the respondents		CFUG of respondents			Total
		Lattekhoriya	Jograni	Juredhunga	
Illiterate	Nos.	9 (30.00%)	9 (30.00%)	12 (40.00%)	30 (100%)
Literate	Nos.	14 (40.00%)	11 (31.40%)	10 (29.00%)	35 (100%)
Up to SLC	Nos.	7 (50.00%)	6 (42.9%)	1 (7.1%)	14 (100%)
Up to Inter.	Nos.	-	1 (100%)	-	1 (100%)
Total	Nos.	30	27	23	80

Source: Field survey, 2004

Figures in parentheses indicate the percentage of each category in community forestry.

5.1.6 Landholding

In the calculation (Table 5.6), the area of the land cultivated per household, rich families have more cultivable land (mean = 18.68 Ropani and std. dev. = 18.22), than the others I. e., medium and poor respondents. Similarly, non Dalits have more cultivable land (mean = 12.71 and std. dev. = 13.44) than dalit households. In case of the poor families only small cultivable land (mean = 4.943 and std. dev. = 6.40) have seen. And for the representation of the dalit have less cultivable land (mean = 4.04 and std. dev. = 6.76).

Calculation of the Mean and Standard Deviation of each wealth rank of the respondents and ethnic group is represented following.

Table 5.6: Distribution of the area of land cultivated per household (areas in Ropani= 0.05ha)

Respondent's status		N	Statistics	Khet	Bari	Kharbari	Total
Wealth Rank of Respondents	Rich	19	Mean	6.2632	2.8947	9.5263	18.6842
			Std. Dev	6.2968	1.6962	10.2327	18.2257
	Medium	29	Mean	2.0036	2.5069	4.6241	9.1346
			Std. Dev	1.6511	1.0961	3.6357	6.3829
	Poor	32	Mean	1.0000	1.7656	2.1774	4.943
			Std. Dev	1.4142	1.1980	3.7915	6.4037
Ethnic Group	Brahmin and Chhetris	45	Mean	4.2295	2.5378	5.9444	12.7117
			Std. Dev	4.6076	1.4208	7.4202	13.4486
	Dalits	16	Mean	.4667	1.5000	2.0733	4.04
			Std. Dev	.8338	.8563	5.0725	6.7626
	Others	19	Mean	.6667	2.4211	4.4211	7.5089
			Std. Dev	.8402	1.3770	4.5254	6.7426
Total			Mean	2.20	1.63	4.88	8.84
			Std. Dev	1.96	0.639	2.59	4.65

Source: Field survey, 2004

The land holding size varied significantly among rich, medium and poor households. Analysis of variance (Table 5.7) showed that the Khet, Bari, and total land differ significantly by economic condition of the households.

Table 5.7: Analysis of variance of land of sampled households

	Test Statistics	Khet	Bari	Kharbari	Total
By Wealth Rank	F value	14.944	5.061	9.032	17.636
	d. f.	2, 77	2, 77	2, 77	2, 77
	Level of significance	.000	.009	.000	.000
By Ethnic Group	F value	9.979	3.754	2.087	6.154
	d. f.	2, 77	2, 77	2, 77	2, 77
	Level of significance	.000	.028	.131	.003

From the Post Hoc tests, Kharbari land of medium and poor do not differ significantly while all others differ significantly at 99% confidence interval. In case of the ethnic group, all the three categories and total land differ significantly to the dalit by non dalit respondents.

5.1.7 Animal husbandry

Medium wealth rank households have an average 3.36 LSU with std. dev. 3.20 (Table 5.8) and seemed higher than rich and poor classed families. Therefore, medium ranked households have greater need for animal fodder. Buffalo population was higher in rich and medium classed households and number of cattle owned by medium classed families was higher than others. Goat and sheep owned by rich families was higher than others. But the high variance in the total no was not seen. Hence, the highest LSU/HH was higher from medium classed families, than rich families and at the last Poor's.

On the other hand Brahmins and Chhetris have highest Buffaloes (Mean = 1.46 and std. dev. 0.72) than others. But in the case of cattle, other ethnic groups different from Brahmins and Chhetris and Dalits have grater value in mean and standard deviation calculation. Similarly in the case of goat and sheep same category has greater value.

Table 5.8: Livestock type and population per household

	Respondent's status	HHs (n)	Statistics	Buffaloes	Cattle	Goat/Sheep	Total	LSU[1]
Wealth Rank of Respondents	Rich	19	Mean	1.52	1.52	2.42	5.68	2.93
			Std. Dev	.69	1.12	2.21	3.26	1.76
	Medium	29	Mean	1.44	2.20	2.00	5.65	3.36
			Std. Dev	.94	2.63	2.54	4.99	3.25
	Poor	32	Mean	1.28	2.18	2.15	5.62	3.20
			Std. Dev	.72	2.08	2.66	4.26	2.60
Ethnic Group	Brahmin and Chhetris	45	Mean	1.46	1.28	1.48	4.33	2.60
			Std. Dev	0.72	0.99	1.99	3.11	1.67
	Dalits	16	Mean	1.18	2.12	1.81	5.12	3.02
			Std. Dev	0.75	2.21	1.86	3.57	2.67
	Others	19	Mean	1.42	3.73	4.05	9.21	4.73
			Std. Dev	1.01	2.99	3.11	5.32	3.65
Total			Mean	1.40	2.03	2.16	5.65	3.20
			Std. Dev	.80	2.13	2.49	4.29	2.70

Source: Field survey, 2004

ANOVA was done to see whether the buffaloes, cattle, goat and total were differ significantly or not among the ethnic group and wealth rank of the families. From the analysis, no significant

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[1] LSU = Livestock Unit, 1 Buffalo = 1 unit of LSU, 1 Cattle = 0.8 unit of LSU, 1 Goat/sheep =0.08 unit of LSU (Neupane, 1995 after APROSC, 1985)

differences in buffaloes were appeared among the different economic group and between the ethnic groups. In case of cattle, goat and total significant differences were appeared among the different economic group and between the ethnic groups (Table 5.9 and table 5.10).

Table 5.9: Analysis of variance of livestock of sampled households by wealth ranking

Livestock Types	Buffalo	Cattle	Goat/Sheep	Total
F value	.628	.712	.160	.001
d. f	2, 77	2, 77	2, 77	2, 77
Level of significance	.536	.494	.853	.999

Table 5.10: Analysis of variance of livestock of sampled households by ethnic group

Livestock Types	Buffalo	Cattle	Goat/Sheep	Total
F value	.713	11.08	8.63	11.00
d. f.	2, 77	2, 77	2, 77	2, 77
Level of significance	.493	.000	.000	.000

5.2 Community forestry benefits distribution and flow in users group

Community people had no or little influence on access to and control over forest resources before and after hand over to the local communities. The forests at that time were national forests where both land ownership and management control were held by the nation. However, some patches of the forests were locally protected on their own initiative. Local people were collecting forest products for fulfilling their basic needs and the forests were a means of livelihoods for many poor families. After formally hand over, the restriction imposed upon use severely impacted on the resource availability and livelihoods of those people who have no alternatives to fulfill the needs by their means. The poor and DAG families were faced more scarcity of the resources than other families (Gentle, 2000).

5.2.1 Forest Products availability

5.2.1.1 Comparison of perception in different forest products according to the wealth rank

Community forests are the main sources of daily using forest products. Perception of the respondents on availability of different forest products were assessed (Table 5.11) under the statement "forest products are more sufficiently available than after CF". On average, rich respondents were agreed to the condition except to the leaf litter category. Most respondents from medium and poor households were also agreed. In case of timber availability, most of the respondents were not agreed to the hypothesis, besides the rich were. The majority of the respondents of the wealth rank agreed with statement and the responses on the statement were

rated on a five point Likert scale. Chi square test indicates that the observed frequencies does confirm to the hypothesized frequencies. Therefore the perception of the respondents did not varied greatly except in some categories among three ranks.

Table 5.11: Perception of the respondents of different wealth rank on "Fuel wood, timber, agricultural implements, grass and leaf litter are now more available than before"

Forest Products Availability	Wealth Category	Perception					X^2 Value	Level of significance
		SA^2	A^2	N^2	D^2	SD^2		
Fuel wood	Rich	10.5	42.1	26.3	10.5	10.5	11	.232
	Medium	24.1	44.8	20.7	3.4	6.9		
	Poor	18.8	34.4	9.4	28.1	9.4		
Timber	Rich	21.1	31.6	5.3	21.1	21.1	17	.029
	Medium	13.8	17.2	37.9	17.2	13.8		
	Poor	3.1	12.5	28.1	46.9	9.4		
Agricultural Implements	Rich	15.8	52.6	10.3	5.3	15.8	15	.148
	Medium	20.7	20.7	24.1	20.7	13.8		
	Poor	12.5	43.8	6.3	18.8	18.8		
Grass	Rich	15.8	36.8	10.5	15.8	21.1	5	812
	Medium	17.2	24.1	31.0	13.8	13.8		
	Poor	15.6	40.6	18.8	12.5	12.5		
Leaf litter and Bedding materials	Rich	63.2	15.8	10.5	.0	10.5	8	.428
	Medium	37.9	37.9	13.8	3.4	6.9		
	Poor	31.3	37.5	15.6	9.4	6.3		
NTFPs	Rich	21.1	31.6	26.3	10.5	10.5	4	.823
	Medium	20.7	27.6	24.1	17.2	10.3		
	Poor	25.0	40.6	12.5	18.8	3.1		

Source: Field survey, 2004

5.2.1.2 Comparison of perception in different forest products according to the ethnic group

Local people were collecting forest products for fulfilling their basic needs and the forests were a means of livelihoods for many dalit families. After formally hand over, the restriction imposed upon use severely impacted on the resource availability and livelihoods of those people who have no alternatives to fulfill the needs by their means. In case of fuel wood collection, dalit (37.5%) are agreed to the condition of the forest to fulfill the fuel wood than before (Table 5.12). And in case of the Timber, different ethnic groups had different response and were not agreed to the hypothesis. Basically agricultural implements such as plough handles, leveling tools, poles and pegs are derived from forest products. Comparison of perception from different categories of the respondents (ethnic group) showed that they all have the similar responses in the agreement to the increase. The grass from the forest is a main source of livestock nutrition throughout the year.

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[2] SA= Strongly Agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree

Livestock based subsistence farming contributed to income generation for most of the respondents and the livestock dung contributed much to improve the soil condition of the farm. Different ethnic group has answered for the agreement to the sub hypothesis that the grass has increased than before. In case of the respondents for leaf litter and bedding materials they agreed in increasing the leaf litter and bedding materials.

Table 5.12: Perception of the respondents of different ethnic group on "Fuel wood, timber, agricultural implements, grass and leaf litter are now more available than before"

Forest Products Availability	Wealth Category	Perception					X^2 Value	Level of significance
		SA	A	N	D	SD		
Fuel wood	Bra. and Chhet.	20.0	42.2	17.8	13.3	6.7	12	.167
	Dalits	31.3	37.5	6.3	25.0	0		
	Others	18.8	40.0	17.5	15.0	8.8		
Timber	Bra. and Chhet.	17.8	22.2	20.0	24.4	15.6	13	.139
	Dalits	0	18.8	18.8	50.0	12.5		
	Others	5.3	10.5	47.4	26.3	10.5		
Agricultural Implements	Bra. and Chhet.	22.2	35.6	11.1	15.6	15.6	12	.162
	Dalits	6.3	62.5	6.3	6.3	18.8		
	Others	10.5	21.1	26.3	26.3	15.8		
Grass	Bra. and Chhet.	8.9	33.3	22.2	15.6	20.0	11	.196
	Dalits	12.5	31.3	25.0	12.5	18.8		
	Others	36.8	36.8	15.8	10.5	0		
Leaf litter and Bedding materials	Rich	46.7	28.9	13.3	4.4	6.7	6	.648
	Medium	25.0	31.3	18.8	12.5	12.5		
	Poor	42.1	42.1	10.5	.0	5.3		
NTFPs	Rich	17.8	31.1	22.2	22.2	6.7	16	.042
	Medium	6.3	50.0	18.8	6.3	18.8		
	Poor	47.4	26.3	15.8	10.5	.0		

Source: Field survey, 2004

Chi square test indicates that the observed frequencies confirm to the hypothesized frequencies. Therefore the perception of the respondents did not varied greatly except in some categories among three ranks.

5.2.2 Index of perceived availability (IPA) of forest products

An index of perceived availability with forest products was computed. A general tendency toward being neutral was observed. Table 5.13 showed index values between 0.530 and 1.036 levels tending towards agreement. A similar trend was obtained in poor families with the forest products. Hence to conclude that one group was more agreed than others is not feasible. Relevant is that availability kept of various ethnic groups and wealth ranks agreed at about the same level.

Dalits respondents ranked the leaf litter and bedding materials as the most available forest products from the forest. They also ranked the agricultural implements as the most available forest products. Timber, Fuel wood, Green grasses were ranked as the second most available forest products for dalit. They put the NTFPs was the most scarce forest products for them.

Others group in the analysis ranked timber, green grasses and NTFPs were the most available forest products. Bedding materials for the others group was the second most scarce forest products. Fuel wood and agricultural implements are the most scarce forest products from the forest. Brahmin and Chhetris perceived fuel wood was the most available forest products, followed by agricultural implements and NTFPs were the second most available forest products with the scarce product as timber, green grasses and bedding materials.

