

CHAPTER I

INTRODUCTION

1. 1 Background

United Nations Framework Convention on Climate Change (UNFCCC) has established two courses of action as main institutional responses to the problem of climate change mitigation and adaptation. While mitigation focuses on the problem source, such as activities that aim to reduce greenhouse gases (GHG) emissions, adaptation focuses on the impact and affected systems, especially activities aimed at reducing the vulnerability of society and its natural resource base. The Kyoto Protocol (KP) recognized the importance of forest in mitigating the GHG emission (i.e. carbon dioxide, methane and other compounds) and has included forest and soil carbon sequestration in the list of acceptable offsets (UNFCCC, 1997). Thus, reducing emission from deforestation and forest degradation has emerged as an incentive mechanism for developing countries.

There is now general agreement on the importance of reducing of carbon emissions from deforestation and forest degradation (REDD) in developing countries in order to mitigate the impacts of climate change. As a signatory party to the UNFCCC, Nepal is committed to contribute in reducing global warming. During the 13th Conferences of Parties (COP 13) of UNFCCC in Bali in 2007 had opened windows of opportunity for developing countries like Nepal to participate in forest carbon financing through the mechanism of reducing emissions from deforestation and forest degradation (REDD). Furthermore, the COP 15 in Copenhagen in 2009, the REDD policy mechanism was expanded to REDD plus , going beyond the emphasis on deforestation and forest degradation to recognize the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks (ICIMOD, 2010). Moreover, currently the COP 16 in Cancun 2010, encourages developing country Parties to identifies opportunities to implement REDD plus activities and to buildup capacity. Likewise, developing country Parties, in accordance with national circumstances and respective capabilities, to develop a national strategy or action plan, a national forest reference emission level, robust and transparent national forest monitoring system for the

monitoring and reporting, and a system for providing information on how the safeguards (www.cancun.org).

The REDD plus proposal, which is currently being discussed at the UNFCCC, allows for a wider range of forest-related activities than the previous proposal, and provides opportunities for approaches such as community forestry, joint forest management, social forestry, and collaborative forestry to derive benefit from international efforts to mitigate climate change (ICIMOD, 2010).

Nepal, located in geologically young and unstable rugged terrain in the Himalayas, its natural environment and ecosystems are diverse and vulnerable. Although Nepal has a negligible in global emissions of GHG, it is particularly vulnerable to climate change due to its fragile mountain ecosystem. Between 1977 and 1994, Nepal's temperature rose at a 0.06 degree Celsius per annum, with a higher rate in the mountains than in lowlands (Shrestha et al. 1999).

Nepal has demonstrated the community involvement in forest management can significantly contribute to reduce deforestation and forest degradation especially in the Mid-Hills and that this significantly contributes to forest conservation and enhancement of carbon stocks (RPP, 2010). Studies shows that community forest management (CFM) is an effective instrument in both reducing emissions and increasing carbon sinks in Nepal (Karky et al. 2009). Based in Nepal's experience with CFM the Readiness- Project Idea Note (R-PIN) was selected by the World Bank in July 2008. Under the Forest Carbon Partnership Facility (FCPF) of World Bank, Nepal has been selected one of the FCPF countries to develop REDD Readiness Proposal (RPP) and developing REDD readiness activities and policies until 2012. Through the fund received under FCPF, the government of Nepal is supposed to develop some instrumental policies that could facilitate the readiness and in the mean time this fund will also be utilized to implement some of the piloting at grass-root level in general. However, to implement REDD piloting with aim of entering in the international carbon market requires several trust worthy foundations that are mostly lacked in most of the forest other than Community Forests (CFs). In order to assess the potentialities of CF under REDD plus mechanism, this study was carried out in Piple CF Kathajor-8 of Ramechhap district of Nepal.

1.2 Statement of Problem and Justification

Deforestation and forest degradation have been estimated to account for up to 25% of total GHGs emissions (IPCC, 2007). Consequently, forestry sector was taken into centre stage during the climate change meeting (COP- 13) in Bali in 2007. The Bali road map was significant in that it opened the way for developing a new policy namely, the REDD which was agreed by the Parties and that aimed to address the issues of the forestry sector integration into climate change raised by tropical developing countries. The REDD policy was originally conceived as an instrument to reward average reductions in rates of deforestation at national level (Santilli et al. 2005 cited on Karky et al.2009), but has developed into a broader mechanism that may also include curbing forest degradation and forest management activities of various types which result in enhanced forest stocks. With recent developments, REDD plus has created an encouraging opportunity to gain additional benefits not only by reducing deforestation and forest degradation but also by promoting good governance, forest conservation, sustainable management of forest, and carbon enhancement.

Under REDD plus initiative in climate change architecture, Community Forestry (CF) seems to be able to derive incremental benefits through managing its standing natural forest and enhancing carbon stocks. In this context, community managed forests in the Himalayan Region are becoming an important environmental asset and carbon pool. These forests were previously deforested and degraded, are now increasingly regenerated and restocked. Several studies shows that Forest biomass and carbon stock is increasing in community managed forest (Rana, 2008) and community managed forests can play important roles in mitigating the adverse impacts of climate change by sequestering carbon dioxide from the atmosphere.

Nepal has expressed its interest in participating in carbon trade through REDD activities and already received a note of the R-PIN under FCPF submitted to the World Bank (WB). Nepal is currently in a process to implement RPP approved by World Bank. Government of Nepal has demonstrated organizational readiness on REDD through setting up REDD Forestry and Climate Change Unit under Ministry of Forest and Soil Conservation, Besides, various pilot initiatives on REDD are in operation with community forest management system in Nepal. Despite the priority

given by government and many development organization, current level of policy set up, forest condition, institutional arrangements and forest management practices of Nepal are not well assessed while they enhance to qualify for the REDD Plus mechanism into global climate change debate. In this context, the study has attempted to assess of the potentiality of Community Forest for REDD mechanism. The study basically has tempted to evaluate existing forest policy, biophysical condition of the CF, institutional arrangements and existing forest management practices that promote REDD initiative on ways to enter into global climate change framework generating greater level of benefits to the local communities.

1.3 Objectives of the Study

The general objective of this study was “to assess the potentialities of Community Forestry under REDD plus mechanism”. More specifically, the research objectives were:

-) To review policy framework relevant to pertaining to REDD initiative in Nepal
-) To assess the biophysical perspective of CF management system in favoring to REDD.
-) To evaluate the governance and institutional strengthening practices of CFUG
-) To assess the existing CF management practices encourage to REDD initiative

1.4 Conceptual Framework of the Study

Figure 1 illustrates the overall conceptual framework of the study. Basically the framework depicts the community forest management system in Nepal was evolved along with popular forest management policy allowing management rights of forest to the local communities. Policy instruments in the proposed study refer to relevant policy at national as well as local level developed in relation to community forestry.

Similarly, biophysical here refers to the overall quantity of living biomass exist in community forest. It further includes the totality of flora and fauna diversity. On other hand, governance and institution refers to the existing and their strengthening

activities of organization. Moreover, forest management refers to the study and application of analytical techniques to aid in choosing those management alternatives that contribute most to organizational objectives.

Figure 1: Conceptual framework of the study

1.5 Limitation of the Study

The study primarily aims at assessing potentiality of community forest management system in Nepal in entering into REDD to acquire benefits. Though the study focus in examining the possibility of CF in REDD in terms of biophysical and institutional aspect in Nepal, the study has assessed biophysical status of single CF which doesn't represent in changes of biophysical trend in whole country. Similarly, community forest user groups (CFUGs) in Nepal comprised users from diverse economic, ethnic and social background. Dynamic among such groups reflect governance system in the CFUGs. This is why, assessment governance practice of a single CFUG doesn't provide full picture of all CFUGs in Nepal. REDD mechanism seems beneficial while it implements in national scale that means bundling carbon performance from all forest management regimes prevailing in Nepal. Since the study has mainly focused on forest management practices under community forest system which doesn't obviously represent rest of the management system besides community forest.

1.6 Organization the study

On the basis of the nature of study the information are collected and analyzed. The study has been organized in six chapter as introduction, review of literature, methodology of study, description of the study area, data analysis and presentation and summary, conclusion and recommendation .

The first chapter introduction covered including background, statements of the problem, objectives, significance of the study. In the second chapter review of the literature, the topics covers are basic concept of REDD, adaptation, additionality, base line scenario, biodiversity, carbon pool, carbon sinks, carbon source, carbon stock enhancement, climate change, co-benefits, degradation and deforestation. The carbon leakage mitigation, sustainable forest management and international context of REDD and also includes national context of REDD+. Pilot REDD initiating in Nepal.

The third chapter describes the study area, background of the study area and selection criteria of the study area. The fourth chapter describes the consultation, meeting with advisor, expert and concerned stakeholders. Sample and sampling design, methodological flowchart, nature and source of data collection, CFUC meeting, households survey, FGD , review of the FOP, data analysis and interpretation.

Chapter fifth deals with socio-economics characteristics, caste composition, average family size, average educational status, family member of respondents, wealth being status and income sources, land holding status of respondents, food sufficiency, livestock management, guideline, policy for community forest management, biophysical condition of community forest and status of biodiversity , governance, institutional strengthening, protection the forest, representation of caste/ ethnic composition in executive committee, participation status in GA and other meeting, benefit sharing, CFUG fund mobilization silvicultural operation in CF.

Chapter six deals with the conclusion and recommendation. In each topic under main headings sub chapters are included to make report more readable and efficient.

CHAPTER II

LITERATURE REVIEW

2.1 Definitions of the Concepts

Adaptation:

It is referred to adjustment in natural or human system to a new or changing environment. Adaptation to climate change refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

Additionality:

The requirement by which, under the Kyoto Protocol and sound voluntary market standards, carbon credits will be awarded only to project activities where emissions reductions are “ additional to those that would occur”, i.e. additional reductions compared to the “baseline scenario”.

Baseline Scenario:

In seeking to measure whether greenhouse gases have increased or decreased, it is necessary to have a known previously emitted amount (often connected to a baseline date or year), against which to make a comparison over time. This is often referred to as the “baseline scenario” or “baseline”, i.e. expected emissions if the emission reduction activities were not implemented. In the case of REDD, the main options are historical baselines (average emissions during a past period), modeled baselines (spatially explicit e. g. land use models or non- spatially explicit process models e.g. econometric models) and negotiated baselines.

Biodiversity

The numbers and relative abundances of different genes (genetic diversity), species, and ecosystems (communities) in a particular area

Carbon pool

It is a system which has the capacity to accumulate or release carbon. Examples of carbon pools are forest biomass, wood products, soils, and atmosphere. The units are mass (e.g. t c).

Carbon sinks

Reservoirs or location that sequesters or stores a greater amount of carbon dioxide than they release is carbon sink. Major carbon sinks include forests and oceans.

Carbon source

A carbon pool (reservoir) can be a source of carbon to the atmosphere if less carbon is flowing into it than is flowing out of it. It is the opposite of a sink.

Carbon stock

The quantity of carbon in a carbon pool

Carbon Stock Enhancement

A component of a REDD Plus strategy that could include both the restoration/improvement of existing but degraded forests and increase of forest cover through environmentally appropriate afforestation and reforestation.

Climate

Climate in a narrow sense is usually defined as the “average weather” or more rigorously as the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands or millions in of years. The classical period is 30 years, as defined by the World Meteorological Organization (WMO). These relevant quantities are most often surface variables such as temperature, precipitation, and wind.

Climate Change

Climate change refers to a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically decades or longer). Climate change may be due to natural internal processes or external forcing, or to persistent anthropogenic change in composition of the atmosphere or in land use.

Co-benefits

The benefits of policies that are implemented for various reasons at the same time including climate change mitigation acknowledging that most policies designed to address greenhouse gas mitigation also have other, often at least equally important, rationales (e.g. related to objectives of development, sustainability, and equity).

Deforestation

Deforestation, as defined by the Marrakech Accords, is the direct human-induced conversion of forested land to non-forested land (with less than 10% crown cover).

Degradation (or Forest Degradation)

The term used to describe the condition of a forest that has been reduced below its natural capacity, but not below the 10 percent crown cover should threshold that qualifies as deforestation.

Green House Gases (GHGs)

A group of gases that control energy flows in the Earth's atmosphere by absorbing infra-red radiation. Some GHGs occur naturally in the atmosphere (e.g. H₂O), while others result from human activities or occur at greater concentrations because of human activities.

Carbon Leakage

The unexpected loss of anticipated carbon benefits due to the displacement of activities in the project area to areas outside the project, resulting in carbon emissions. Leakage can negate some or all of the carbon benefits generated by project

Mitigation

The term used to describe any action seeking to reduce the amount of greenhouse gases released into the atmosphere by human-related activities. Such actions might include reducing our use of fossil fuels and changing the way we use land—such as by reducing our rate of land clearing and deforestation, and increasing our rate of reforestation.

Permanence

A key pre-requisite for the credibility of any carbon sequestration activity, particularly tree planting; that it have in place safeguards to cover the possibility that removed from the atmosphere may be released in the future, for example, due to fire, disease or logging.

Reducing Emissions from Deforestation and Forest Degradation (REDD)

An initiative to cut greenhouse gas emissions associated with forest clearing by the inclusion of “avoided deforestation” in carbon market mechanisms. More simply, it is the payment in return for the active preservation of existing forests.

REDD Plus

Refers to the extra consideration in reducing greenhouse emissions beyond deforestation and forest degradation (REDD) being given to sustainable forest management and afforestation/reforestation in developing countries.

Sustainable Management of Forests

The management of forest areas designated for the production of timber in such a way as to effectively balance social, economic and ecological objectives.

2.2 International Context of REDD

The emerging international climate negotiations are a new mechanism called Reducing Emissions from Deforestation and Forest Degradation (REDD) as a means of mitigating global climate change by maintaining and sequestering carbon in forests. This new mechanism would compensate developing countries, and their communities, for their forest conservation and/or regeneration efforts. The original idea of REDD mainly concerns creating positive incentives for reducing deforestation and forest degradation. REDD plus takes a wider approach by incorporating carbon stock enhancements through sustainable management of forest and forest carbon conservation with explicit recognition of co-benefits like biodiversity conservation, socioeconomic development, ecosystem services and livelihood improvements (Rana et al.2009).

The forestry sector and its role in carbon emission reduction were raised in subsequent meeting by various developing countries after 2003 (Karky et al. 2009). This discussion gained momentum after the publication of the Stern Report which estimated that emission from the global forestry sector was more than 18% of the total GHG emission (Stern, 2007). Thus, the concept of REDD emerged when concerns were raised by developing countries about the inadequacy of the Clean Development Mechanism (CDM) of the UNFCCC (Pokhrel, et al. 2009).Therefore, a new international trade mechanism, called Reducing Emissions from Deforestation and forest Degradation (REDD) has been proposed to curb global GHG emissions. In this consideration, to date to develop the concept and implementation of REDD, there were following major international initiatives and commitments were held.

In the first time idea of Reducing Emissions of Deforestation – RED was evolved when the Rainforest coalition, Costa Rica and Papua New Guinea proposed the access of deforestation and forest degradation countries in carbon trade in the COP-11 of UNFCCC held in Montreal, Canada in 2005. In June, 2007 Conference of industrialized countries (G8) expressed their interest to assist in REDD activities by Forest Carbon Partner Facility (FCPF) which is funded by World Bank (ICIMOD, 2011).

The Bali Action Plan (COP-13) in 2007 had opened windows of opportunity for developing countries like Nepal to participate in forest carbon financing through the mechanism of reducing emissions from deforestation and forest degradation (REDD), (RPP-2010). This was recorded another turning point of REDD when COP recognized the Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries.

The UNFCCC meeting held in Accra from August 21-27, 2008, REDD gained a broader support for an agreement to reward actions that enhance forest cover and is additional to avoided deforestation and forest degradation (popularly called REDD⁺) (Dahal et al. 2009). The 14th conference of the Parties to UNFCCC in Poznan (Poland) in December 2008, prepared REDD policy, which addressed safeguard the interests of the rural communities that have already been managing and conserving forests.

The COP 15 (2009) in Copenhagen, Denmark has recognized the crucial role of reducing emissions from deforestation and forest degradation and need to enhance removals of GHG emission by forest. It has also developed a broad agreement on the need to provide positive incentives to such actions through the immediate establishment of a mechanism including REDD Plus to enable the mobilization of financial resources from developed countries. REDD plus has thus created an encouraging opportunity to gain additional benefits not only by reducing deforestation and forest degradation but also by promoting good governance, forest conservation, sustainable management of forest, and carbon enhancement.

Currently, the COP 16 (2010) in Cancun, Mexico encourages developing country Parties to identifies opportunities to implement REDD plus activities and to buildup capacity. Likewise, developing country Parties, in accordance with national circumstances and respective capabilities, to develop a national strategy or action plan, a national forest reference emission level, robust and transparent national forest monitoring system for the monitoring and reporting, and a system for providing information on how the safeguards.

Several international organizations have already set up funds or programs, through which they to support REDD. The World Bank has established the Forest Carbon Partnership Facility (FCFP) and the Forest Investment Program (FIP). The UN has established the UN collaborative Program on REDD, or UN REDD, a program of partnership between the Food and Agricultural Organization (FAO), the United Nations Development Program (UNDP) and United Nations Environment Program (UNEP). On the other hand, many developed countries providing funding support directly to organizations, country and agencies to carry out pilot REDD activities.