Index of the wealth rank showed that poor was almost all access to the timber, fuel wood, agricultural implements and bedding materials. Medium classed respondents have had clear access on only green grasses and rich had access on NTFPs.

General tendency to perceive more availability of the agricultural implements and bedding materials were to be the labor work in the dominant's household with different agricultural implements and less number of livestock respectively. In other hand dalit perceived NTFPs, timber, fuel wood and green grasses were less available than non dalit. This could be so because dalit solely depend upon forest for these products and also they were getting insufficient as what they expected. On the contrary rich families used alternative sources for these products. However, dalit collects more leaf litter and they felt that the availability of leaf litter after CF is more sufficiently available. This may be due mainly to insufficient money to purchase chemical fertilizer.

Table 5.13: Index of perceived availability (IPA) of the forest products

Forest products	Ethnic group			Wealth rank		
	Bra. And Chhetri	Dalit	Others	Rich	Medium	Poor
Timber	0.599 (3)	0.700 (2)	0.763 (1)	0.530 (3)	0.657 (2)	0.735 (1)
Fuel wood	0.882 (1)	0.841 (2)	0.812 (3)	0.832 (3)	0.892 (2)	0.893 (1)
Agri. Implements	0.696 (2)	0.875 (1)	0.537 (3)	0.645 (3)	0.691 (2)	0.728 (1)
Green Grasses	0.802 (3)	0.803 (2)	0.871 (1)	0.836 (2)	0.874 (1)	0.757 (3)
Bedding materials	0.845 (3)	1.036 (1)	0.948 (2)	0.853 (3)	0.868 (2)	0.977 (1)
NTFPs	0.867 (2)	0.801 (3)	0.928 (1)	0.997 (1)	0.851 (2)	0.807 (3)

Source: Field survey, 2004

Figures in the parentheses are the ranks within ethnic groups and wealth ranks.

The perception of richer and non dalit individuals was found too be more agreed than poorer and dalit individuals on the statement "forest products are more available after CF than before". This

has a number of possible explanations. One is that the perception of the forest product availability in community forest was influenced by their environment in the decision making. But a second is that richer and non dalit respondents had better control over the forest, which in turn showed the positive perceptions. A third is that the poor and dalit respondents were unhappy with results of the CF program. Despite the fact that grasses and leaf litter increased in the forest in all case, the poor and dalit still tend to disagree. On the contrast, timber is less available in the forest because the forest is immature, dominated by the pole sized-tree, but the poorer and others agreed on the statement "timber is more available after CF".

5.2.3 Forest products collection process

The perception of the respondents of the forest products collection process was assessed in terms of differences in time and ease in the collection processes after and before CF.

5.2.3.1 Collection time

The majority of the respondents agreed with hypothesis "the process of collection is less time consuming than before". The perception of the respondents was not varied greatly with their economic and social condition (Table 5.14).

Table 5.14: Perception of respondents on collection process is less time consuming after CF

Variable	Category	Response in % within category				
		Strongly agree (1)	Agree (2)	Neutral (3)	Disagree (4)	St. Disagree(5)
Wealth rank of the respondents	Rich	36.8	31.6	15.8	10.5	5.3
	Medium	24.1	48.3	3.4	13.8	10.3
	Poor	40.6	31.3	6.3	12.5	9.4
Ethnic gr. of respondents	Bra. and Chhet.	26.7	37.8	13.3	13.3	8.9
	Dalits	25.0	37.5	-	25.0	12.5
	Others	57.9	36.8	-	-	5.3
Total		33.8	37.5	7.5	12.5	8.8

Source: Field survey, 2004

5.2.3.2 Ease of collection

The majority of the respondents were agreed with the statement "the collection process is easier than before". Though the forest was controlled and managed by state when the forest was national forest, people had been collecting forest products in any way and they had easy access to forest. However the control is on the community forest user's group with some restrictions placed upon use of forest products, no application up to the HMG/N authority even in the less number per year. Each forest users group have decided some rules to collect forest products and defined time,

however, the user compare this process with the situation prior to CF and expressed their mixed views with this statement (21.3%) neutral (Table 5.15).

Most of the users had agreed to the statements. Among them rich respondents were strongly agreed with 31.6% and medium and poor respondents were agreed with 31.0% and 43.8% respectively. The highest values in the ethnic group were Brahmin and Chhetris (31.1%) agreed, Dalits (43.8 %) agreed and others (36.8%) agreed.

Table 5.15: Perception of respondents on "forest products collection process is easier after CF"

Variable	Category	Response in % within category				
		Strongly agree (1)	Agree (2)	Neutral (3)	Disagree (4)	Strongly disagree(5)
Wealth rank of the respondents	Rich	31.6	26.3	21.1	10.5	10.5
	Medium	10.3	31.0	27.6	10.3	20.7
	Poor	21.9	43.8	15.6	12.5	6.3
Ethnic gr. of respondents	Bra. and Chhet.	17.8	31.1	22.2	13.3	15.6
	Dalits	18.8	43.8	18.8	6.3	12.5
	Others	26.3	36.8	21.1	10.5	5.3
Total		20.0	35.0	21.3	11.3	12.5

Source: Field survey, 2004

5.2.4 Issues related to Tree fodder

Perception of the respondents on the issues of fodder availability was assessed in terms of quality of the fodder, availability in terms of quantity and price of the fodder whether is it reasonable to the before and after the CF implementation.

5.2.4.1 Availability of the fodder

Quantity of fodder for the cattle in forest user's groups have had increased due to the stall feeding practice provisioned in the operational plan. The rules were varied across FUGs. The fodder from the forest is a main source of livestock nutrition throughout the year. Livestock based subsistence farming contributed to income generation for most of the respondents and the livestock dung contributed much to improve the soil condition of the farm.

Fodder availability in community forest was assessed by the sub-hypothesis "fodder is more available after CF than before". The responses on the statement were rated on a five point Likert scale. Most of the respondents (30.0%) agreed (Table 5.16). They expressed their miscellaneous expressions but the noteworthy point is that the different groups are not differentiated so far.

Table 5.16: Perception of respondents on "the quantity of fodder is increased after CF"

Variable	Category	Response in % within category				
		Strongly	Agree	Neutral	Disagree	Strongly
Wealth rank of the respondents	Rich	31.6	31.6	21.1	10.5	5.3
	Medium	20.7	31.0	24.1		24.1
	Poor	28.1	28.1	21.9	12.5	9.4
Ethnic gr. of respondents	Bra. and Chhet.	26.7	35.6	17.8	4.4	15.6
	Dalits	12.5	37.5	18.8	18.8	12.5
	Others	36.8	10.5	36.8	5.3	10.5
Total		26.3	30.0	22.5	7.5	13.8

Source: Field survey, 2004

5.2.4.2 Quality of fodder

Quality of the fodder is the most important part of the community forest users group whether it is used for the milk or meat production. Most of the community forests had maintained the tree fodder quality after taking the responsibility of the management. It is due to the grazing control in the forest over the year. Studied CF also agreed for the response "the fodder quality is increased after the community forestry" by scoring the 35.0% in the agreed response (Table 5.17).

Table 5.17: Perception of respondents on "the quality of fodder is increased after CF"

Variable	Category	Response in % within category				
		Strongly	Agree	Neutral	Disagree	Strongly
Wealth rank of the respondents	Rich	15.8	57.9	21.1	5.3	-
	Medium	27.6	24.1	24.1	13.8	10.3
	Poor	31.3	31.3	18.8	12.5	6.3
Ethnic gr. of respondents	Bra. and Chhet.	28.9	37.8	20.0	11.1	2.2
	Dalits	31.3	25.0	18.8	12.5	12.5
	Others	15.8	36.8	26.3	10.5	10.5
Total		26.3	35.0	21.3	11.3	6.3

Source: Field survey, 2004

5.2.4.3 Price of the fodder

Most of the community forests has been pricing to the tree fodder and also for the other important forest products for the improvement of the economic status of the FUGs. In the responses collected from the respondents 40% individuals were agreed to the statement "the price is reasonable" (table 5.18).

Table 5.18: Perception of respondents on "the quality of fodder is increased than before/after CF"

Variable	Category	Response in % within category				
		Strongly	Agree	Neutral	Disagree	Strongly
Wealth rank of the respondents	Rich	26.3	47.4	10.5	5.3	10.5
	Medium	17.2	37.9	20.7	17.2	6.9
	Poor	31.3	37.5	18.8	6.3	6.3
Ethnic gr. of respondents	Bra. and Chhet.	28.9	40.0	15.6	11.1	4.4
	Dalits	25.0	43.8	25.0	-	6.3
	Others	15.8	36.8	15.8	15.8	15.8

Source: Field survey, 2004

5.3 Impacts of community forestry

This section describes the impacts of community forestry. Impacts cover results, outputs, effects and consequences. Analysis of contribution of community forestry on forest management, livestock, farming system, income generation and employment creation, community development and institutional aspects is made in subsequent pages.

5.3.1 Improved forest management

The condition of handed over forests has remarkably improved in the study area. Natural regeneration and biodiversity are increased. The forest composition and crown coverage is increased.

According to the Table 5.19 majority of the respondents (42.5%) stated that the condition of the forest is highly improved (mean =1.80 and standard deviation= .78). Only 22.5% of the total respondents said that the condition of the forest is depleting.

Chi square test indicates that the observed frequencies do not confirm to the hypothesized frequencies in the case from the wealth rank respondents. But the test statistic shows the hypothesis is true. On average, majority of all categories respondents except medium classed individuals stated that the condition of forest is improved. This may perhaps be due to the unawareness of the condition of the forest albeit the condition is highly improved.

Table 5.19: Perception of respondents on condition of forest after CF

Variable	Category	Response in % within category			Test X^2
		Highly	Improved	Normal	
Wealth rank of the respondents	Rich	52.6	36.8	10.5	Chi square value= 14 d f = 4 Sig. = .007
	Medium	31.0	41.4	27.6	
	Poor	46.9	28.1	25.0	
Ethnic group of respondents	Bra. and Chhet.	42.2	37.8	20.0	Chi square value= 4 d f = 4 Sig. = .492
	Dalits	43.8	25.0	31.3	
	Others	42.1	36.8	21.1	
Total		42.5	35.0	22.5	

Source: Field survey, 2004

5.3.2 Reduced trend of livestock ownership

An analysis was extended to include consideration of changes in the animal ownership trend. There is a 61% decreased in the livestock, 32% same and 7% increased. Among non dalit respondents 53%reported that there is a decrease in the livestock number. Similarly majority of dalit families (81%) said that the animal trend now is decreased. From the chi square test, a high significance value (i. e., .328) was reported and it indicates that there is not a significant relationship between the ethnic groups and animal ownership trend.

54

Over the duration of 8-10 years, 61% observed changes in livestock rearing was found. Both increase and decline was observed but the later proportion was higher.

Causes of decline in livestock rearing

Livestock rearing has been decreasing. Table 5.20 showed the principle reasoned given included insufficient household labor. The second reason was insufficient grazing land, followed by insufficient fodder in the farm land of the household. They should have been dependent despite expectation of utilization of household labor force and ease of earning a livelihood, livestock rearing was found declined because some households had considered unprofitable.

Table 5.20: Causes of decline of livestock rearing

Causes	Index	Ranking
Insufficient household labor	0.94	1
Insufficient grazing land	0.91	2
Insufficient fodder on their farm land	0.84	3
Unprofitable	0.63	4
Death	0.44	5

The net decrease in livestock rearing was a matter of concern from the perspective of community forestry as well as with a view to the impacts on rural livelihood. The decrease in livestock may be due to the restriction on grazing after CF. Being one of the main causes of decline in livestock the insufficient grazing land confirmed the impacts of community forestry.

5.3.3 Impacts on farming system

The contribution of community forestry to farming system was analyzed in terms of crop production, soil fertility, and livestock situation. The soil fertility has been increased thanks to the community forestry because more compost is being produced due to availability of leaf litter and bedding materials in the forest after the community forestry. Consequently the crop production has been increased, though not significantly and solely due to community forestry. The landless poor have has no meaning of increased leaf liter in the forest. The impacts on the cropping intensity and crop diversification, inputs used were found negligible.

5.4 Contribution on sustainable livelihood

A livelihood comprises of assets (natural, social, human, financial, and physical) and activities required for the means of living. A livelihood is sustainable when it can cope with and recover from stresses and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Chamber and Conway, 1992 cited in Scoones, 1998).

Sustainable livelihood is a way of thinking about the objectives, Scope and priorities for development with the ultimate aim of poverty elimination (DFID, 2001). It is a holistic approach that tries to capture, and provide a means of understanding, the vital causes and dimensions of poverty without collapsing the focus onto just a few factors (e.g. economic issues, food security, etc.). It also tries to sketch out the relationship between the different aspects (causes, manifestations) of poverty, allowing for effective prioritization of action at an operational level. In the research the stated indicators were studied and made a frame for the analysis for the livelihood assets pentagon by DFID.