The World Bank's main mechanism for promoting REDD is a scheme called the Forest Carbon Partnership Facility (FCFP). The FCFP intends to assist developing countries in their efforts to reduce emissions from deforestation and forest degradation. This is supposed to be done through two funds: 1 **The Readiness Mechanisms**-aims at building capacity for REDD. The idea is that countries which want to start REDD program need to have the necessary knowledge and technical skills before they can do that. 2. **The Carbon Finance Mechanism** -A few countries that have successfully participated in the Readiness Mechanism will be invited to be part of pilot program that are testing REDD. Remember, the basic idea of REDD is to provide financial compensation for protecting forests, and thereby reducing carbon emissions (NEFIN, 2010).

There are variation of REDD plus execution model in world in accordance with national circumstances and respective capabilities but after the COP 15 following three steps should be followed:

Preparation Phase: In this stage national policy, strategy, planning and capacity buildup.

Piloting Phase: In this stage national policy, strategy, planning and capacity build up, technology hand over, result oriented piloting should be implemented.

Result Oriented Phase: During this phase complete the result oriented program and measurement, reporting and verification of result oriented program.

2.3 National Context in REDD

As a signatory party to the United Nation's Framework Convention on Climate Change (UNFCCC), Nepal is committed to contribute in reducing global warming. In Nepal, the government, donor agencies, and some civil society organizations working in the forestry sector have embraced the promise of REDD, fast-tracking policy development and initiating various piloting and awareness raising activities involving CFUGs to reap significant benefits and to play an active role in climate change mitigation through forest carbon trading.

On January 26, 2009 the Ministry of Forest and Soil Conservation established, by declaration at the Ministry level, three tiered REDD-related institutional set-up: the REDD multi-sectoral, multi-stakeholder coordinating and monitoring body at the apex (APEX body), the REDD Small Working Group at operational level (WG); and the REDD Cell. All three bodies are working to prepare the REDD National Strategy and its implementation plan (RPP, 2010).

Through a wide stakeholder consultation, prepared its Readiness Plan Idea Note (R-PIN), and submitted it to the World Bank. Nepal's R-PIN was accepted in July 2008 and Nepal was selected as participant country in October 2008. Likewise, after acknowledged of R-PP from the World Banks Forest Carbon Partnership Facility (FCPF), there is some hopeful space for the effectiveness preparation of REDD activities.

R-PP Nepal includes basic principles and process for the REDD readiness such as preparation of required strategy, capacity build up of stakeholder, carbon measurement and prepare payment mechanism, and implement the pilot project. Nepal has been partner country under UN- REDD initiated by three UN organizations namely FAO, UNEP and UNDP.

2.4 Pilot REDD Initiatives in Nepal

In Nepal, International Center for Integrated Mountain Development (ICIMOD), Asia Network for Sustainable Agriculture and Bio-resources (ANSAB) and Federation of Community Forest Users, Nepal (FECOFUN) with financial support of

Norwegian Agency for Development Cooperation (NORAD), have collaboratively implemented a pilot project “ Design and setting up of a Governance and Payment system for Nepal’s Community Forest Management under REDD. The project is running in three watersheds namely Charnawat in Dolakha District, Ludikhola in Gorkha District and Kayarkhola in Chitwan District of the mid hills of Nepal.

Similarly, with different financial support World Wildlife Fund (WWF) Nepal and Winrock International have collaboratively implemented a pilot project basically to assess the carbon stocks of low land forests. Also, Nepalese Federation of Indigenous Nationalities (NEFIN) with financial support of NORAD has been implementing a capacity building program concentrating mostly on the issues of Indigenous Peoples (IPs) and local communities.

CHAPTER III

DESCRIPTION OF STUDY AREA

3.1 District Background

Ramechhap district is a Mid-Hills district of Nepal. Geographically, it lies between 27°28' – 27°50' North latitude and 85°50'–86°35' East longitude. It is bounded by Okhaldhunga and Solukhumbu district in the east, Kavrepalanchowk and Sindhupalanchowk in the west, Dolakha in the north and Sindhuli district in the south. It has 55 Village Development Committee (VDC) as its administrative unit. Manthali VDC is headquarters of the district, which is 192 Kilometers east from Kathmandu the capital city of Nepal. Altitudinal variation of the district ranges from 439 m. to 6958m. According to its altitudinal variation, it also has climatic variation from tropical, sub-tropical, temperate, sub-alpine to alpine across the district.

Total land area of the district is 1564.32 square kilometer. Out of total, it has 509.08 sq. km. (32.54%) Agricultural Land; 541.02 sq. km. (34.58%) Forest Land, 247.34 sq.km. (15.82%) Shrub Land, 92.62 sq. km. (5.92%) Pasture Land, 174.25 sq. km. and (11.14%) other Land (LRMP, 1994).

According to the population census 2001, the total household (HH) and population of the district is 40386 and 212408 respectively. Out of the total population, male and female are 100,853 (47.49%) and 111,555 (52.51%) respectively. The major caste of the district is Chhetri (26.39%), Tamang (20.40%), Newar (14.10%), Magar (10.93%), Brahmin (5.62%), and others (22.56%). Kathajor VDC is one of the nearest VDC from the district headquarter, where the population of the Chhetri group is dominant with the total population 4779 (Ramechhap District Profile, 2004). There are 9 Community Forest Groups (CFUGs) in the VDC, among which Piple CFUG was selected as the core study site for this research.

3.2 Description of Study Area

The study was undertaken in Piple CFUG, Kathajor-8, Ramechhap district. The basic criteria of the group selection were the availability of information of stem volume for last two periods and other relevant information. Out of 54,102 hectare (ha) of total

forest area 33,799.41 ha have been managing through the 404 Community Forests (CFs) involving 53,365 households (HH) in the district (DFO, 2010).

Piple CF was formally handed over to the community by District Forest Office (DFO) in 1994 and the CF is revised in 2001 and in 2007. The CF covers an area of 206 ha. The CF is divided into three block namely block 1, 2, and 3. The blocks are further divided into sub-blocks in order to carry out forest management activities efficiently. Sal (*Shorea robusta*) is the predominant species in each block of the forest and other major species are Khote salla (*Pinus roxburghii*), Karam (*Adina cordifolia*), Bot Dhangero (*Lagerstroemia parviflora*), Chilaune (*Schima wallichii*).

The total 274 hh are involved in the CF management. It is a heterogeneous community that represents Dalit¹ (Bishwarkarm, Damai, Sarki) Indigenous People (Bhujel, Newar, Tamang, Magar), Brahmin/Chhetri². A detail of CFUG is explained as follows:

¹ So called untouchable group in the context of Nepal

² So called upper caste in the context of Nepal

Table 1: Description of the research site

Indicators	Description of the research site
Research site	Kathajor- 8, Ramechhap
CFUG name	Piple Community Forest User Group
Handover Year	1994
Total Forest Area (Ha)	206
CF management plan	2001 first and 2008 second revised
Total Household involved	274 (Dalit=27, Indigenous people=93 & Brahmin/Chhetri=154)
Total population	1813 (Female= 930 & Male= 883)
Major Caste in Groups	Chhetri, Brahmin, Newar, Bhujel, Tamang
Per capita Forest Area (Ha)	0.75
Average slopping percent (Degree)	20
Altitude (mean sea level) (M)	
Vegetation Type	700-1200
Forest Type	Sub-tropical forest
Major Species	Dominant natural broad leaved forest
Block of forest (No)	<i>Shorea robusta</i> , <i>Pinus roxburghii</i> , <i>Adina cardifolia</i> , <i>Schima wallichii</i> 3 (Sub- block=10)

Source: CFUG OP 2010

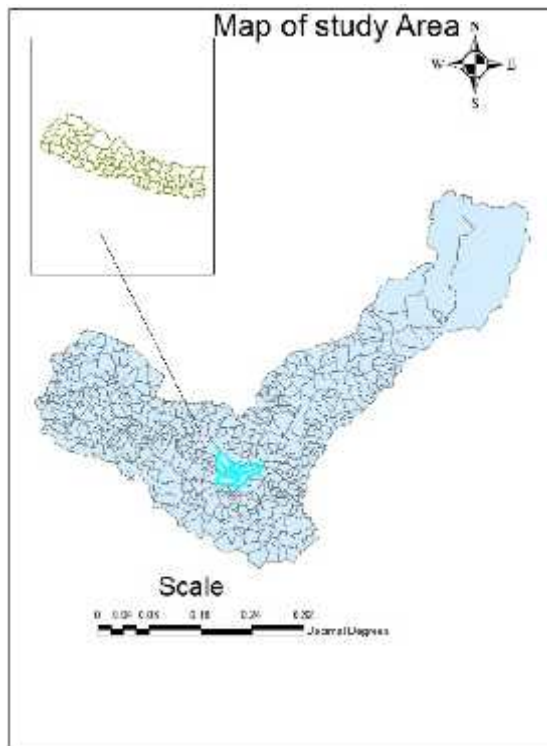


Figure 2: Map of the study area

3.3 Selection Criteria of the Study Area

This study was carried out in mid hills Ramechhap district and the district was purposively selected for study. Consultation was organized to inform various

organizations about the study and their experience on climate change scenario in the area. They were consulted to understand their current and future intervention for climate change mitigation. The study area was finalized upon consultation with personnel of District Forest Office (DFO), Nepal Swiss Community Forestry Project (NSCFP), and Federation of Community Forestry Users Nepal (FECOFUN). The major criteria of study area were as follows:

-) Having at least two time revised of FOP
-) Vulnerable from different climate and weather related disaster
-) Having forest resource dependent people
-) Having stratification of well being class groups
-) The forest area having at least 100 Ha with mixed forest types.

CHAPTER IV

RESEARCH METHODOLOGY

4.1 Consultation Meeting with Advisor, Experts and Concerned Stakeholders

First, few numbers of consultation were done with advisor, experts, District Forest Office (DFO), Nepal Swiss Community Forestry Project (NSCFP), and Federation of Community Forestry Users Nepal (FECOFUN), after that research methods were finalized.

4.2 Sample and Sampling Design

The stratified random sampling method was the principal sampling method applied for this research. This sample technique gives a better cross-section of population so as to gain a higher degree of precision. The main parameter for the sampling is the economic status, i. e. well being ranking (WBR). The WBR carried out by CFUG members themselves was considered which was facilitated by NSCFP and a 15% sampling intensity was used. Mainly five types of wealth viz. natural capital, human resource, physical, social and financial capital were the main parameters of wellbeing ranking carried out by CFUG. Based on the well being ranking, four categories of people were identified (ultra poor, poor, medium, and rich) by CFUG themselves. A 15% sample of each category was selected for the household survey and sample households were selected randomly.

4.3 Methodological flow chart

The methodological flow chart of the study was as illustrated in figure 2. The methods includes the tools and techniques of data collection, nature of collected data, sources of data, data analysis, report presentation and submission of the study report with major recommendation.

Figure 3: Study steps and designs

4.4 Nature and Source of Data Collection

Both primary and secondary data were collected from the study area. The emphasis of research was on collection of bio-physical condition of the CF in terms of stand density & growing stock, governance & institutional strengthening practices of CFUG as well as existing practices of CF management knowledge and skill. The primary data is qualitative in nature although some quantitative data were also collected on the other hand secondary data is both qualitative and quantitative in nature.

4.4.1. Primary Data Collection

Primary data was collected through various methods including Community Forest Users Committee (CFUC) meeting, Focus Group Discussion (FGD), Transect walks, household survey and review of Forest Operation Plan (FOP) & FUG Constitution and minute records.

4.4.1.1 CFUC Meeting

The main objective of the CFUC meeting was to examine/know the decision making process & theme of decision, fund mobilization system, information & benefit sharing system, knowledge of forest services, silvicultural system, FOP persuasion, status of bio-diversity, non timber forest products (NTFPs), and stand density. Checklist were designed and used to conduct the CFUC meeting.

4.4.1.2 Household Survey

The household survey was carried out on the basis of economic status of users. The main objective of the household survey was to examine the governance & institutional strengthening practices of CFUG, bio-physical condition of the CF, existing practices of CF management in terms of knowledge/skill and to collect the information about general economic and social conditions of the respondents household. Semi-structured questionnaires were designed and used to conduct household survey. Total 41 households were surveyed and stratified random sampling method was applied for the selection of household as respondents.

4.4.1.3 FGD Discussion

One focus group discussion was carried out with interest group i.e. Poor, Dalit, Women and key person who were not involved in executive committee at the research site. FGD were conducted to supplement and triangulate information gathered from the household interviews and other sources. Due to interaction among participants, group interviews will have inherent quality control in them (Robson, 2002). The participants were selected based on the recommendation made by CFUC and key informants.

4.4.1.4 Review of FOP and Minute Minutes /Records

The main objective of the review of FOP was to collect information about growing stock, stand density, status of NTFPs, bio-diversity and demand-supply status of forest products from first & second time revised FOP. On other hand planning of silvicultural operation, provision of fund mobilization system, benefit sharing system, persuasion of FOP, decision making system, participation of users and transparency system related information were collected from minute records.

4.4.1.5 Transect Walk

The main objective of the transect walk was to collect information about the bio-physical condition of the CF, silvicultural operation and some climate change related risks and hazards, such as flooding and land slide area, as well as climate change impacts on agriculture, water resources. The transect walk supported supplement and triangulate information gathered from the household interviews and other sources.

4.4.2 Secondary Data

Secondary data are essential to fulfill the objectives of the study and required data were collected from CFUGs Operational Plan (OP), Constitution and records (minute books). Forest related policies (rules, regulation, guideline, directives), R-PP, REDD interim strategy, district forest management plan, related documents, journals, website visit and so on.

4.5 Data Analysis and Interpretation

All of the data collected through the above mentioned methods were then compiled, edited and tabulated. The data were then analyzed and interpreted using different statistical tools like pie charts, bar graphs, line graphs and tabulation with help of Microsoft office programs and Statistical Package for Social Sciences (SPSS) while the qualitative data were descriptively analyzed

CHAPTER V

RESULTS AND DISCUSSIONS

5.1 Socio-economic Characteristics

Socio-economic features such as caste, occupation, well-being ranking, age structure, family size, land holding, food sufficiency, and livestock management system etc, of the respondents give quick understanding of the scenario of socio-economic status of the users in the study area. Thus, different socio- economic condition are presented and analyzed under this heading in a graphical form.

5.1.1 Caste Composition, Average Family Size and Average Educational Status of Family Member of Respondent

Among the 274 households (HHs) involved in CFUG, there are 27 Dalit HHs, 93 Indigenous Peoples (IPs) HHs and 154 HHs Brahmin/Chhetri. Out of the total households (HHs), 41 HHs were sampled and interviewed for the study. Table 2: shows that majority of the respondents in the HHs survey was from Brahmin/Chhetri because of the dominancy of their caste in the research site. The average family size of the Dalit was 8.5 whereas 5.84 were recorded of Brahmin/Chhetri. Of the total, about 26% respondents were found illiterate. Similarly, 9.48% were recorded literate with degree holding higher than 10 classes. Nevertheless, caste composition, family size and educational status was not considered during the selection of sample for the household survey.

Table 2: Ethnicity, average family size and educational status of family member of the respondents

Caste	Sampling (HHs)	Caste wise average family size	Caste wise average family member		educational status		
			Illiterate	Literate	<5 Class	6-10 class	>10 class
Dalit	4 (3.75)	8.5	2.75	2.25	1	2.25	0.25
IPs	12 (9.26)	6	1.41	1.08	1.16	1.33	1
Brahmin/chhetri	25 (60.97)	5.84	1.12	1.16	1.32	1.56	0.68
Total	41 (100)	20.34	5.28	4.49	3.48	5.14	1.93
Percent			25.95	22.07	17.1	25.27	9.48

Source: Field Survey, 2010

Parenthesis is percentage

5.1.2 Well-being Status and Income Source of Respondent

Involved HHs in studied CFUG were categorized into four levels such as ultra poor, poor, medium and rich by using participatory well being ranking by NSCFP and DFO. The major criteria used for the categorization in well being classes were the five capitals (natural, physical, financial, social and human). Of the total household in the CFUGs, 29, 73, 114 and 58 households were categorized as ultra poor, poor, medium and rich respectively.

Table 3 illustrates the well being status of respondents in the studied CFUGs. Majority of the respondents were fall under medium status whereas only a small percentage in ultra poor. A total of 41 HHs (corresponding to at least 15% from each class) were randomly selected for the household survey.

Table 3: well being status and income sources of respondents

Caste	Well being status of Income source of respondent (N=41) respondent (N = 41)							
	Ultra Poor	Poor	Medium	Rich	Labor	Business	Employment	Agriculture
Dalit	1	2	1	0	2	2	0	0
IPs	1	6	3	2	4	2	5	1
Brahmin/Chhetri	2	3	13	7	9	0	14	2
Total	4	11	17	9	15	4	19	3
% of total	3.75	26.82	41.46	21.95	36.58	3.75	46.34	7.31

Source: Field Survey, 2010

Occupation refers to all the activities of earning by people for their livelihood and daily requirement fulfillment. People of studied area were found in a various occupations like labor, business, services and agriculture etc. Members of some HHs were also involved in foreign employment. The figure shows that the greater parts of the people (46.34%) of the household are engaged in services and 36.58% of them earn their living on the basis of labor (daily wages).

5.1.3 Land Holding Status of Respondent

Table 4: illustrates the average family landholding status of respondents. There were various types of land. Irrigated land is recognized as productive to any land type and worth's higher monetary value in local market. Average landholding size of various well being status households was found to be 0.63 ha. Land size is the determinant of well being status of the respondents as there is obvious disparity in size of land between households of various wellbeing statuses. Wealthier households own the largest size of lands (0.76 ha) whereas ultra –poor groups receive the smallest amount of land (0.21ha).