5.4.1 Contribution of CF in livelihood from natural capital formation

Natural capital is the term used for the natural resource stocks from which resource flows and services (e.g. nutrient cycling, erosion protection) useful for livelihoods are derived. There is a wide variation in the resources that make up natural capital, from intangible public goods such as the atmosphere and biodiversity to divisible assets used directly for production e.g. trees, land, etc. (DFID, 1999). In terms of the analysis, variables like fuel wood, leaf litter and fodder supply condition, resource condition of the forest products, accessibility to the natural resources, support to the flora and fauna, support to the soil conservation and improvement in the scenic beauty of the forest; perception of the individuals were analyzed.

5.4.1.1 Supply condition of the fuel wood, leaf litter, and fodder

Responses of individuals to verify the statement "fuel wood, leaf litter and fodder supply after CF has increased" have been collected (Table 5.21). Responses shows 45.9% individuals are agreed to the supply of the fodder are adequate from the forest. Only 8.4% individuals responded on the critical shortage and 15.9% responded on shortage. But the 29.2% were agreed with the surplus availability of the fodder. It shows that the statement is true. And the increase in the supply of the forest products that need in the daily basis is the main cause of the popularity gain by the community forestry program.

Table 5.21: Supply condition of the fuel wood, leaf litter and fodder after CF

Category	Response in % within category					Total
	Surplus	Adequate	Shortage	Critical Shortage	Don't Know	
Fuel wood Supply	26.3	58.8	13.8	1.3	-	100
Leaf litter supply	40.0	43.8	12.5	2.5	1.3	100
Fodder supply	21.3	35.0	21.3	21.3	1.3	100
Total Mean	29.2	45.9	15.9	8.4	0.9	100

Source: Field survey, 2004

5.4.1.2 Resource condition of the forest products

Most of the community forests had improved after hand over to the communities, both in the flora and fauna of such forests. So, the "forest resource has been increased than before" has set to study the perception of the respondents. In this scenario, all the three CFUGs agreed in the abundances of the forest products for the different purposes. Maximum percentage of the response is in the abundant. This incorporates the principle of the community forestry satisfying to the communities in the local level (Table 5.22).

Table 5.22: Resource condition of the forest products after CF

Community forest users group	Response in % within category					Total
	Very abundant	Abundant	Normal	Dwindling	Rare	
Lattekhoriya	26.7	56.7	10.0	3.3	3.3	100.0
Jograni	55.6	44.4	-	-	-	100.0
Juredhunga	47.8	52.2	-	-	-	100.0
Total Mean	42.5	51.3	3.8	1.3	1.3	100.0

Source: Field survey, 2004

5.4.1.3 Reasons of the abundances of the resources in the forest

Resource condition of the community forests has been improving day by day after had over to the communities. The principle reasoned given included no free grazing in the forest, no encroachment from the outsiders, no over exploitation of the forest products and the management of the forest with the principle of the forest management. The sub variables have been tested with the perception of the individuals surveyed. In total 61.9% respondents agreed in different types of sub variables

Table 5.23: Reasons of the abundances of the resources after CF

Variables	Response in % within category	
	Yes (1)	No (2)
Free grazing	36.3	63.8
Encroachment	45.0	55.0
Over exploitation	32.5	67.5
No Management	38.8	61.3
Total Mean	38.1	61.9

Source: Field survey, 2004

5.4.1.4 Accessibility to the forest products

After hand over process of the forest most of the community forests have to be banned the CF for the access of the uses except for the time when CF itself called for the different silvicultural operations made. This also improves the discipline of the proxy users near by the forest and control to the own members to go to the forest in the time defined. A test of perception of the

communities to the accessibility for the natural resources is made. Most of the respondents (67.5%) have agreement to the ban posed on collection, harvesting of the forest products. However, responses in the category easily accessible were also seen, highest response in ban for collection practices shows the low risk for the hazard in the CFs.

Table 5.24: Perception about the accessibility to the natural resources after CF

Community forest users group	Response in % within category			Total
	Easily accessible (1)	Banned (2)	Other practices (3)	
Lattekhoriya	30.0	66.7	3.3	100.0
Jograni	29.6	66.7	3.7	100.0
Juredhunga	26.1	69.6	4.3	100.0
Total Mean	28.8	67.5	3.8	100.0

Source: Field survey, 2004

5.4.1.5 Support to the flora and fauna

According to DFO authority, the condition of natural forest has gradually improved after community involvement. Natural regeneration has covered under-story of the degraded forest after control of over-grazing. No symptoms of grazing and other illegal activities were found in both plantation and natural forest.

The community-managed forest has become an additional habitat for wild animals. The animals prefer to graze new shoots of grasses in the community forest. The communities reported that the trend of sighting wild animals have been gradually changing for last few years. They also reported sighting of some common bird species after five years.

Responses from the individuals on: "support of the community forest to the floral and faunal diversity" and made habitat for them has been collected and fed in to test the defined statement. Individuals 35% have had agreed with the statement, 26.3% have also strongly agreed, 15% were neutral. Most of the responses were in the positive part, so the conclusion may be taken in the favor of the statement.

Table 5.25: Perception about the support to the biodiversity conservation after CF

Community forest users group	Response in % within category				
	Strongly agree (1)	Agree (2)	Neutral (3)	Disagree (4)	Strongly disagree(5)
Lattekhoriya	36.7	33.3	13.3	10.0	6.7
Jograni	14.8	40.7	22.2	22.2	-
Jure Dhunga	26.1	30.4	8.7	30.4	4.3
Total mean	26.3	35.0	15.0	20.0	3.8

Source: Field survey, 2004

5.4.1.6 Support to the soil conservation, environmental amelioration, and scenic beauty

Every forest helps in the soil conservation and to the scenic beauty with the environmental amelioration. Community forestry has been playing important role for the grass cover formation, rain water trapping to reduce runoff, and made greenery to the peripheral locality. In this concern, perception about "community forests are able to conserve soil, create scenic beauty and help to environmental amelioration" has been collected.

More than 40% respondents have agreed for the statement, 313% were on the category strongly agreed, and less value in category disagree. Mean calculation shows the more or less same value for the all three community forestry users group.

Table 5.26: Perception about the support to the biodiversity conservation after CF

Community forest users group	Response in % within category				
	Strongly agree (1)	Agree (2)	Neutral (3)	Disagree (4)	Strongly disagree(5)
Lattekhoriya	33.3	43.3	10.0	10.0	3.3
Jograni	33.3	40.7	14.8	11.1	-
Jure Dhunga	26.1	34.8	8.7	21.7	8.7
Total mean	31.3	40.0	11.3	13.8	3.8

Source: Field survey, 2004

5.4.2 Contribution of CF in livelihood from human capital formation

Human capital represents the skills, knowledge, ability to labor and good health that together enable people to pursue different livelihood strategies (Carney, 1999) and achieve their livelihood objectives. Human capital is increased by investment in education and training as well as by the skills acquired through pursuing one or more occupations (Ellis, 2000). At a household level human capital is a factor of the amount and quality of labor available; this varies according to household size, skill levels, leadership potential, health status, etc (DFID, 1999).In terms of the analysis, variables like employment creation, health care from the income of community forest, contribution to the education sector, support micro enterprises, trainings and seminar attending, decision making were analyzed.

5.4.2.1 Employment creation due to the community forestry

Employment in terms of forest watchman, carpenters in the processing stall of the CFUGs may be created for the enhancement of the quality of the local people and help to the human capital formation. School teacher from the fund of community forestry also have been noted in the many community forestry. Perceptions about the employment creation had collected and fed for the analysis. More than the 45% respondents have rejected the statement and it can be noted that no employment creation has been occurred in the villages due to the community forestry. Mean of

the responses also less (2.07) than the mid point (2.50). But the responses of agreed in the employment generation were not less (30%). So, it shows that CF is certainly helping to the employment generation by the different programs albeit it is in the lower in the number.

Table 5.27: Perception about the support to the employment creation in CFUGs after CF

Community forest users group	Response in % within category		
	Yes (1)	No (2)	Don't Know (3)
Lattekhoriya	26.7	46.7	26.7
Jograni	25.9	51.9	22.2
Jure Dhunga	39.1	34.8	26.1
Total mean	30.0	45.0	25.0

Source: Field survey, 2004

5.4.2.2 Health care from the income of the community forestry

Health care is the main agenda of the all developmental organization either form the direct impact or from the indirect facilities development. Support to the health of the users' group from the direct facilities viz., help to go to the hospital, support to the health posts for the infrastructural development etc. perceptions of the users' group have been collected and analyzed. Only 26.3% individuals were agreed with 16.3% respondents strongly agreed to the statement. But the value in the section of neutral, disagree and strongly disagree were also not in less number as perceptions. Mean shows the result is in the positive direction of the statement.

Table 5.28: Perception about the support to the health of user's groups after CF

Community forest users group	Response in % within category				
	Strongly agree (1)	Agree (2)	Neutral (3)	Disagree (4)	Strongly disagree (5)
Lattekhoriya	13.3	26.7	23.3	13.3	23.3
Jograni	11.1	25.9	22.2	18.5	22.2
Jure Dhunga	26.1	26.1	13.0	13.0	21.7
Total mean	16.3	26.3	20.0	15.0	22.5

Source: Field survey, 2004

5.4.2.3 Contribution on education sector

Contribution on education sector has been analyzed evaluating in two sections, one is the support to the schools either in the monetary term or in the other support. And second is the informal classes conducted in the villages by the community forest user's group. Support of the community forestry for education in the form of perception is analyzed. Forty six percent of the total respondents have agreed in the statement "community forestry has been supporting to the education sector". Individuals in the group of strongly agreed to the statement were 31.3%. Mean is also support to the statement.

Table 5.29: Perception about the support to education sector from the CF

Community forest users group	Response in % within category				
	Strongly agree (1)	Agree (2)	Neutral (3)	Disagree (4)	Strongly disagree (5)
Lattekhoriya	40.0	56.7	-	3.3	-
Jograni	18.5	37.0	18.5	7.4	18.5
Jure Dhunga	34.8	43.5	4.3	8.7	8.7
Total mean	31.3	46.3	7.5	6.3	8.8

Source: Field survey, 2004

5.4.2.4 Support to the micro enterprises development

Micro enterprises may be wood based, NTFPs based. Income generation activity based for the improvement of the economic status of the users group and employment creation. Perceptions were collected if the micro enterprises are running in the different FUGs, and types of the enterprises. Responses from Lattekhoriya CF is on the contrary to the statement "community forest is supporting to the micro enterprises". Jograni individuals are agreed to the statement because they were being starting a enterprise related to the wood processing, and individuals from Juredhunga CF were dame level of agreement and rejection.

Table 5.30: Perception about the support to education sector from the CF

Community forest users group	Response in % within category	
	Yes (1)	No (2)
Lattekhoriya	36.7	63.3
Jograni	59.3	40.7
Jure Dhunga	52.2	47.8
Total mean	48.8	51.3

Source: Field survey, 2004

5.4.2.5 Trainings and Awareness program

Awareness activities, managerial training and income generating activities (IGA) were supported by different organizations related to the community forestry. The awareness activities included workshops, observation visit, and seminars to enhance knowledge and skill on forest management and community development. The managerial training was organized to the office bearers for the better management of the community forests. They have frequently received more than 10 training on book-keeping, enterprise development and forest management, etc.

Perceptions of the individuals according to the gender, females were dominant in each of the categories illustrated in the table. In the concern of the wealth rank, three all categories rich, medium and poor were get chance of the participation and learning from the training. But in case of the ethnic group, responses from dalit shows that they were preferred for the training participant, and made equal chance for the opportunity.

Table 5.31 showed that, in total 51.3% respondents perceived no trainings organized in the local level versus 42.1% organized. Among the trainings conducted in the local level forest management got high value (23.8%) and second one was enterprises development (15.0%) and third was Income generation activity (10.0%). Among the total respondents 35.0% were participated in the organized trainings. Among the participant of the training 32.5% were responses that they learnt something from training. And at last, among the learnt participant 33.8% were agreed with the use of the knowledge, skills in the given locality.

Table 5.31: Perception about the trainings in local level, category of training, participation of individuals, learning from the trainings, and the uses of the learning to the FUGs

Variable	Category	Response in % within category										
		Trainings organized in local level		Category of training			Did you participate*		Did you learn about subject*		Did you use these learning*	
		Yes	No	FM	IGA	ED	Yes	No	Yes	No	Yes	No
Gender	Female	55.6	44.4	25.0	11.1	19.4	38.9	16.7	38.9	16.7	38.9	13.9
	Male	43.2	56.8	22.7	9.1	11.4	31.8	9.1	27.3	13.6	29.5	13.6
Wealth rank	Rich	57.9	42.1	31.6	5.3	21.1	47.4	10.5	42.1	15.8	47.4	15.8
	Medium	41.4	58.6	17.2	20.7	3.4	24.1	13.8	20.7	17.2	20.7	17.2
	Poor	50.0	50.0	25.0	3.1	21.9	37.5	12.5	37.5	12.5	37.5	9.4
Ethnic gr. of respondents	Bra. and Chhet.	42.2	57.8	28.9	6.7	6.7	28.9	11.1	24.4	15.6	26.7	13.3
	Dalits	75.0	25.0	18.8	12.5	43.8	56.3	18.8	56.3	18.8	56.3	18.8
	Others	42.1	57.9	15.8	15.8	10.5	31.6	10.5	31.6	10.5	31.6	10.5
	Total	48.8	51.3	23.8	10.0	15.0	35.0	12.5	32.5	15.0	33.8	13.8

Source: Field survey, 2004

* Individuals who were not participated the program are not included
FM= Forest Management, IGA=Income Generation Activity, ED=Enterprises Development

5.4.2.6 Decision making processes

The decision making process of user groups is usually on consensus basis. About 90 percent of the households are member in FUGs and majority (54%) of the members always attend regular meeting. The degree of participation is highest in rich and lowest in the poorest class. The rich and middle class have played *very active* (all aspects of CF management) role and the poor have played only *active* (passive in opportunity claim and presence in all other activities) role. Analysis shows that the degree of participation of the medium classed is relatively higher than the

poor but it is lower in case of decision making. Respondents expressed views on *community governance*[3] and decision making during group discussion and field observation (Table 5.32).