Table 4: Landholding status of the respondents

Strata	HHs	Per HH landholding status in Ha			Total
		Pasture (Pakho)	Irrigated (KheT)	Rain fed (Bari)	
Ultra Poor	4	0.05	0.06	0.1	0.21
Poor	11	0.15	0.12	0.41	0.68
Medium	17	0.09	0.18	0.37	0.64
Rich	9	0.1	0.16	0.5	0.76
Total	41	0.39	0.52	1.38	2.29
Average HH		0.1	0.14	0.38	0.63

Source: Field survey, 2010

5.1.4 Food Sufficiency of Respondents

The figure 3 depicts that the food sufficiency period of the respondents. About 5% respondents have only less than three month food availability from their land and majority (66%) of the respondents were reported having food sufficiency for 3-6 months. On the other hand, 7% and 22% respondents have only 6-9 and 9-12 month food sufficiency respectively.

Figure 4: Food sufficiency period of respondents

5.1.5 Livestock Management

Table 5: illustrates the overall information of per household average livestock standard unit belonging to households of different strata. The study found weighted mean of per household livestock standard unit is to be 3.31. The highest unit 1.55 falls under the buffalo and least unit 0.72 falls under the goat.

Table 5: livestock rearing by respondents

Strata	Livestock standard unit	Total
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	Buffalo	Cow	Goat	
Ultra Poor	1	1.22	0.82	3.04
Poor	1.27	1.01	0.75	3.03
Medium	2	1.10	0.77	3.87
Rich	1.33	0.85	0.56	2.74
Total	5.6	4.18	2.90	12.68
Av/hh	1.55	1.03	0.72	3.31

Source: Field Survey, 2010

Note; Different types of livestock is brought into standard unit by multiplying

Buffalo with 1.0, Cow/Ox with 0.7 and goat with 0.15 (Rana, 2008). Average means is weighted mean here calculated adding the total livestock. Standard unit of livestock that is hold by one household in a stratum then

Divided by the total number of hhs.

The study found that grazing and stall feeding are two ways of livestock management in the households. Stall feeding is the most common practice which was reported practicing by 46.34% respondents. Rotational grazing in CF was reported by 31.10% respondents whereas 21.95% respondents replied that they graze their livestock in their private land (Figure 4).

Figure 5: Livestock management system

5.2 Guiding Policy for Community Forestry Management

The master plan for the forestry sector (MPFS) is considered to be the first comprehensive policy document which recognized the crucial role of people's participation in forest management. MPFS was approved in 1989 and provides a 25 years policy and planning framework for the forestry sector which emphasized rights of local people in different regimes of forest governance. It deals to core objectives to meet the people's basic needs for forest products on a sustainable basis and protect

and conserve ecosystems and land against deforestation and degradation and other effects of ecological imbalance.

Forest Act, 1992 has been promulgated to fulfill the basic needs, socio-economic development of the people, as well as to achieve healthy environment. The act recognizes the individual CFUG is to be autonomous and free to conserve, manage, collect and selling forest products from CF. The act has provided use right to the users while gripping tenure rights under the state. The forest act defines the forest products types however the act doesn't mention about management and utilization of intangible forest goods including capacity of carbon sequestration.

Forest regulation was formulated in 1995 that defines the forest act in an elaborated form. Focus of the regulation is on the people centered forestry development programs such as Community and Leasehold Forestry. In order to encourage such forests into practice, the regulation has made provision of handing over government's forest by formation of Forest User Groups and by making operational plans (OP), with due approval of the District Forest Officer (DFO).

On the other hand, to improve the quality of OP and to know the condition of CF, status of growing stock and to allocate the annual allowable cut of forest products in OP, in 2004 Department of Forest (DoF) has prepared CF inventory Guideline. Moreover, due to the change in Political, social and economical scenario of the nation, to transform CF process more inclusive, transparency, pro-poor and participatory in 2008 DoF published CF development program guideline. CF policy has granted use right to the local communities. Property rights are still on the jurisdiction of state. REDD basically relates to carbon as commodity derived from the forest. Under REDD scheme carbon from soil can also be creditable. However, current forest policy is silence to the right of soil carbon. Who won soil carbon is still unanswered. RPP has not clarified either in the case of soil carbon ownership.

The CF was renewed twice since the first hand over to the local communities. CF re-granted to the communities on the basis of previous performances demonstrated by local users while managing the forest. Concrete framework of REDD is still on discussion, it however likely demands a long time framework to ascertain the reducing emissions and accumulation of carbon dioxide. In this way, community

forest management policy was basically evolved to deal with local and national demand in forest management. Since it has now been tempted to link global initiative like climate change and REDD, it needs certain redresses in policy framework.

Ministry of Forest and Soil Conservation now act as focal organizations for REDD initiative. It indicates the role of forest in climate change is being gradually taken into consideration. As consequences, Nepal government formally set up REDD forestry and Climate Change Unit under the MFSC. Similarly, REDD cell has initiated drafting interim National REDD strategy.

5.3 Bio-physical Condition of the CF

5.3.1 Growing Stock and Stand Density of CF

Table 6: shows that status of per ha growing stock in 2001 was estimated 2141.20 Cubic feet (Cft). In second measurement in 2007 growing stock was recorded 2269.67 Cft/ha. Likewise number of regeneration per hectare in 2001 is 8050 and in 2007 9451. Furthermore, number of per hectare sapling was increased from 2000 to 3034 between 2001 and 2007. Per ha regeneration number is also reported increased by 1400 within the six years from 2001. Positive increment of overall biophysical status of community forest clearly indicates that the biological activities of forest are also enhanced significantly. This figure explicitly shows that growing sock and stand density of forest is enhancing after the forest was handed over to the local communities. It further exhibits that community forestry in Nepal has contributing largely in climate change mitigation through accumulating carbon.

Table 6: Biophysical changes of studied CF from 2001 to 2007

Parameter	Year	
	2001	2007
Growing Stock (Cft/Ha)	2141.20	2269.67
Regeneration (No./Ha)	8050	9451
Sapling (No./Ha)	2000	3034

Pole (No./Ha)	2887	3510
Crown Cover (%)	75	69-90
Ground Cover (%)	60	75-95

Source: CF Operational Plan, 2001 and 2007

According to the CF guideline inventory 2004, on the basis of growing stock and condition of regeneration these CF falls under good condition. Although community based forest management model have been successful in conserving forests, deforestation and forest degradation in government-managed forest is taking place at an alarming rate. The Land Resource Mapping Project survey of 1994 and the national forest inventory of 1999 show that Nepal's deforestation rate is 1.7% with the Terai region having higher rate (2.1%) than the national average. Several Studies has shown that community forest has been succeeding in improving the forest condition once management rights were devolved to local communities from the government.

5.3.2 Demand and Supply Status of Forest Products

Community forest management in Nepal is subsistence based management that meets local requirements and is guided by prescribed management plan and group constitution. The table 7 indicates the demand and supply status of the forest products mainly timber, firewood, ground grass and bedding material. According to the FOP, there was larger demand of forest products in comparison to supply capacity of CF in 2001. The forest products include timber, firewood, grass and bedding materials. Similarly, household survey 2010 indicated that supply status of CF was still less than demand.

Table 7: Demand and supply status of forest products of studied HHs

Forest Products	FOP, 2001		FOP, 2007		HH survey, 2010	
	(HH =206)		(HH =274)		(HH=41)	
	Demand	Supply	Demand	Supply	Demand	Supply
Timber (Cft/Yr)	4650	2000	NA	2443.93	200	20

Firewood (Bhari/yr)	74160	8493	NA	4766	15	6
Ground (Bhari/yr)	grass 65000	1900	NA	1287	27	13
Bedding material (Bhari/yr)	70000	12225	NA	16038	30	14

Note: 1 bhari= 30kg

Source: CF OP, 2001, 2007 & HH Survey-2010

Despite the larger deficit of supply of CF in comparison to the demand, forest condition was still reported enhanced. It indicates that studied CF has truly abide by the forest operational plan where forest was managed sustainable way. Respondents replied that the deficits forest products were supplied from their private land. It is most interesting to note that after introduction of community forest management, private forest has found largely been increased in most cases.

5.3.3 Status of Bio-diversity

Community-based approaches to forest management have a large impact on biodiversity conservation by preventing local extinction of species and increasing vegetation and wildlife. According to the total respondent's views, in numbers of vegetation and wildlife is increasing after the CF handed over to the FUG.

5.3.3.1 Floral and Faunal Diversity

On the basis of Dobremez (1976) classification of vegetation types this CF falls under the tropical forest. Vegetation pattern is mixed types. Species composition of Sal forest is highly dominated by regenerated Sal (*Shorea robusta*) and other species are Karam (*Adina cordifolia*), Bot Dhangero (*Lagerstroemia parviflora*), Chilaune (*Schima wallichii*), Khote salla (*Pinus roxburghii*).

According to the CF Operational Plan (OP), only the some species are mentioned as a non-timber forest product (NTFP) such as Amala (*Emblica officinalis*), Khayar (*Acacia catechu*), Barro (*Terminalia belarica*), Harro (*Terminalia chebula*),

Kukurdaeno, Bakhrejhar, Lajjawati and so on. But in the CFOP there is lack of details management system of NTFPs.

On the other side different species are mentioned in CFOP as a faunal species such as common leopard (*Panthera* sps), Jackal, Monkey, Porcupine, Mayur, Dhukur and Titra. But in the CFOP there is lack of details management system of NTFPs and wildlife.

5.4 Governance and Institutional Strengthening Practices of CFUG

Governance is the main pillar of the any organization to achieve the goal and objectives. So this section presents the representation in executive committee, decision making process (participation and thematic decision in CFUC meeting and general assembly) as well as benefit sharing mechanism.

5.4.1 Representation of Caste and Gender in CFUG Executive Committee

The table 8: depicts the inclusiveness of gender and ethnicity in CFUC from its first user committee to till now. From the gender perspective about 86% men and 14% women were represented in the committee. However in 2010, women representation was increased to 47%. This figure shows the participation of women in decision making forum is gradually increasing. Despite the efforts are made, the studied CFUG is still unable to meet minimum women involvement in UC as defined in the CF development guideline 2008 where a provision is clearly defined to include women in CFUG at least 50%.

In terms of ethnicity, in the initial stage of CFUC Dalits were completely excluded whereas IPs and Brahmin/Chhetri were fully involved. But since 2007 there was positive initiative for the involvement of Dalit in CFUC. Though in 2010 there were good practices of ethnicity inclusiveness in the CFUC.

Table 8: Trend of representations on CFUGs executive committee of different caste groups and gender

Year	Gender distribution	Number of EC member caste/ethnic distribution percent			
		Dalit	IPs	Brahmin	Poor

	&Chhetri									
	Men	Women	M	W	M	W	M	W	M	W
1995	6 (86)	1 (14)	0	0	3 (50)	1 (100)	3 (50)	0	0	0
2001	10(67)	5 (33)	0	0	5 (50)	2 (40)	5 (50)	3 (60)	0	0
2007	9 (69)	4 (31)	1(11)	0	2 (22)	2 (50)	6 (67)	2 (50)	0	0
2010	10(53)	9 (47)	0	4 (45)	3 (30)	2 (22)	7 (70)	2 (22)	0	1 (11)

Source: CFUG Constitution- 1995, 2001, 2007, & 2010

Note: M=Men, W=Women & Parenthesis is percentage

5.4.1 Participation Status of Committee Member in CFUC Meeting

Table 9: illustrates the presence of executive member in CFUC meeting (one fiscal year 2009/2010). The group convened nine events of CFUG meetings which were three additional events as provision made on their constitution for at least six events of meeting every year. Table11: illustrates the majority of the participants in the meeting were women (72%) and men were only 28%. However the majority of members in CFUC were men. Ethnicity wise about 8% participants were from Dalit and 65% Brahmin/Chhetri.

The study found that none of the respondents could explain in details the contents included in the group constitution and forest management plan. About 19.51% respondents have no idea about contents of constitution and FOP whereas 51% have very few and 29.26% have some idea.

Table 9: Participation of various caste groups in CFU committee meeting

Gender diversity	Number of caste wise participants distribution			
	Dalit	IPs	Brahmin/Chhetri	Total
Men	5 (20)	9 (36)	11 (44)	25 (28.40)
Women	2 (3.17)	15 (23.80)	46 (73.01)	63 (71.59)
Total	7 (7.95)	24 (27.27)	57 (64.77)	88 (100)

Note: Parenthesis is on percentage

Source: CFUG Minute Register (2009/2010))

5.4.2 Theme wise Decision in CFUC Meeting

Table 10: indicates the thematic area of the decision in one year. Out of total decisions, nearly 47% decisions were related to the institutional and governance. On contrary, only 2% and 3% were related to the community development and pro-poor matters respectively. Decisions are made in group meeting based on majority of involved users in the meeting. Majority of the respondents stated that participation selection on training and workshop is made by group meeting. Record system is also deficit in FUG.

Table 10: Number of decisions on various themes made by the CFUG meeting in 2009

Decision Theme	Number of Decision	Total Decision
Community Development	2 (5.88)	34
Pro-Poor	3 (8.82)	
Penalties	6 (17.64)	
Forest Development	7 (20.58)	
Institutional & Governance	16 (47.05)	

Note: Parenthesis is on percentage. *Source: CFUG Minute Register*

Institutional and governance is considered to be a cross cutting issues in any CFUGs. In this way, nominal discussion on pro-poor and community development agenda don't mean the group paid less attention to the matter. Since the high level of governance concerns are demanded by pro-poor and community development agenda in many cases.

5. 4.3 Participants Status in General Assembly

General assembly normally holds once in year is the most powerful body of the CFUG to legitimize and approve the activities done by committee over the year. During this event, committee present annual financial and progress reports to the users. Users are asked for comments and reactions, and finally requested for approval. Any dissatisfaction among the users in committee's reports and performance, committee members are accountable to clarify the matter. This is why the participation level during such meeting indicates how CFUG is strong in terms of decision making, transparency and accountability.

Table 11: Participation status of various caste groups in general assembly

Gender distribution in		Number of caste wise participants distribution					
general assembly		Dalit (10%)		IPs (28%)		Brahmin & Chhetri (62%)	
Men	Women	Men	Women	Men	Women	Men	Women
47 (22)	162 (78)	5 (11)	15 (9)	24 (51)	36 (22)	18 (38)	111(69)

Note: Parenthesis is on percentage

Source: CFUG Minute Register 2009

Table 11: shows the involvement of the users in general assembly. Majority of the participants were women 78% in the general assembly. In terms of ethnicity, most of participants were from Brahmin/Chhetri (62%) which is followed by IPs 28%. In contrast, only 10% of Dalit took part in the assembly.

In all meeting, participation of women was higher than men's participation. The reasons for this, users reported that women are sincere and honest when they are given with responsibilities. Forest is considered to be the domain of women. Their livelihood mainly concerns to forest that instigates their involvement in decision matter of forest.

Users were informed through various communication means. Sending letters, notice on public places, and message from committee members, telephones and local radio are reported to be common practices in the studied groups. Such early inform practices made users to prepare meeting agenda and comments. Such practices may build on in REDD initiative to strength issues of Free, Prior and Informed consent.

Involvement of IPs, Dalits and women in forest management related events are major concerns in REDD initiative. In order to ensure social safeguard ascertaining rights of IPs, Dalits and women in REDD mechanism, their involvement in whole REDD process is highly commendable. Free, Prior and Informed Consent (FPIC), ILO 169, UNDRIP, CEDAW are international instruments to be incorporated into REDD process.

5.4.4 Benefit Sharing System

Groups are independent to distribute and use their resources in community based manages forests. However, distribution mechanism varies among the forest groups of various forest management regimes which are guided by forest benefit distribution policy. In studied CF there is forest product distribution committee which activate according to the CFOP. Of the total interviewees, 81% showed their disagreement on the restriction of forest product removal from the CF.

The study found that main income sources of the CFUGs are sale of forest products, membership fee, punishment fee and donation from the organizations (table 10). CFUG recognized forest products such as timber, firewood, fodder, leaf litter and grass derived from the CF are also the main benefits to them. Similarly, services generated by the forest such as water sources, grazing, soil erosion control are another forms of benefits that group are receiving from the forest.

The studied group was reported that they are practicing equitable distribution of forest products among the users. They first collect demand and need of all households only for timber. They however distribute other forms of forest products in an equal basis. The CFUG identify the time at periodic basis when local users are allowed enter into

the forest for firewood, grass and leaf litter. Even though the HHs are categorized into various well being class as per the provision developed in Community forest development guideline, 2008 this is taken into account only timber distribution and fund mobilization.

Users of all forest management regimes are forest manager who make a significant level of contribution to avoid activities pertaining to deforestation and forest degradation. Resolution of the clarity over who has the right to own carbon is therefore crucial for determining the extent of benefit distribution before the REDD implementation. It is not yet clear at what level REDD will operate, however to define appropriate institutional framework to ensure fair distribution among diverse management regimes is a precondition of pro-poor REDD in Nepal

5.4.5 CFUG Fund Mobilization Provision and Trend of Last Four Years

Table 12: illustrates the income source and expenditure area of the CFUG in last four years. Main income sources of the CFUG are from forest products selling i.e. about 5% to 98%, cash balance, loan return, and bank balance. On the other side following table shows the expense headings in forest development about 29% to 36%, community development, pro-poor about 14% to 30% and institutional strengthening of FUG. This data shows the inconsistency expenditure in forest development because of the gap expense in 2008 and 2009. According to the CFOP, 2007 there were some provisions made for the fund mobilization such as annul expense should be done in forest development about 25%, women awareness 5%, Dalit/poor 5%, infrastructure development 55% and forest development fund 10%. On other hand, CF development guideline allocates expense should be at least 25% in forest development and 35% in pro-poor activities out of the total income of per year. Majority of the interviewed respondents are unfamiliar and disagreement on the fund mobilization system as well as lack of proper recording system in terms of fund mobilization.