Table 5.32: Participation trend, decision-making role and collective action

Status of respondents	Participation (IRR)		Decision making role (IRR)	
Rich	0.68	Always	0.75	Very active
Middle	0.58	Always	0.72	Very active
Poor	0.43	Almost	0.59	Active

5.4.3 Contribution of CF in livelihood from financial capital formation

Financial capital refers to stocks of money to which the household has access (Ellis, 2000). Financial capital denotes the financial resources that people use to achieve their livelihood objectives. However, it has been adopted to try to capture an important livelihood building block, namely the availability of cash or equivalent that enables people to adopt different livelihood strategies (DFID, 1999).Income source of the people, expenditure pattern, employment of the village people, income from forest products, savings and household major income were analyzed in this section.

5.4.3.1 Major income sources of rural people

The following figure shows the average income sources 2003. There is big change in agriculture and labor work (in/out of country). During group discussion, it was found that there was a positive correlation between reduced incomes due to out migration in search of better employment opportunities.
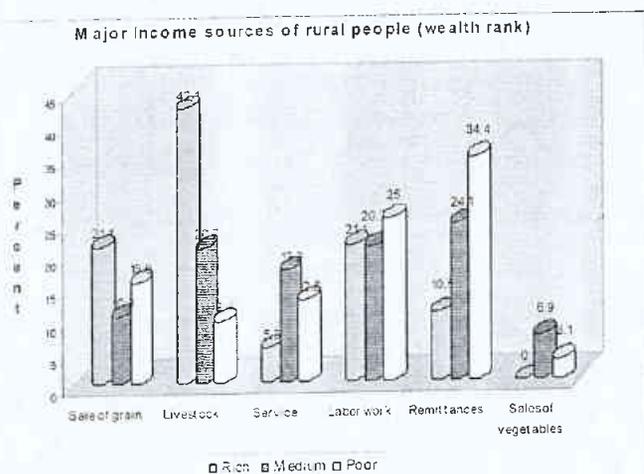
Figure 5.2 Major income sources of the rural people

Here, the major income of the poor was from the other remittances 34.40%, and second from labor work 25.0% third was from the sales of grain (Purchase in village and go to bazaar to earn benefits) and the last one was from the sales of vegetables. But the income of the rich people is high from livestock, and then from sales of grain and the last one is from service (Figure 5.2).

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[3] Transparency in each and every processes of: decision making, benefit sharing and opportunity provision.

From figure 5.3 it has been revealed that Brahmins and Chhettri were earning money from livestock, sales of grain and service with remittances. Whereas Dalit has been earning from remittances and labor work. Other than dominant group and dominated group higher value was on labor work and than from remittances.

Figure 5.3 Major income sources of rural people (ethnic group)

Major income sources of rural people (ethnic group)

□ Brahmins ▣ Dalits □ Others

5.4.3.2 Employment status of the village people

Employment due to the community forestry intervention has been checked for the perception of the rural people. All the users have been responded that the employment has not been increased (60%). Twenty one percent responded for the unknown stage of the situation albeit 18.8%

Table 5.33: Major income sources of the rural people

Variable	Category	Response in % within category			Test		
		Yes	No	Don't Know			
Wealth rank of the respondents	Rich	21.1	47.4	31.6	Chi square value= 14	D f	= 4
	Medium	20.7	58.6	20.7	Sig.		= 0.176
	Poor	15.6	68.8	15.6			
Ethnic group of respondents	Bra. and Chhet.	22.2	53.3	24.4	Chi square value= 8	D f	= 4
	Dalits	18.8	75.0	6.3	Sig.		= 0.546
	Others	10.5	63.2	26.3			
Total		18.8	60.0	21.3			

Source: Field survey, 2004

of the respondents were accepted the statement that the employment have been increased. This might be the response because of the different types of training and small rural crafting institution (Righa) for the local employment (Table 5.33).

Chi square test indicates that the observed frequencies does not confirm to the hypothesized frequencies. Therefore, the perception of the respondents varied among three ranks irrespective of social and economic status of the respondents. On average, majority of all categories respondents stated that the condition of employment has not been increased.

5.4.3.3 Changes in income sources, expenditure and savings

Changes in income sources, expenditure and the saving patterns might be changed due to the time period. Income sources due to the community forestry has been changed because of the shortage in fuel wood availability, timber extraction obligation, out migration and the road access near by the different community forests. Expenditure pattern also have been changed in the situation of the fuel wood shortage and the reduced employment opportunity in the villages. So, the savings remaining from the expenditure, also obtained from the perception of the users.

Table 5.34: Perception on changes in income sources, expenditure and savings

Variable	Category	Response in % within category									
		Changes in income sources			Changes in expenditure pattern			Annual Saving of the rural community in terms of money			
		Yes	No	Don't Know	Yes	No	Don't Know	1-5 Thou	6-10 Thou	11-15 Thou	More than 16 Thou
Wealth rank	Rich	10.5	47.4	42.1	57.9	21.1	21.1	68.4	31.6	-	-
	Medium	13.8	55.2	31.0	51.7	27.6	20.7	48.3	37.9	10.3	3.4
	Poor	25.0	53.1	21.9	52.5	23.8	52.5	50.0	50.0	-	-
Ethnic group of respondents	Bra. and Chhet	20.0	48.9	31.1	46.7	31.1	22.2	48.9	42.2	6.7	2.2
	Dalits	12.5	62.5	25.0	63.2	10.5	26.3	50.0	50.0	-	-
	Others	15.8	52.6	31.6	63.2	10.5	26.3	-	68.4	31.6	-
	Total	17.5	52.5	30.0	52.5	23.8	23.8	53.8	41.3	3.8	1.3

Source: Field survey, 2004

Change in the income source and expenditure were seen as the contradictory to the perception collection. Perceptions for the changes in income have seen the agreement to the "NO" answer with 52.5% and the most contradictory perception that the expenditure pattern of the user's group have changed. Here, savings from the rich people in small amount is high and the medium classed had answered for the saving more than 16 thousand per year even though it was small in percentage similar to the Brahmins and Chhetris.

5.4.3.4 Role of community forestry on income of the households

Community forestry schemes had developed the income generation activity for the well being of the households. Either from the IGA or from the forest products collection, responses of the user's group have been collected and analyzed.

Community Saving/Credit Scheme

The members have deposited money at the regular meeting as per their capacity and willingness. The community credit scheme is one of the main activities of the community forests. The communities have developed their own fund mobilization mechanism. The loan was provided to the dalit and poor for the IGA to improve the livelihood by the goat rearing. IGA was the most common activities financed by the community credit.

Table 5.35: Perception on income generation from IGA and forest products

Variable	Category	Response in %					
		Goat farming role for income generation			Role of forest products for income		
		Major	Minor	OK	Major	Minor	Not important at all
Wealth rank	Rich	36.8	42.1	21.1		78.9	21.1
	Medium	24.1	48.3	27.6	3.4	51.7	44.8
	Poor	34.4	37.5	28.1%	3.1	43.8	53.1
Ethnic group of respondents	Bra. and Chhet	33.3	37.8	28.9	4.4	64.4	31.1
	Dalits	31.3	50.0	18.8	-	25.0	75.0
	Others	26.3	47.4	26.3	-	57.9	42.1
	Total	31.3	42.5	26.3	2.5	55.0	42.5

Source: Field survey, 2004

Income from the IGA have been responded as the minor by the 42.5% individuals in the survey, but the agreement to the major role have been revealed out from the 31.3%, so that the program was not so excluded by the user's groups. In the context of the income from the forest products, most of the respondents have answered to the minor and unimportant for the income generation of the households especially for the poor.

5.4.4 Contribution of CF in livelihood from Social capital formation

The term social capital attempts to capture community and wider social claims on which individuals and households can draw by virtue of their belonging to social groups of varying degrees of inclusiveness in society at large (Ellis, 2000). Social capital refers to the internal social and cultural coherence of society, the norms and values that govern interactions among people and the institutions (Collier, 1998). Social capital in the context of the SL framework is defined as the social resources upon which people draw in pursuit of their livelihood objectives (DFID. 1999). Collier (1998) stated that social capital is institutions, relationships. and norms that shape the quality and quantity of society's social interaction and the glue that holds societies together. Decision making and benefit sharing processes are another aspect of the social capital.

5.4.4.1 Memberships in forest users groups

The representation of different classes of people in FUG, FUC is on table. Majority of the poor showed their positive interest in FUG and FUC membership. But. only 18 percent poor represented in user committees. Poor access to representation is low in FUGs, very low in FUC. Under the community forestry regulation. the provisions to have memberships of women at different levels of FUGs are crucial.

Table 5.36: Households representation in FUGs by well-being class (%)

Wealth ranks	Member HHs	User Group		User Committee	
		Male	Female	Male	Female
Rich	135	110	25	17	-
Middle	190	78	122	5	7
Poor	123	99	24	5	1
Total	448	277	171	27	8

Source: Field survey, 2004

5.4.4.2 Equity in decision making and benefit sharing

Decision making processes in community forests and benefit sharing is affected by the wealth rank and ethnic group of the users' group. It may either help to the group cohesion or contradiction due to the conflicts in benefit sharing. Perceptions about the decision making and benefit sharing of the forest products have been collected and analyzed for the interpretation. Perception about the equity in decision making process with the liberty putting views and make them prioritized 33.8%individuals were strongly agreed to the hypothesized statement "there is equity in decision making within the different wealth rank and ethnic groups". In the case of benefit sharing during the harvesting period of the community forest products, 38.8%people were agreed to the equity in benefit sharing. It shows that there is strong group cohesion in all these three community forest user's groups.

Table 5.37: Perception of people for equity in decision making and benefit sharing

Variable	Category	Response in % within category									
		Decision Making					Benefit sharing				
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Wealth rank	Rich	47.4	36.8	5.3	-	10.5	31.6	26.3	15.8	5.3	21.1
	Medium	27.6	37.9	6.9	17.2	10.3	37.9	41.4	3.4	6.9	10.3
	Poor	31.3	25.0	9.4	18.8	15.6	25.0	43.8	9.4	18.8	3.1
Ethnic gr. of respondents	Bra. and Chhet.	35.6	33.3	6.7	13.3	11.1	31.1	40.0	11.1	6.7	11.1
	Dalits	43.8	25.0	6.3	12.5	12.5	31.3	50.0	6.3	12.5	
	Others	21.1	36.8	10.5	15.8	15.8	31.6	26.3	5.3	21.1	15.8
	Total	33.8	32.5	7.5	13.8	12.5	31.3	38.8	8.8	11.3	10.0

Source: Field survey, 2004

5.4.4.3 Inter and Intra Group Members' Feeling/ Attitude

For the poor, 43.8 percent households rated that they have trustful relationship between each other. They have social norms (selection of leadership, performing collective activities, witness for credit etc.) to exchange experience and support each other during the crisis. However, 27.1 percent of them felt distrustful towards their group members and neighbors.

Table 5.38: Inter and intra group members' feeling/ attitude (%)

Well-being class	Burdening	Distrustful	Trustful	Neither
Rich		31.6	63.2	5.3
Middle	6.9	24.1	58.6	10.3
Poor	15.6	28.1	43.8	12.5
Total	8.8	27.5	53.8	10.0

Source: Field survey, 2004

Table 5.38 shows that the feeling of middle class is more or less similar to that of poor class. About 53.2 percent households felt trustful to the neighbors, 27.5 percent rated in distrustful. The reason of burdening and distrustful responses was delay in forest product extraction and silvicultural operation in the unsuitable time of the year with committee members.

Another cause of their distrustful feeling was that the office bearers (chairperson and secretary of CFUG) did not want to be transparent in regards to the group funds and contribute equally in community works. Remaining 15.6 percent of poor households felt burden towards their group members. The main reason behind this was weekly meeting and free contribution in community work.

They have survival problem than other issues which is apparent from a remarkable statement of one respondent: "how could it be possible for us to contribute free of cost labor when we don't have single minute to spare and think about other issues, even basic education and health of our own family, than hand to mouth problem".

5.4.4.4 Solidarity and Collective Action

The FUGs regularly performed collective activities for both conservation and community development. All classes and locations have perceived good performance Table 5.39. IRR have calculated for the response whether the respondents agree or disagree to the solidarity and collective action among the group. It is based on the rank of the perception and the order calculated according to the 3.7.2.

Table 5.39: Perception of people on solidarity and collective action

Status of respondents	Perception (IRR)*	
Rich	0.79	Good
Middle	0.75	Good
Poor	0.72	Good

Source: Field survey, 2004

5.4.5 Contribution of CF in livelihood from physical capital formation

Physical capital comprises the basic infrastructure and producer goods needed to support livelihoods (DFID, 1999). Ellis (2000) defined in economic term, producer good as contrast to consumer goods. Building, irrigation canals, roads, tools, machines and so on are physical assets.

- Infrastructures consist of changes to the physical environment that help people to meet their basic needs and to be more productive.
- Producer goods (pump set) are the tools and equipment that people use to function more productively.

The CF program supported to develop common and household level physical capitals. From the group discussion, it was reported that the common capitals were schools, village roads, health posts, community buildings, drinking water, irrigation canals etc. More than 90 percent respondents were fully aware about these activities as community development supported by the program. The program provided supports particularly for external materials and the users themselves (voluntary participation) accomplished rest of the work.

Among household level supports, the program provided toilet, improved cook stoves and house construction materials to enhance the individual capitals of the people. Out of those activities, types of houses and support to the community in different works are considered below.

5.4.5.1 Types of Houses

One of the main objectives of the CF program was to generate sustainable supply of timber to all users for house construction and other requirements including agricultural implements. The ownership of houses is one of the main properties. All respondents have their own houses.

Table 5.40: Types of houses by well-being classes (%)

Well-being classes	Permanent house		Temporary house		Total
	New*	Old**	New*	Old**	
Rich	7	3	5	4	19
Middle	10	6	9	4	29
Poor	15	5	8	4	32
Total	32	14	22	12	80

Source: Field survey, 2004

*house constructed after 1995, **house constructed before 1995

Table 5.40 shows that 66 percent of houses were thatched roofed and 34 percent were with permanent roof including masonry type. And all the 100% households have wooden door and window frames and shutters. The construction materials (timber, poles) have been brought mostly

from the community forest and thus, it is clear that the community forest contributes to a great extent to the livelihoods of the people.

5.4.5.2 Support to the community in different works

Community development works that directly concern to the rural people were studied whether they were supported by the fund collected by the forest user's group. Perceptions about the support to these activities have been taken out and analyzed. These developmental works that have been supported by the FUG was school construction (Lattekhoriya) that had damaged by the landslide. CF also supporting to the teachers hire for the part time teaching in that school.

Table 5.41: Support to the community in different works

Community forest users group	Response in % within category				
	Village Road	School support	Drinking	Telephone	Health posts
Lattekhoriya	-	86.7	6.7	-	6.7
Jograni	22.2	40.7	37.0	·	-
Juredhunga	-	26.1	39.1	17.4	17.4
Total Percentages	7.5	53.8	26.3	5.0	7.5

Source: Field survey, 2004

Support for school whether it is for construction purpose or to teacher hiring, Lattekhoriya CF has got more than 86% agreement from the respondents. Jograni CF has support for the school and drinking water in terms of support particularly for external materials collection and the users themselves (voluntary participation) accomplished rest of the manual work and at last Juredhunga CF has been supported for drinking water. One water permanent rain water collection tank (see photo plate at last) has constructed for which FUG support more than 70 thousand rupees.

5.5 Analysis of Livelihood Capitals

Pentagons can be useful as a focus point for debate about suitable entry points, how these will serve the needs of different social groups and likely trade-offs between different assets. However, using the pentagon in this way is necessarily representative. At a generic level there is no suggestion that we can – or should – quantify all assets. The overall selected household assets were measured on radial graph (Fig. 3.2 of Chapter 3).

The following figures show an access to selected household assets by well being classes. The common physical capitals have equal access to all but it was different in the case of private physical capital. House type (permanent) and ownership, land holding, livestock, annual income, literacy status is found to be critical assets distinguishing the poorest and the rich class. Poor have relatively less access than the rich class.

Whereas, access to opportunity for IGA training, group fund for credit, community forest resources (timber, fuel wood, forage), decision making role and drinking water facilities are in more or less equally distributed. The following figures (Figure 5.4 to Figure 5.7 and Annex-3 and 4) give details by well being classes.

Fig.5.4: Selected household assets by well-being class, 2003.
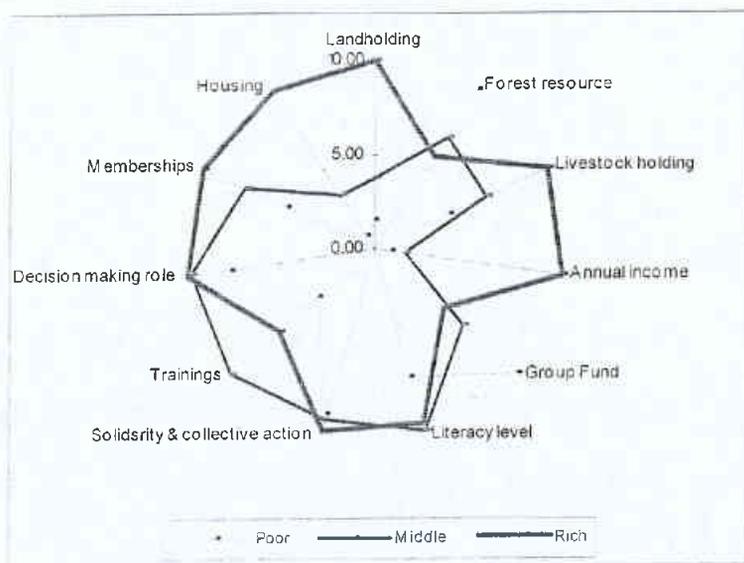
The Figure 5.4 reveals that rich class has highest access in all assets except group fund and forest resources. It is because of availability of alternative sources of forest resources to them. On contrary, the poorest class has greater access to group fund and forest resources since they have more dependency on those activities (Annex-3).

Summing up the contribution made to all the Livelihood Assets

The contribution to the five livelihoods assets by the community forestry for different well being

category have been summed up and figure out. Figure 5.5 shows the access of selected households on livelihood assets by well being class. Except natural and social capital, rich class has highest access on three assets whereas middle class has highest access on social capital since they have more access to literacy
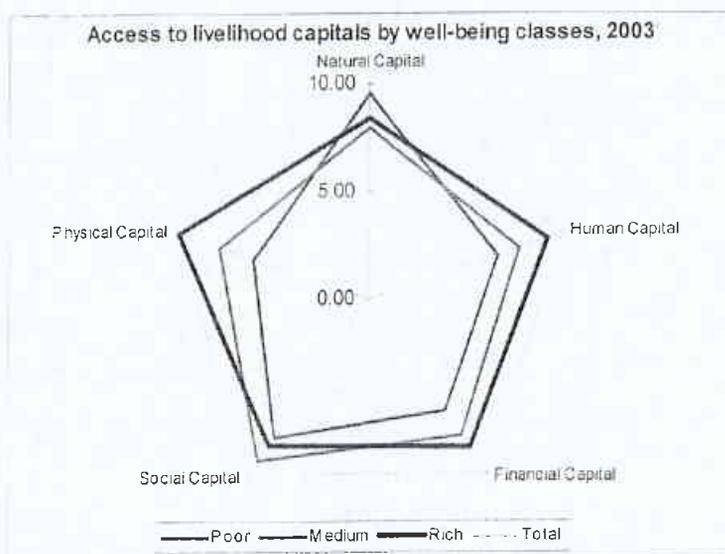
Fig. 5.5: Access to livelihood capitals by well-being classes, 2003

71

level, training and leadership quality. Poor people have highest access on natural capital.

Figure 5.6 reveals that the poor people have highest access on forest resources and group fund whereas better off class has higher access than the poor on remaining activities which are related to these livelihood assets. The weighted value for each activity is presented in Annex-4. Figure 5.7 shows access of poor and better-off class on livelihood capitals. The figure clearly indicates that poor have less access than the better-off in all types of capitals namely, social, physical, financial, human, and natural.
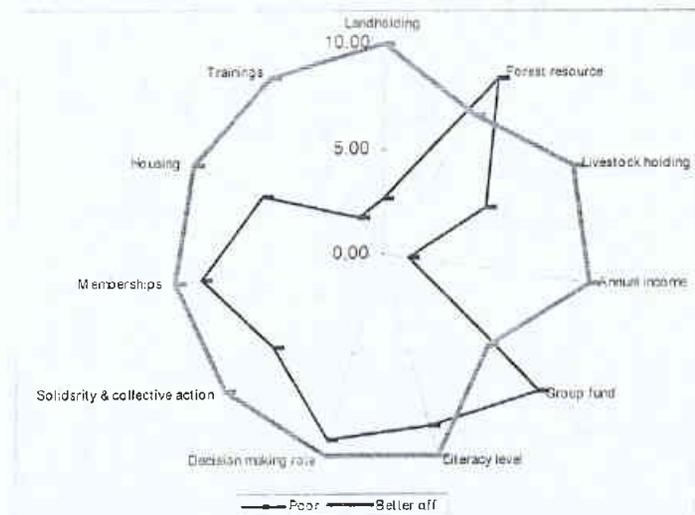
Fig. 5.6 Selected household assets by poor and better off class, 2003

In overall calculation of the livelihood capital in relation to the community forest that is supporting to the community people, major capital like financial were accessed by the rich and dominant class of the society, and the poor and dalit were found accessed more to the natural resources. All the characteristics of the livelihoods assessed showed that the poor and dalit were vulnerable than the dominants and high classed people for the sustainable rural livelihoods. Results in relation to the credit provision, this study agree to the Hill Livelihoods Baseline Study 'Some CFUGs provide low-interest loans to vulnerable households for income generating activities such as raising goats and chickens, bee keeping and producing
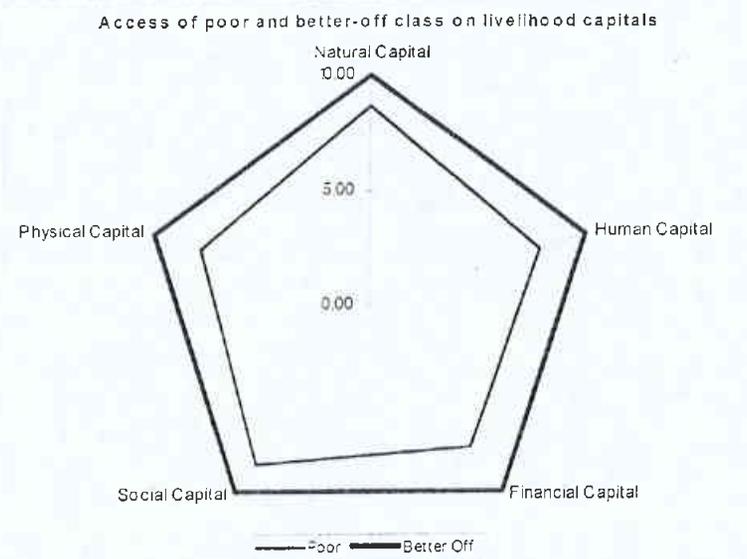
Fig.5.7. Access of poor and better-off class on livelihood capitals

vegetables' (LFP, 2004). But in the case of decision making process poor households played only active role but the ethnic majorities played the very active role (table 5.32).

5.6. Livelihood Outcomes

5.6.1. Livelihood Features—(A Case of Lattekhoriya and Juredhunga FUG)

The livelihood features emerging in two community forests of the study area are encapsulated in Box 5.1. It is remarkable to note that the community of Lattekhoriya and Juredhunga CF has visualized a clear-cut positive change in terms of the overall livelihood indicators. Livelihood activities conducted and strategies taken have resulted in net positive livelihood outcomes in the village.

Box 5.1: Livelihood features from group discussion, Juredhunga and Lattekhoriya CFUG

Vulnerability context	**Shocks**
	High shortage of drinking water in Juredhunga and problem of school building in Lattekhoriya
	Trends
	• Diminishing water spring
	• Landslide affect the school building
	• Dependency on haphazard rain water collection
	• Formation of FUG
	• Collection of fund for drinking water and school renovation
	• Availability of fund for school and drinking water system renovation
	• School and rain water collection pond construction to make easy to study in the school room for children and drinking water for rural
Livelihood assets	**Natural capital**
	• Availability of time for forage collection by improving health of the school children
	Physical capital
	• Construction of primary school
	• Access to drinking water facility
	Social capital
	• Access to have memberships of FUG/FUC/ FECOFUN
	• Cohesiveness and trust build up between each other in the village
	Financial capital
	• Access to soft loan from groups for income generation activities
	• Increased annual income from agricultural products
	Human capital
	• Increased participation in the group meeting
	• Enhanced community governance and decision making role
Policy, institution and process	**Construction of school building and rain water collection pond**
	• Intensification of school teaching practice due to safe school building
Livelihood strategies	• Introduction of vegetable farming subsistence to household use
	• Reduction of livestock number and increased stall feeding due to water availability
	• community plantation and protection of degraded forest in the community forests
Livelihood outcomes	• Household health improved
	• Forest condition improved
	• Mentality of children for study has improved
	• Improved social relation have been developed

5.6.2. Contribution of the CF Program on Rural Livelihoods

Reduced Vulnerability

Reduced vulnerability due to construction of rain water collection pond for livestock and rural people for the time when scarcity. Provision of soft loan for income generation activity from CF (NRs. 20,000.00) to the poorest/women entrepreneurs without collateral and low interest rate (max. 12%); reducing vulnerability of bank loan and unaffordable interest rate (up to 25%) from dominant people.

Livelihood Assets

Natural: three CFUGs have managed 148.13 ha CF, poorest fulfill 35 percent needs from CF.

Physical: support to school construction and rain water collection pond.