Table 12: Trend of last four years income and expenditure

Title		2007	2008	2009	2010
		Total NRs	Total NRs	Total NRs	Total NRs
Income Sources	Forest	5395 (5.47)	22,650	198,872	62,340
	Products		(11.77)	(66.35)	(98.62)
	Cash Balance	4178 (4.23)	4178 (2.17)	58,835	0
				(19.63)	
	Loan Return	0	8,000 (4.15)	36,000	0
				(12.01)	
	Bank Balance	89,007	157,507	6,000 (2.0)	0
	(90.28)	(81.89)			
	Other	0	0	0	875 (1.38)
	Total	98580	192335	299707	63215
Expense Headings	Forest	2000 (29)	0	0	16,600
	Protection				(36.22)
	Community	0	180000	241,920	10,000
	Development		(94.24)	(98.05)	(21.82)
	Pro-poor activities	1000 (14.5)	0	0	13,900
					(30.33)
	Institutional	3895 (56.49)	5000 (2.61)	2000 (0.81)	5324
				(11.61)	
	Other	0	6,000 (3.14)	2,787 (1.12)	0
	Total	6895	191000	246707	45824

Note: Parenthesis is on percentage

Source: CFUG Income-Expense Register 2009/2010

There is big debate at international level on how REDD can generate co-benefits. Co-benefits here refers to outcomes derived from the implementation of REDD simultaneously. It is further interpreted as a result through utilizing benefits of REDD utilized. At this moment, REDD co-benefits are biodiversity conservation, governance, livelihood improvement, poverty reduction and sustainable development.

From the practices of studied CFUG in mobilizing group into various activities, it seems existing practices would generate co-benefits in terms of sustainable development and livelihood improvement. There is still a need of concrete fund mobilization guideline. But small amount of group fund was utilized forest conservation. REDD Plus activities has opened multiple options to benefit from the mechanism. Country, group or agency can benefit either from reducing deforestation and forest degradation and enhancing forest carbon stock through sustainable management and conservation. With this options, practices of Nepal's CF in managing the forest in a sustainable way would yield benefit to enhancing forest's biological capacity to sequester CO₂ from the atmosphere thereby receive benefits under the REDD mechanism.

5.5 Existing CF Management System

This section includes provision made in CFOP for community forest protection, silvicultural operation system and existing practices of forest management system.

5.5.1 Protective Measures of CF

In CFOP, FUG has made provision against the driving force of deforestation forest degradation such as provision for forest watcher, grazing control, forest fire, illegal felling of forest products, wildlife conservation, bio-diversity conservation, and water source conservation. Of the total respondent interviewee, 94% showed the controlled the CF from forest fire , uncontrolled grazing, encroachment, illegal felling, poaching and increasing the number of biodiversity after handed over forest to the FUG whereas some invasive species such as Banmara (*Lantana sps*) also spreading the CF area. These types of protective measure contributed to the enhancement of forest condition which is verified in the increment data of growing stock and stand density of forest.

5.4.2 Silvicultural Operation System in FOP, 2001&2007

One of the major important activities to improve the forest condition is silvicultural operation. As per the approved CFOP, 2001 they made the provision of tending

operation such as pruning, thinning and cleaning whereas in 2007 plantation and pruning are specified. Table 13& 14 presents the silvicultural operation which is not completely sufficient. Furthermore, in 2007 there is lack of detail activities of tending operation. Almost all respondent involved in CF management activities with three days contribution in silvicultural activities.

Table 13: Planning of silvicultural operation

Fiscal Year	Block Number	Sub-Block No.	Area (Ha)	Silvicultural Operation	Month	Involvement
2001/002	2	1	17	Pruning, Thinning	Poush & Magh	Users Group
2002/003	2	1	18	Pruning, Thinning	Poush & Magh	Users Group
2003/004	1	1	16	Cleaning, Thinning	Poush & Magh	Users Group
2004/005	1	1	16	Cleaning, Thinning	Poush & Magh	Users Group
2005/006	3	1	24	Pruning, Thinning	Poush & Magh	Users Group

Source: FOP, 2001

Table 14: Planning of silvicultural operation

Fiscal Year	Name of Block	Area (Ha)	Silvicultural Operation	Operating Month
2009/10	Kol Danda	2	Plantation	Shrawan/Bhadra
2010/11	Chyan Danda	3	Plantation	Shrawan/Bhadra
2011/12	Archale Pakho	NA	Plantation	Shrawan/Bhadra
2009/10	Archale Kopchevani	NA	Pruning	Poush-Magh
2010/11	Dihi Deurali	NA	Pruning	Poush-Magh
2011/12	Surule Ban	NA	Pruning	Poush-Magh

Note: NA: Not available

Source: FoP, 2007

REDD basically deals with forest management activities that promotes to five REDD activities- reduce deforestation, forest degradation, forest conservation, sustainable management of forest and forest carbon enhancement. If existing forest management activities supports to those activities you can say- it is useful for REDD.

5.4.3 Knowledge of Forest Services and Behavioral Practices

Majority of interviewed respondents are familiar with the intangible benefits such as biodiversity, fresh air, fresh water, soil conservation and beautification whereas almost respondents are unfamiliar with forest carbon benefits. In current years, CFUG have started plantation in CF area and also promoted trees in their private land for the fulfillment of requirements of forest products. Although, studied area is nearest from the district headquarter, they know the information about installation of improved stove but none respondents haven't installed improved stove.

CHAPTER VI

CONCLUSION AND RECOMMENDATION

6.1 Conclusions

Policy Framework in Nepal

-) REDD forestry and Climate Change Unit under Ministry of Forest and Soil Conservation is great institutional readiness of government.
-) National REDD strategy drafting shows a government concrete steps towards REDD initiative in Nepal. But still it should specify clear approach how secure social and environment safeguards and ensure rights of IPs, Dalits and women in REDD initiative.
-) CF Policy was previously focused on dealing local forest dynamics in Nepal but now gradually adapted to deal with international and global demand including climate change. Initiative of REDD in forestry sector under the leadership of MFSC is a best example.
-) Current community forest management policy can promote REDD Plus initiative in Nepal since it has already started to improve forest condition without any threats on forest deforestation.
-) The general practice, CF is given to the local communities for five or ten years once forest operational plan and group constitution approved by concerned forest authority. In certain condition, CF can be pulled back to government from the local communities though such cases are rarely experienced in Nepal. Temporal threshold for REDD is not yet determined but considered to be longer at least 20 or 30 years. In such cases, current practices of CF tenure may create uncertainties on carbon rights to local communities. Unless, local communities are ascertained forest ownership under their management right there can be high uncertainties which may largely hamper to REDD mechanism.

Biophysical Status

-) Forest condition has been increased because of community forest management system.
-) Demand status of forest products of local communities larger than supply capacity of CF. On the other hand, biophysical condition of the forest increased over the years. There was reported not government forest close to the studied forest. It means no forest leakage experienced by the local communities. They rather met unmet forest products by promoting private forest on their own. It indicates that community forest would adjust leakage problems.
-) Community forest management qualify for REDD from biophysical perspective.
-) There is no well document of biodiversity monitoring and documentation system in CFUG which is very important from REDD perspective.

Institution, Governance and Resource Sharing

-) Inclusive decision making process practice in CF promotes 3Es- efficiency, effectiveness and equity issues pertaining to REDD.
-) Women are predominantly taking part in meeting in comparison to men because of their sincerity. Bringing them into REDD process from early is mandatory to ensure their rights.
-) Involving IPs, Dalit and gender indicates CF decision making process enhance to ascertain social safeguard in REDD.
-) Existing communication and information dissemination system among the users in forest may be instrumental to enhance free, prior and informed consent as indicated in ILO 169.
-) Existing practice of CFUG fund mobilization practices found stepping stone to capitalize co-benefits of REDD.

Forest Management Practices

-) Enhancement of forest condition thanks to proper management of forest by local communities.
-) Considering ecological capacity of forest while collecting forest products interprets the sustainable management of forest – one of the promising REDD plus activities.
-) Involving and investing larger efforts in conserving forest would witness the forest carbon conservation – a REDD plus activity.
-) Local communities use national inventory guideline developed by Government of Nepal for forest inventory which doesn't cover biomass and carbon.
-) CFUG follows FOP strictly. Apply silvicultural operation and tending operations. Assess mean annual increment (MAI) in terms of growing stock and determine annual allowable harvest. In this way, community forest has demonstrated good practice of sustainable management forest though it is still on discussion on what operational definitions and actions of sustainable management of forest in REDD.
-) CFUG performs forest fire and grazing management activities which indicates permanence can no longer be issues in CF.

6.2 Recommendations

Based on the findings of the study following recommendations have been made for further study and actions.

-) CF was mainly evolved to deal with local demand of forest resource in Nepal. Since it envisions to deal international issues like Climate change and REDD, it needs to harmonize with global context to meet requirements demands. A further in-depth study is highly recommended how Nepal's CF policy match to REDD initiative
-) CFUG is provided with use right to the local communities. Property right is still on state. Who own the benefit from the soil carbon is still unclear in policy framework. A clear policy and provision of carbon ownership particularly soil carbon should be formulated. Nepal should come up with clear version in REDD strategy.