Financial: established saving/credit scheme; poor assists by the income generation activities and small craft preparation (Righa).

Social: formal and informal memberships.

Human: Poor had access to IGA training, leadership and awareness, enhanced decision making role of the poor in the meetings.

Policies, Institutions and Process

Policies and institutions: Community forest operational Plan, Forest Act, Forest Regulation, Community forest management guidelines, FUG's Constitutions provided the opportunity to have memberships in CFUG; use of the fund and resources. Provision of income generation activities for users group.

Organizational framework: District Forest Office and different NGO/INGOs (DFID/LFP, BYC, CYC, and GYC) are providing technical and financial supports to the CFUGs for CF management activities including improved cook stove program.

Livelihood Strategies

FUGs managed community forest for forest resources in the CF; the opportunity to engage in income generation and employment increased; stall-feeding practice (increased by 26%). FUGs managed for credit to the poor who are unable to reach formal bank and dominant users due to collateral and unaffordable interest rates.

Livelihood Outcomes

Improved participation in decision making

The decision making for the forest management and distribution of forest products have shown satisfactory participation in the perception. Perception about the equity in decision making process with the liberty putting views and make them prioritized 33.8% individuals were strongly agreed. Enhanced social inclusion by involving lower caste, poor and women in FUGs, raised the voice of poorest in decision making; improved coordination with other line agencies; improved CF condition serving as extended habitat to the wildlife are other findings.

Improved natural resource condition

Perceptions of the respondents were collected to test whether the condition of the fodder, grass, timber, fuel wood and NTFPs status has been increased or not. The survey revealed that the condition of the forest and whole resource condition has been improved and soil conservation, amelioration to the environment is another achievement of the community forestry.

Support to the human resource development

Community forest has not been success in the sector of the employment generation in the mountain rural communities, however support to the health care (fund mobilization for the health posts), education sector (renovation of the school buildings), establishment of the micro enterprises for the crafting to the forest products by the trainings from DFO and INGOs are the achievements. Training and awareness program has sufficiently provided chances to become the entrepreneur even in the small scale.

Changes in the economic status

Economic status of the community people has been changed due to changes in the income sources, expenditure and savings. Opportunity to raise goat for income generation to poor households have become most prioritized activity and thus help the economic status of the poor notwithstanding all the respondents are not agreed to the statement.

Improved social status and more physical facilities

Feelings of the people within the community and outside have been changed for the common goals and solidarity. Many physical activities have been renovated and thus improved livelihood status of the community people.

Chapter 6

SUMMARY, CONCLUSION AND RECOMMENDATION

6.1 Summary

This study has attempted to assess the socio economic characteristics of FUGs, and impacts of community on livelihood. Three FUGs in Baglung district of western Nepal was selected to examine how the benefits are related to the socio economic condition of the households. The selection of the study sites and households was done by preparing a stepwise sample design firstly, the forest user groups and secondly, the household units.

6.2. Conclusions

The overall results of this study show that the community forestry program has supported the livelihood of poor people. Based on the above results and discussions, the following conclusions are drawn.

In terms of policy

- The CFUGs are recognized as an umbrella approach for community development and forest management activities.

- Women and poor groups have negligible representation in FUGs resulting in the absence of their voices in decision making level. Majority of the poor and women have been neglected due to lack of quota provision for representation at different level of FUGs and FUCs.

In terms of vulnerability context

- Most of the adopted efforts by the FUGs are in progress in collaboration with DFO and other line agencies to reduce the vulnerability factors that are credit provision, community forest management and community development works.

In terms of livelihood strategies

- The increasing trend of stall-feeding practice (increased by 26%) and participatory protection of the CF are helping to meet forest management strategies approve by the program.

- Establishment of micro enterprises for the income generation of the poor and making provisions of the soft loans (credits) for goat rearing help to maintain the household income of the poor.

In terms of assets

- Taken as a whole the physical capital has increased. Increase in physical capital by construction of school, support to health post have equal access to all. Maintenance of foot trails; construction of rain water collection ponds have helped to increase the physical capital of community.

- After community forest management, forest is serving as an extended habitat to the flora and fauna and poor got higher access to forest resources (i.e. increased natural capital).

- Local people became members in formal CFUGs (women's participation, participation of poor) and established networking with different line agencies like DFID/LFP, GYC, and CYC for improved cook stove, improved toilet construction and District Forest Office for soft loan. The CFUGs have been evolved as a major organization to implement community development activities at the settlement level. Thus, the social capital has improved by the community forestry program.

- Consensus basis leadership selection process is prevalent in CFUGs. Similarly poor have got the opportunity to be present in awareness programs and IGA trainings. Moreover, there is an active decision making role of the poorest in the meetings. In this way, the human capital has increased by the community forestry program.

- Community forestry has improved the forest management, created some short term employment opportunity, generated income for community development activities, developed institutional arrangements at local level, and contributed to farming system.

Finally, the access to capitals, uses of capitals, possession of capitals and their interaction serves as the foundation of a sustainable livelihood system. Not only one asset is seen in isolation but the assets derived are also the outcomes from different factors and interaction of capitals.

6.3. Future Concerns and Recommendations

Generally the findings from the study indicate that the existing practice of community forest management is satisfactory in relation to the support to the livelihood assets In order to achieve goals of community forestry to reduce poverty and to contribute to economic development by sustained use of forest resources, despite the rhetoric success of community forestry, the following issues should be addressed.

6.3.1. Policy Level

- Proper monitoring and evaluation system in policy level to monitor the process and impacts should be developed and implemented. It is recommended to amend the monitoring policy accordingly.

6.3.2. Field Level

Sustainability of the program

- There is need to develop sustainability plan of the activities such as income generation activities, medicinal plant cultivation etc.

- A particular focus should be given to the poor, women and dalit individuals in CF related training, workshop, study tours in order to encourage to participate; to empower them; and to improve their awareness level. It is recommended that skill development programs should be launched and that should be need based and at community level.

- PRA should be adopted as the most important tool for identification of needy people and types of potential income generation activities. Right persons should be selected for participation in training, which have the actual need for the skill and will adopt it for their occupation. The training should be designed based on need of the poor.

- The technical support from DFO is must for the active forest management. On site trainings for the forest management, NTFPs collection and cultivation, rural forest enterprises establishment, frequent field visit for the awareness of the new policies to the community people are the main subjects that the DFO should improved for active forest management by the rural community.

Promoting saving/ credit scheme and cooperative

- Establishing guidelines for the use of FUG fund and need to allocate certain amount of FUG fund especially for poor to reduce poverty and saving/credit scheme should be promoted through community managed cooperatives. Soft loan should be provided through co-operatives to the selected potential entrepreneurs for IGA. Following monitoring mechanism should be recommended for proper utilization of the disbursed loan;

    - DFO representative
    - CFUG representative
    - VDC representative

6.3.3. Further Research

There are some remaining issues. Therefore, further researches are recommended for the following issues;

- The inventory of the flora and fauna is recommended for further research including active involvement of local communities (key informants) through PRA exercise. Local people are the storehouse of indigenous knowledge. It is an urgent need to incorporate in the preparation of inventory list of the biodiversity in community forestry.

- The research should be replicated in other community forestry and other users group of the other districts in Nepal.

- The multiplier effect of community forestry to quantify the economic impacts and contributions in terms of gross output, net out and employment arising from forest management is clearly an important topic for future research and is recommended.

---The End---

REFERENCES

Achrya, KP., 2001. Managing Forests in Community Forestry, *Banko Janakari* 11 (2): 3-7.

Adhikari, B., 2001. *Household Characteristics and Common Property Forest Use: Complementary and Contradictions. Journal of Forest and Livelihood*, Vol. 2(1): Pp. 3-14, Forest Action, Kathmandu, Nepal

Arnold, JEM. and Campbell, JG., 1986. *'Collective Management if Hill Forests in Nepal: The Community Forestry Development Project:* in proceedings of the Conference on Common Property Resource Management, National Academy Press, Washington, D. C. Pp. 425-54

Arnold, JEM. and Campbell, J. G., 2001. *Forestry, Poverty and Aid*, Occasional paper No. 33. Center for International Forestry Research (CIFOR), Jakarta, Indonesia

Arnold, JEM. and Campbell, J. G.,1998. *Forestry and Sustainable Rural Livelihoods*, In D. Carney ed. Sustainable Rural Livelihoods: What Contribution can we make? London, UK, Department for International Development

Arnold, JEM and Bird, P, 1999. *Forest and the Poverty-Environment Nexus (Internet)*, Prepared for the UNDP/EC Expert Workshop on Poverty and the Environment. Brussels, Belgium, January 20-21 1999

Ashby, C. and Carney, D., 1999. *Sustainable Livelihoods: Lessons from early experiences*, London, UK, Department for International Development

Berkes, F., 1985. *'The common property resource Problem and the Creation of Limited Property Rights'*, Human Ecology, 13, Pp. 187-208

Berkes, F.,:1986. *"Local-Level Management and the Commons Problem: A Comparative Study of Turkish Coaster Fisheries*, 'Marine Policy' 10, Pp. 215-29

Berkes, F.,:1988. *Common Property Resources: Introduction and Overview*. St. Catherine's, Ontario, Canada

Bond, R, 2001. *Common Methods Used in Impact Assessment. Application* Guidance Note "Rural Enterprise Development" [Source: Richard.bond@man.ac.uk]

Broomley, D. W., 1991. *Environmental and Ecology, Property Rights and Public Policy*, Oxford and Cambridge, Blackwell

Brown, D., Malla, Y. B., Schreckenberg, K., Springate-Baginski, O. 2002. From supervising subjects to supporting citizens: Recent Developments in Community Forestry in Asia and Africa. *Natural Resource Perspectives* No. 75, ODI, London

Carney, D, 1999. *Approaches to Sustainable Livelihoods for the Rural Poor Poverty Briefing* List, Overseas Development Institute, UK

Carney, D., 1998. *Implementing the Sustainable Livelihoods Approach,* In D. Carney, ed. Sustainable Rural Livelihoods: What Contributions can we make? London, UK, Department for International Development

CBS, 2001. National Population Census 2001 – *Summary Sheet, Central Bureau of Statistics*, His Majesty's Government, Kathmandu, Nepal

Chambers, R, 1983 (reprint 1993). *Rural Development – Putting the Last Firs*, London Scientific & Technical, Longman Group UK Limited, Longman House, Bumt Mill, Harlow, Essex CM20 2JE, England

Chhetri, R.B., 1999. The Rhetoric and Realities of People's Participation in Conservation and Development in Nepal: An Anthropological Perspective, in Chhetri, R.B and Gurung, O. P. (eds.) *Anthropology and Sociology of Nepal, Cultures, Societies, Ecology and Development*, SASSON, Kathmandu, Nepal

Cochran, W. G., 1977. Sampling Techniques (Third ed.) John Willy and sons, New York, USA

Collet, G., Chhetri R., Jackson, W. J. and Shepherd, K. R., 1996. *Nepal Australia community Forestry Project- Socio-Economic Impact study*, Technical Note No. 1/96, ANUTECH Pty Ltd. Canberra, Australia

Collier, P, 1998. Social Capital and Poverty, Social Capital Initiatives Working Paper No. 4. The World Bank Social Development Department, Washington D.C., USA (www. worldbank.org/socialdevelopment)

DDC, 2001. *District Profile of Baglung District*, 2001 District Development Committee, Baglung, Nepal

DFID (Department for International Development),1999. *Sustainable Development sheets: Framework.* London, UK, Department for International Development

DFID (Department for International Development),: 2000. *Strategies for achieving the international development targets: Environmental Sustainability and eliminating poverty, Consultation document*, London, UK, Department for International Development

DFID, 1999. *Sustainable Livelihood Guidance Sheet,*. Department for International Development, United Kingdom

DFID, 2001. *Sustainable Livelihood, Poverty Elimination and Water*. Journal of Water.

Ellis, F, 2000. *Rural Livelihoods and Diversity in Developing Countries*. Oxford University Press Inc., New York.

Fisher, R. J. and Gilmour, D. A., 1999. Anthropology and Biophysical Sciences in Natural Resource management: Is Symbiosis Possible? (eds.) Chhetri R. B. and Gurung, O. P. in *Anthropology and Sociology in Nepal, Cultures, Societies, Ecology and Development*, SASSON, Kathmandu, Nepal

Fisher, R. J., 2000. *Poverty Alleviation and forests: Experiences from Asia. In: Paper Presented for Workshop "Forest Eco-spaces, Biodiversity and Environmental Security"* 5 October 2000. Amman, Jordan. Pre-congress workshop IUCN World Conservation Congress 2000

Gadgil. M., 1987, *'Diversity: Cultural and Biological; Trends in Ecology Evolution*, 2 (12), Pp. 396-73

Gentle, P., 2000. *The Flow and Distribution of Community Forestry Benefits: A Case Study from Pyuthan District*, Nepal. A M. Sc. Thesis Submitted to University of Christchurch, New Zealand.