-) Terms of CF which is now normally of 5 or 10 years should be harmonized with the need of REDD scheme since it may be long term deal to ensure permanence and additionality.
-) Nepal is pioneer in setting institutional set up for REDD work. It needs a periodic review on assessing how effective such institutional structures are working.
-) Community Forest witnessing to increase forest condition through halting illegal felling and forest degradation. Annual increment of forest stock (biomass and carbon) seems very low unlike other tropical countries. Since the CF already started to enhance forest stock, it would have lesser growth rate in mature forest. Nepal should define reference level that benefit to CF for their previous contribution.
-) Monitoring and record keeping of biodiversity profile of CF should be well developed which is very important element of REDD in terms of co-benefits.
-) Respect and secure social and environment safeguard in REDD initiative is still in abstract form. CF system in Nepal is acting as platform of exercising democratic process of user rights bringing IPs, gender and Dalit which is still insufficient (from the studied CFUG). It is therefore highly recommended that a clear, concrete and obligatory mechanism of securing rights of IPs, women and Dalit in REDD framework should be brought.
-) Development of concrete guideline and mechanism with criteria is recommended to ensure equitable benefit sharing to the communities of diverse management regimes.
-) A concrete system to utilize fund receive from the REDD is recommended so as to generate co-benefits such as livelihood and poverty reduction from REDD initiative in Nepal.
-) CFUG needs to measure biomass for REDD which is not covered by existing National Forest Inventory Guideline. This guideline should be updated with methodology of biomass calculation. Similarly, CFUGs should be equipped biomass calculation capacity and knowledge.

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ANNEX

Annex 1: Questionnaire for household Survey

A. General Information:

Interview Date:

1. Name of Respondent:
2. Age: 3. Caste/ Ethnicity: Dalit-1, janajati-2, BCN-3
4. Village Development Committee/ Ward:
5. Family Size: Male:... Female:... Total: ...
6. Well being ranking: Rich1..... Medium2..... Poor3.....
7. Educational status of family:

Sex	Illiterate	Literate	< 5 Class	6-10 Class	>10 class	Support by

8. Land holding [Ropani, ox- team]

Pakho	Khet	Private Forest	Total Land

9. Food Sufficiency:

- a. Less than 3 month b. 3-6 month c. 6-9 month d. 9-12 month -3 e.
More than 1 year

10. Livestock number and rearing system:

Type	Number	Owned	Half Share	Stall Feeding	Grazing in			
					CF	PL	CL	NL
Buffalo								
Cow								
Goat								
Others								

11. What are the sources of income?

Source	Income
.....
.....

B. Governance and Institutional Strengthening Practices

12. Do you know the number of CFUC members? Yes NO

13. How often do you participate in group meeting?

Always	Most of the time	Sometimes	Very rarely	Never

14. How the decisions are made in meeting?

Full consensus	2/3 majority	Majority>50%	Elite dominant	No idea

15. How often do you participate in FUG assembly?

Always	Sometimes	Never

16. How the decisions are made in assembly?

Full consensus	2/3 majority	Majority>50%	Elite dominant	No idea

17. Do you know the fund allocation system? Yes No

18. If yes, what is the fund allocation theme?

Pro-poor	F. development	C. development	F. base enterprise	Loan	No idea

19. Do you satisfied with existing fund recording system? Yes No

20. How often do you take part in workshop and training?

Never	Once	Twice	Thrice	More

21. Who decides the participants to take part in workshop and training?

Committee	Assembly	Organizer	No idea

22. What are the benefits sharing mechanism in your FUG?

Equality	Equity	No idea

C.Forest Policy in local level

23. Do you know the contents of group Constitution and FOP?

Know all contents	Know most content	Some	Very few	No idea

24. If yes, how do you know?

From Committee	DFO	Self Reading	General assembly	NGO and other

25. Who can amendment of Constitution and FOP?

Committee	Assembly	DFO	Other

26. If somebody violate the Constitution and FOP who will responsible to punishment?

Committee	Assembly	DFO	Other

D. Existing practices of CF management in terms of knowledge and skill

27. In addition of CF, do you know the other practices of forest management? Yes
No

28. If yes, please tell the name of forest management practices?

National Forest	Leasehold Forest	Collaborative	Religious

29. What is the existing CF protection system?

Watcher	Rotational	Self- social fencing	Others

30. What is grazing system in FUG?

Completely Prohibited	Rotational	Free	Stall Feeding	Others

31. What is the trend of following parameters after CF handed over?

Factors	Completely stop	Increasing	Decreasing	Others
Forest Fire				
Encroachment				
Illegal Felling				
Wildlife				
Species				
Poaching				

32. Do you know the CF management activities that help to improve forest condition?

Yes No

33. If yes, what are the existing practices of CF management? And did you have involved?

Activities	Involved Days	Yes	No
Plantation			
Weeding			
Cleaning			
Pruning			
Thinning			
Seed tree selection			
Demo plot establishment			

34. Do you have any benefits received from the CF? Yes No

35. If yes, list out the demand, supply system..

Forest Products	Units	Demand	Duration	Supply in %				
				CF	LF	PF	NF	Ag residue
Pole			Yearly					
Firewood			Monthly					
Dry leaf litter			Monthly					
Bedding material			Monthly					
Grass			Monthly					
NTFPs								
Timber			Yearly					

36. Do you agree to restrict the collection of FP from the CF? Yes No

37. If yes, the current practice restricts to collect FP from CF and the nearest forest , the how would you meet the requirements?

Forest Products	NF	P. land	Market	Alternative
Timber				
Firewood				
Pole				
Grass				
Bedding materials				
Leaf litter				

38. Do you have any benefits received from the N/GO forest agencies after handed over CF?

Fund/Cash	Participating in Trg./ Ws	Employment	Scholarship	Information

39. Do you know the other indirect services of community forest? Yes No

40. If yes, what types of services are observing?

Biodiversity	Carbon market	Fresh water	Fresh air	Beautification	Decrease soil erosion

E. Bio-Physical Condition

41. What is your observation of forest status after CF handed over?

Increase	Decrease	No change	No idea

42. If increased, what is considered of increasing?

No. of trees	No. of spp	Size of trees	No. of wildlife	NTFPs

43. What is your status of access to resources?

Access to land for HH purpose	Access to FP	Access to information	Access to FUG Fund	others

44. When have you been involving in the CFUG?

-) From the time of beginning
-) After few years

45. Major HH income sources 10 years before (in % from total)

Business	Services	Ag	NF	Others	Total

46. Major HH income sources after CF handed over

Business	Services	Ag	CF	Others	Total

47. Contribution aspects of CF to increase income:

Employment	Selling of illegal felling FP	IGA	Other	Total

48. Your contribution to the forest and FUG

- A. Contribution to F. protection and mgmt days/year
- B. Group meeting and assemblyhr/day/yr
- C. Fee/ levy per year

49. Do you feel any loss after the handover of the CF? Yes No

50. If yes, what are you losing after handing over the CF?

- A. Restriction to collect of FP
- B. Loss of income sources through selling FP
- C. Reduced grazing area then decrease in livestock number
- D. Reduced agriculture production due to unavailable of sufficient litter
- E. Conflict among users

51. Do you want to tell anything else?

.....

Annex-2: Checklist for CFUC Meeting and Focus Group Discussion

- Researcher Introduction
- Clarification of CFUC meeting and FGD/ Objectives of the study

General Information:

CF handed over year:

FOP revision year:

Total CF area:

Caste composition of CFUG:

Committee member:

Well being ranking:

CF related policy:

-) Discussion about Constitution and FOP (What, scope, importance, formulation process....)
-) Contents of Constitution and FOP
-) CF development guideline
-) Implementation status
-) White are the barriers to implement constitution, FOP and so on?
-) What is the existing sub-committee?

Bio-Physical Condition

- ✓ Biodiversity increasing trend (perception)
- ✓ Stand density trend(increasing/decreasing): Regeneration, Sapling, Pole, Tree
- ✓ Demand and supply status(sufficient/insufficient): If not alternative: Timber, Firewood, Grass, Bedding material, Fodder, Leaf litter

Governance and Institutional Strengthening Practices of CFUG

- Constitution and FOP follow system
- Decision making system
- Benefit sharing system: Equity, Equality, Proportionate
- Transparency and information sharing system (notice board, katuwal, tole bhela, committee, phone, letter.....)
- Coordination system
- Annual Progress submit system
- Fund Mobilization System: Pro-poor, Forest Development activities, Community Development, Training/WS/Campaign

Existing CF management practices in terms of Knowledge/skill

Protection System (Grazing, Encroachment, Illegal Felling, Wildlife Poaching, Forest Fire, Landslide, Invasive species...)

Silvicultural System as per FOP

Behavioral Practices: Alternative energy, Plantation in private land...