Gibbs, C. J. N., and Broomley, D. W., 1990. Institutional Arrangements for Management of Rural Resources: Common-Property Regimes; 'Resources and Economic Development: An Institutionalist Perspective, *Journal of Economic Issues, Pp. 779-96*

Goodwin, R K. and Shepard, W. B., 1979. *Forcing Squares, triangles and Ellipses into a Circular Paradigm: The Use of the Commons Dilemma in Examining the Allocation of Common resources,* Western Political Quarterly 32(3): 265-77

Hames, R., 1979. *A Comparison of the Efficiencies of the Shotgun and the Bow in Neo-tropical Forest Hunting.* Human Ecology '7': 219-52

Hardin, G., 1968. The Tragedy of the Commons, Science 162: 1243-48

HMGN, 1998. *The Ninth Plan, 1997-2002.* Kathmandu. National Planning Commision, Kathmandu, Nepal.

HMGN,:1989. *Master Plan for the Forestry Sector.* Kathmandu, Nepal, Ministry of Forests and Soil Conservation.

IUCN, 1980. *World Conservation Strategy. Living Resource Conservation for Sustainable Development.* IUCN-UNEP-WWF, Gland, Switzerland

Johannes, R. E., 1981. *Worlds of the lagoon: Fishing and Marine Love in the Palau District of Micronesia.* Berkley: University of California Press

Khatry, PK, 1997. *Social Sciences in Nepal: Some Thoughts and a Search for Direction.* Tribhuvan University Center for Nepal and Asian Studies, Kathmandu, Nepal.

Korten, D. C., (eds.). 1986. *Community Management, Asian Experience and Perspectives,* Kumarian Press, West Hartford, CT, USA

Karna, A, 2003. Relationship between contribution to local livelihood and antibacterial activities of Selected Medicinal Plants, A M. Sc. Thesis submitted to the TU, IOF, Pokhara, Nepal.

Kothari, C. R. 1990. *Research Methodology: Methods and Techniques* (Second Edition). Wishwa Prakashan, New Delhi, India.

Leuschner, WA, 1984. *Introduction to Forest Resource Management*. John and Wiley and Son Inc.

Livelihoods and Forestry Programme, 2004. A report of Livelihoods and Forestry Programme, Hill Livelihoods Baseline Study. LFP, Kathmandu, Nepal.

LFP, 2003. Baseline Study and Qualitative Survey of the Baglung District, Development Vision Nepal Pvt. Ltd, Kathmandu Nepal.

Maharjan, M. R., 1998. *The Flow and Distribution of Costs and Benefits in the Chuliban Community forest, Dhankuta District, Nepal*. Network Paper 23e. Rural Development Forestry Network. Overseas Development Institute. London.

Malla, Y. B., 2001. *Impacts of community Forestry Policy on Rural Livelihoods and food Security in Nepal*. *Unasylva* No. 202:37-45.

Mc Cay, B.J., and Acheron, J.M., 1990. Human Ecology of the Commons, (eds.) *The Question of the Commons, The Culture and Ecology of Communal Resources*, The University of Arizona Press, Tucson.

Mikkelsen, B, 1995. *Methods for Development Work and Research- A Guide for, Practicenners* Sage Publication India Pvt. Ltd New Delhi, India.

NBS, 2002. *Nepal Biodiversity Strategy*. His Majesty's Government of Nepal, Ministry of Forest and Soil Conservation, supported by GEF and UNDP, Kathmandu, Nepal.

NEFAS, 1992. *Interagency Committee on Integrated Rural Development for Asia and the Pacific/ United Nations, Future of Nepalese Economy*, Nepal Foundation for Advanced Studies (NEFAS), Kathmandu, Nepal

Netting, R., 1982. Territory, Poverty and Tenure, In *"Behavioral and Social Science Research: A National Resource"* Adams, R.M., Smelser, N. J. and Trieman, D. J. (eds.) Pp. 446-502 Washington D.C.: National Academy Press

Neupane, RP, 1995. *A Study on the Development of Agroforestry Systems in the Hills of Ramechhap Nepal: A Sustainable Resource Management Perspective*, M. Sc. Dissertation, Asian Institute of technology, Bangkok, Thailand

NPC, 1998. *Poverty and Poverty Alleviation in Nepal. "A Plung into Poverty"* National Planning Commission Secretariat, Kathmandu, Nepal

Ostrom, E., 1985. *"The Rudiments of Revised theory of the Origins, Survival, and Performance of Institutions for Collective action'*, Working Paper 32, Workshop in Political theory and policy Analysis, Indiana University, Bloomington

Pokharel, B, 2002. *Livelihoods, Economic Opportunities and Equity- Community Forestry and People's Livelihoods. Journal of Forestry and Livelihoods*. Forest Action, Kathmandu, Nepal.

Pokharel, BK and Tumbahangphe, N, 1999. *Community Forestry Development Action: A Synthesis of NUKCEFP Reports and Publication*. Nepal-UK Community Forestry Project, Coordination Office, Nepal

Poudel, B.S. 2003. The Rural Poor and the forest resources: Socioeconomic heterogeneity, benefit sharing and participation in community forestry in Nepal, Masters thesis submitted to TU, IOF, Pokhara.

Roy, R. and Pokharel, R. K., 2000. Impacts of Community Forests on Rural Livelihood. *Banko Jankari, Vol/ 9 No 2 Nov, 2000*, Department of Forest Research and Survey, Kathmandu, Nepal

SAPAP, 2002. *Fighting for Poverty*. South Asia Poverty Alleviation Program (via Internet)

Scoones, I, 1998. *Sustainable Rural Livelihoods – A framework for Analysis*. IDS Working Paper 72: Institute of Development Studies (IDS), UK.

Silwal, T. 2003, Rural Livelihoods and diversity in Buffer zone, A Case Study from Royal Bardia, National Park, Nepal, Masters thesis submitted to TU, IOF, Pokhara.

Springate-baginski, O., Blaikie, P., Dev, O.P., Yadav, N. P. and Soussan, J., 2001. *Community Forestry in Nepal: A Policy Review, Livelihood-Policy relationships in South Asia.* Working Paper No 3. Department for International Development (DFID), UK.

Thapa, S, 2000. *A Detail Study on Effectiveness of the Means Used by Local People for Crop Protection.* A Case Study of Thakurdwara and Shivpur VDC, Royal Bardia National Park. B.Sc. Thesis. Kathmandu University, Nepal.

Thomas, A, 2000. Poverty and the End of Development. In Allen, T and Thomas, A. (eds). Poverty and Development in 21 Century. Oxford University Press, London

Timsina, N, 2001. *Empowerment or Marginalization: A Debate in Community Forestry in Nepal. Journal of Forest and Livelihood.* Pp. 27-33. forest Action, Kathmandu, Nepal.

Tiwari, IP, 1998. *Employment Creation and Income Generation in Rural Regions: Peoples, Places, Activities and Interventions in Nepal.* Center for Rural and Urban Studies and Transfiguration, Lekhnath, Nepal.

Tiwari, IP, 2000. *Employment Creation and Income Generation in Rural Regions: Peoples, Places, Activities and Interventions in Nepal:* Center for Rural and Urban studies and Transfiguration, Canal Avenue, Begnas Lake-Side, 9 Lekhnath, Kaski, Nepal.

Tiwari, NR, 1998. *Biodiversity Conservation in Nepal. In Ecoregional Co-operation for Biodiversity Conservation in the Himalayas.* A Report on the International Meeting on Himalayan Eco-regional Co-operation. United Nations Development Program, New York, NY 10017, USA

Topal, S.Y., Bhuchar, S.K., Pant, P., and Kothyari, B. P., 2000. *Sustainable Management and Utilization of Common Property Resources:* A Case Study in the Bheta Gad-Garur Ganga Watershed in the Central Himalayas, ICIMOD, Kathmandu, Nepal

UN ESCAP, 1998. *Asia and the Pacific into the 21st Century: Prospects for Poverty Alleviation.* Theme Study of the 54th Session of ESCAP, 20-28 April 1998.

UNDP, 1998. *Nepal Human Development Report 1998*. United Nations Development Program, Kathmandu, Nepal.

UNDP, 2002. *Nepal Human Development Report 2001*: Poverty Reduction and Governance. United Nations Development Programme, Kathmandu, Nepal.

Upreti, B. R., 2000. *Social transformation through Community Forestry: Experiences and Lessons from Nepal*. Mountain Forum On-line Library Document.

Valdivia, C and Quiroz, R, nd. *Rural Livelihood Strategies, Assets and Economic Portfolios in Coping with Climatic Perturbations*: A Case Study of the Bolivian Andes. Paper Presented at the Social Organization and Land Management Session, Integrated Natural Resource Management for Sustainable Agriculture Forestry and Fisheries, 28-31 August, CIAT, Cali Colombia.

Varughese, G., 2001. Revisiting Community forestry policy and Practice in Nepal: Some Reflections. *The Nepal Journal of Forestry* XII (1): 18-26. Nepal Foresters' Association, Kathmandu, Nepal.

Warner, K., 2000. *Forestry and Sustainable Livelihoods*, in Unasylva # 202

Wells, MP and Brandon, KE, 1992. *People and Parks: Linking Protected Area Management with Local Communities*. The World Bank/ The Wildlife Fund/ USAID.

Wells, MP and Brandon, KE, 1993. *The Principles and Practice of Bufferzones and Local Participation in Biodiversity Conservation*. Ambio, Vol. 22, No 2-3, p. 157-162, 1993.

Annex-1

Self Administered Household Survey Questionnaire
"Community Forest Management: Contribution on Sustainable Rural Livelihoods"

I am Bishnu Chandra Poudel. I am going to conduct study about the contribution of community forestry on Sustainable Rural Livelihoods for the partial fulfillment of the Masters' Degree in anthropology. This questionnaire seeks answers to following questions to find the contribution on your daily life and livelihoods. It is a part of my research activity for completing my M. A. (Anthropology) degree. Your view will be kept confidential and will not harm you in any way. Please do not hesitate to answer the following questions. Your help in this form will be highly useful to me and will be very much acknowledged. Thank you.

Questionnaire no.:   Date:
Name of Interviewer:

General information:
Name of respondent: Place/ VDC:
Hamlet: Aspect: Ethnicity/ Caste:
Age: Sex: M ☐   F ☐   Profession/ Designation:
Household size: Male ....   Female....
Cattle holding: Cow....   Buffalo....   Goat/ Sheep.... Chicken...
Land holding: ha   Ropani   (Bari...   Khet....   Kharbari...Others.....)

Natural Capital & its contribution:
1. Distance from forest to your house: ... Km. (estimated)
2. Total forest area available to your village?
         CF.... ha;   National Forest ... ha.

3. How would you best describe the supply of fuel wood currently available in your area?
         Surplus supplies   just adequate   Shortage   Critical
Shortage
         Don't Know

4. How would you best describe the supply of leaf litter currently available in your area?
         Surplus supplies   just adequate   Shortage   Critical
Shortage
         Don't Know

5. How would you best describe the supply of fodder currently available in your area?
         Surplus supplies   just adequate   Shortage   Critical
Shortage
         Don't Know

6. How much time do you spend in collecting the fuel wood, fodder, leaf litter? (hr/Bundle)

	Fuel wood	Fodder	Leaf Litter
Before CF			
After CF			

7. Does your household ever purchase feed/fodder for your livestock?
         Yes: No:
         If yes, what types and how much does it cost?

8. For your household, which forest product is the most scarce/difficult to collect?

    Fuel wood ( )   Leaf fodder ( )   Timber ( )   Grass ( )

    Animal Bedding ( )   Other ( )

9. What is the resource condition of bio-diversity?

    Very abundant ☐   Abundant☐   Normal☐   Dwindling ☐ Rare ☐

    Reasons of the resource conditions:

a) Free grazing	Yes	No	b) Encroachment	Yes	No
c) Over exploitation	Yes	No	d) No management	Yes	No
e) Not identified	Yes	No	f) Others …		

10. Accessibility to the natural resources

    Easily accessible   Ban posed on collection, harvesting, etc.   Other practices

11. Do you think the resources affect other flora and fauna of the area?

    Yes   No   Don't know

    If yes, what? E.g., some wildlife are dependent on these species highly, etc.

- Promotes growth of … plant species/wild life
- Promotes regeneration of … plant species/wild life
- Disturbs/ competes with the growth of … species/wild life
- Makes the site/ soil harse/ or moist less, etc.
- Attracts some insects/ pests….

12. Does the wild life affect the regeneration, growth, etc. of other plants and animals?

    Yes   No   Don't know

    If yes, which species are affected and how?

13. Is the forest capable for more important for soil conservation, watershed conservation, environmental amelioration, scenic-beauty, etc.?

    Yes   No   Don't know

14. What are the systems of grazing in your village?

    Before: After:

15. Are there any changes occur after the intervention for the grazing control?

    If yes, how?

16. Is there any changes observed after the implementation of this program?

Changes in	Response			If yes, please specify the reasons
	yes	No	Don't Know	
Crop yield				
Crop Varieties				
Soil Fertility				
Inputs used				
Cropping intensity				

17. Does your household use compost for crop production?

    Yes: No:

18. Does your household use chemical fertilizer for crop production?

     Yes: No:

19. How many of the following livestock do you have and how are you managing them?

Type	Number	Stall Feeding	Grazing			
			CF	NF	PF	GL
Buffalo						
Cow/Oxen						
Goats/Sheep						
Horse/Mule						
Pigs						
Chickens						
Others						

CF=Community Forestry, PF=Private forest, NF=National Forest, GL=Government land

20. Has the number of animals owned by your household now own more or less animals than before this program intervention?

     Increasing,   Decreasing   Same

     If increased or decreased, what do you think the reason for this increase/decrease?

21. How would you perceive the benefits of community forest? Please indicate your agreement or disagreement with the following statements.

(Symbol: 1=strongly agree, 2=agree, 3=neutral, 4=disagree, 5=strongly disagree)

Statements	Agreement				
	1	2	3	4	5
a. Fuel wood is more sufficiently available these days than before.					
b. Agricultural implements are more sufficiently available these days than before					
c. Green and thatching grass is more sufficiently available these days than before.					
d. Timber is more sufficiently available than before.					
e. The collection of forest product is less time consuming than before					
f. The processes of collection of forest product is easier than before					
g. Non-timber forest products are more sufficiently available than before					
h. Fodder is more sufficiently available from the forest					
i. Fodder collection process is easy					
j. The quality of the fodder has increased					
k. Price of fodder is reasonable					
l. Bedding material and leaf litter are more utilized after CF					
m. Collection of leaf litter and bedding materials is easy and less time consuming					
n. More compost is being produced because of more availability of leaf litter and bedding material.					

22. Do you feel the intervention is assisting to conserve the natural resources than before?

Contribution to Financial Capital:

1. What are the major sources of income for the household?

Source:	Amount:
Sales of grains:	------------
Government service/pension:	------------
Sales of livestock:	------------
Labor work:	------------
Sales of vegetables/fruits/	------------
Other business	------------

2. Is there any changes observed after the intervention of CF program?

Changes in	Response			If yes, please specify the reasons.
	Yes	No	Don't Know	
Employment opportunity				
Income sources				
Expenditure pattern				

3. What are other uses of income from the forest products you put on?

4. Household income (approximate).

From agriculture	From livestock	From medicinal plants	Others (remittances, business, jobs, etc.)	Saving	Expenditure
...% of total	...% of total	...% of total	...% of total	...% of total	... % of total

5. What do you think about the income from the medicinal plants?

Major ☐   Minor ☐   Not important at all. ☐

6. Are there any credit programs for income generation?

Yes   No.   If yes, soft loan facility, etc.......? Others....

7. How easily is the loan available for the income generation?

Contribution to Physical Capital:

1. Is the amount of income from intervention in any way for (tick)

road-construction ☐
school-construction ☐
drinking water support ☐
telephone ☐
Others ...
If yes, when? Do you remember? Your comments (i.e., is it good, bad, etc.)

2. If the income from program is used in the infrastructure development, do you think it is of considerable (substantial) amount?

Physical facilities	Contribution from the project (%)	Remarks
Road building		
School Construction		
Water tap construction		
Telephone		
Electricity		
Others		

Rank from 1 to 5.

3. Distance to hospital or health-post.........Km. from the HH.... From the VDC.

Contribution to Human Capital:
1. Employment from the intervention

People engaged	Wealth rank	Ethnicity (DAG/ NDAG)

2. Do you remember the cases when lives were saved or diseases cured by the program?
   If yes, when and what?

3. Contribution of the program to your health, your perception (from 1 to 5)
   (from 1 to 5)......

4. Contribution to the education sector made by the program, your perception
   (from 1 to 5).....

5. Have anyone of you started any entrepreneur or micro-enterprises related to community forestry?
   Yes   No
   If yes, what are those?

6. Were there any trainings/ seminars/ workshops organized related to the CF?
   Yes   No
   If yes, which trainings? ....

6.1. Did you participate in those events? Yes   No
   If yes, in which trainings? ...

6.2 Did you learn something valuable from those events? Yes   No.

6.3 Do you use those learning from the events?   Yes   No
   If yes, what and where? ...
   If no, why?...

Contribution to Social Capital:

1. Are there any cooperative or any other institutions/ organizations concerning the trade, processing, collection, harvesting, etc. of the forest products?

Institutions	Related to			
	Harvesting	Processing	Trade	Marketing
Cooperatives				
Local organizations				

1.1 How are these functioning? Well   Not functioning well

1.2 If functioning well, why is it so?

1.3 If not functioning well, why is it so?

1.4 Is there equity in decision-making, benefit-sharing, participation in the use of forest products' collection, harvesting, management, conservation, etc. (within male and female, DAG & NDAG; people of different wealth-ranks?
If no, why?

2. Are you member of any organizations related to intervention? Yes   No
        If yes? of which organizations? ………

3. Are there any organizations to support the bio-diversity conservation?
        If yes, what are these?..........

4. Have you got any rewards or medals for something related to the outstanding bio-diversity conservation program?
        Yes   No
        If yes, what? …

5. What is the condition of labor availability in the society for farming?
	Abundant	Scarce	Moderate
for NTFP collection ……	Abundant	Scarce	Moderate
for NTFP cultivation. …….	Abundant	Scarce	Moderate

6. Does the committee listen to others while making the decisions?
        Yes: Only sometimes: No:

7. What is the process of decision making generally found in your group?
        Passed agenda seconded by only chairman
        Passed agenda seconded by only committee members
        Passed agenda seconded by other user members
        Passed agenda seconded by other influential persons
        All of above
        Others

8. What do you think about the decisions that have been made by the user group committee?
        All good: Mainly Good: OK: Not so good:
        Very poor: Don't Know:

9. What do you think the decision is

More democratic: Democratic: Neutral:

Autocratic: More autocratic:

10. Most of the decisions taken in user committee meetings are for

Forest	Rural poor and backward people
Village development	Elite people
As per requirement	Government

11. What decisions, if any, have you been unhappy with?

Policies & institutions:

1. Do you know any policies of community forestry?

Yes   No   (if yes, what are those?)

2. If yes, are policies conducive to the community forestry? (Your perception of vulnerability posed from the policy)?

Policy	Perception				
	1	2	3	4	5

(1 = Not conducive; 2 = Conducive; 3 = Don't know; 4 = Very much conducive & 5 = extremely conducive.)

3. How many times forest official visit you concerning conservation?

Most often (15-20 days per month)

Regularly (10-15 days per month)

Rarely (<5 days per month)

4. Do the forest official suggest you to manage the forest or community development programs?

Yes   No   If yes, what?

5. Are there any other organizations related to the community forestry program functioning in your area?

Yes   No (if yes, what are these? NGOs & INGOs?)

6. Have you developed any rules and regulations by your own initiations to manage the community forest in connection to the community development?

Yes   No.   If yes, what is that?

7. Do you think that elites are dominating more in decision-making about forest product uses, collection, etc.?

Yes   No

Livelihood Strategy:

1. If you might not have got engaged in community forest, what would you have done (subjective judgment)? (Opportunity cost)

Alternative job name	Benefit	Cost	Remarks

2. Do you think that any forest product can improve the current income from different interventions?

     If yes, what are these?

3. Whom do you sell the forest products?

     Village cooperative   Middlemen   Direct in the market (......)

5. Are there chances of job in your village related to forest product processing or crafting institutions?

     Yes   No   Don't Know

-------------------------------------Thanking You-------------------------------

Annex-2
Checklist for information from Key informants

Distance from highway/Link road...   Km

Name of VDC:

Total no. of HH: Total population: Literacy Percentage:

Castes living in the VDC:

Caste composition: ... %,   %,   %

Major occupation of people: Number of forest watcher:

Physical facility:

Telephone ☐   Electricity ☐ School ☐   Water tap ☐   local market ☐

Campus ☐   hospital/ health-post ☐ Bus communication ☐   Courier/ post office ☐

Road: graveled/ earthen/ trail only/ etc.

Condition of the road: Good/ poor/ prone to damage from landslides, etc.

Number of kerosene selling depots: Number of biogas selling depots:

Telephone facilities: Number of PCO: Number of private telephones: ...HH.

Courier/ Post office: yes   no   If yes, number:

How many people are engaged in the income-generation from the intervention?

Degree of engagement	Male	Female	Child	Adult	DAG	NDAG	Remarks
Fully engaged							
Partially engaged							

Nearby market place: ....   Distance: ......

Name of CFs: Name of Leasehold forests: Name of private forests:

Forest area: Leasehold forest   Private: National forest ..., etc.)

Forest type: Forest condition: Water source:

Mines: Solar power: Wind power:

House construction rate per year:

Nearby forest products processing industries or plants

        Yes   No   (If yes,   Km. from this place)

Number of processing plants or industries: ...

Number of people employed in the industry...

Are there sufficient resources available in the adjoining areas to run the industries?

Insurance facility:

Cattle insurance:

## Annex-3: Selected household weighted assets by well being class, 2003

Livelihood assets and their indicators	Relative Value of Contribution by		
	Poor	Medium	Rich
Natural Capital	Assumed total Value 10.00		
• Supply condition of the fuel wood, leaf litter, and fodder	2.10	1.90	1.70
• Resource condition of the forest products	2.35	1.85	1.65
• Accessibility to the forest products	1.65	1.60	2.10
• Support to the flora and fauna	1.90	1.35	1.63
• Support to the soil conservation, environmental amelioration, and scenic beauty	1.60	1.30	1.30
Total Value	**9.60**	**8.00**	**8.38**
Human Capital	Assumed total Value 10.00		
• Employment creation due to the community forestry	0.5	0.9	1.2
• Health care from the income of the community forestry	0.8	0.85	1.66
• Contribution on education sector	1.66	1.2	1.66
• Support to the micro enterprises development	1.1	1.52	1.66
• Training and awareness program	1.2	1.55	1.4
• Decision making process	1.45	1.66	1.66
Total Value	**6.71**	**7.68**	**9.24**
Financial Capital	Assumed total Value 10.00		
• Major income sources of rural people	1.2	2.1	2.1
• Employment status of the village people	1.3	1.6	2.45
• Changes in income sources, expenditure and savings	1.5	2.05	2.1
• Role of community forestry in income generation activity	2.4	2.1	1.9
Total Value	**6.40**	**7.85**	**8.55**
Social Capital	Assumed total Value 10.00		
• Memberships in Community forest users groups	2.45	2.5	2.1
• Equity in decision making and benefit sharing	1.9	2.35	2.253
• Inter and Intra Group Members' Feeling/ Attitude	2.05	2.25	1.9
• Solidarity and collective action	1.5	2.1	2.1
Total Value	**7.90**	**9.20**	**8.35**
• Household	Assumed total Value 10.00		
	3.5	4.2	4.9
• Community works	2.5	3.53	4.95
Total Value	**6**	**7.73**	**9.85**
Total mean value	**7.32**	**8.00**	**8.38**

Annex-4: Selected household assets* by poor and better-off class, 2003

Selected assets	Poor	Better off
Natural	6.33	**10**
Landholding	2.65	10
Forest resource	10	7.87
Human	**6.71**	**10**
Literacy level	8.85	10
Training	2.08	10
Decision making role	9.20	10
Social	7.84	**10**
Solidarity & collective action	6.90	10
Memberships	8.78	10
Physical	**6.45**	**10**
Housing	6.40	10
Community works	6.51	10
Financial	**5.55**	**10**
Livestock holding	5.39	10
Annual income	1.25	10
Group fund	10	6.67

*Weighted data
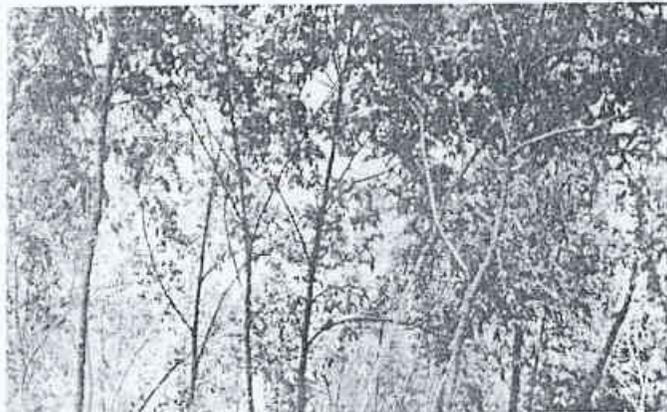
◀ Jure Dhunga CF at
a glance, Jure
Dhunga, Righa

Broom grass ▶
plantation at
Jure Dhunga
CF for
income
generation,
Righa

◀ Rain water
collection tank
made by Jure
Dhunga FUG,
Righa

Field ▶
assistant
during group
discussion at
Jure Dhunga
FUG, Righa

Photo Essay

Fuel wood (billets) collected at dominant user's homestead, Lattekhoriya FUG

Plantation forest at a glance, Lattekhoriya CF
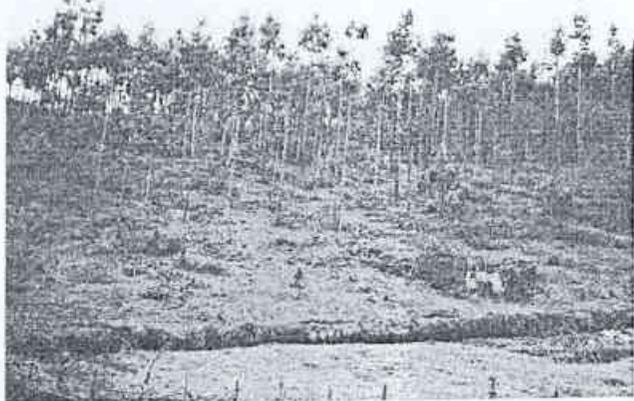
School building reconstructed by FUG, Lattekhoriya FUG

Fuel wood stacked at dalit hamlet, all pile looks same in amount

98