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林业产权制度与生计安全
--基于尼泊尔中部巴格马蒂地区的案例研究

FOREST TENURE REGIMES AND LIVELIHOOD SECURITY-A CASE STUDY FROM THE BAGMATI ZONE, CENTRAL REGION OF NEPAL

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摘要

尼泊尔的林地权属模式过去发生了迅速的变化。历史上占主导地位的林地所有制完全绝迹，新的土地所有制度在发生。林地所有制改革的类型和程度因国而异，尽管每项权属改革的一个共同目的都是在森林资源的使用和管理上将多方利益相关者纳入进来与国家一起分享所有权和管理权。类似地，林业方面的所有制改革在一方面关注全球对生物多样性保护和环境保护的需求的同时，另一方面更多地在关注解决人们的生计需要和收入。所有制改革进程在20世纪70年代后期开始，并且在90年代早期被制度化，它推动了森林管理中的分权和参与式进程。关于林地、森林以及它们的动态自然的不同的权属制度安排，它们对于森林所有者行为和时候最利的深远影响被广泛接受。因此，这项案例研究考察了：森林所有制制度的分布方式、类型和数量，以及森林权属制度对于森林状况的蕴意。研究进一步探讨了森林所有制制度对于不同富裕程度的农户的社会、文化和经济状况的影响。这项研究是在尼泊尔中部巴格马蒂区的8个案例研究地区开展的。定性与定量的分析是基于在前期分层随机抽样调查基础上的，266个应答农户是在贫富排序后的不同类型农户中选出来的，包括133个男性和133个女性。还组织了焦点小组访谈，以探索不同森林所有制下依赖于森林的社区的生计特征。办公室记录，非正式访谈和直接观察也是该项研究收集二手资料的方式。

数据通过用MS Excel 和SPSS软件进行分析。使用方差分析（ANOVA）和最小显著性法（LSD）检验富裕、中等和贫穷农户对于土地保有、牲畜保有、家庭总收入以及私有森林和社区森林在样本农户总收入中的份额的显著性差异。使用描述性统计来量化受访者的家庭规模、受教育水平、各种资源的总收入、职业和年龄的均值和范围。研究区域的林业分为两类所有权：国有的和私有的。国有森林可进一步划分为：政府管理的森林、社区森林、租约森林、宗教性森林和受保护森林。研究显示，99%的受访者观察和察觉到森林被移交给社区后树木密度和尺寸的显著性增加。结果也显示与富裕和中等户相比，来自社区森林和私有森林的收入在穷人的家庭总收入中的份额更高。不同社会群体参与森林使用者团体（FUGs）会议，在会议上制定森林发展、维护和使用的治理规则，揭示了参与并非对于不同类型的森林管理活动都是整齐划一的。与经济情况较好的农户和高种姓群体相比，穷人和边缘群体在森林使用者群体委员会的决策过程中表现更糟了。越来越多的以社区为基础的管理制度发展出了权属制度安排的创造性手段，与政府管理的森林和保护区森林管理制度相比，更积极地促进了不同富裕程度农户的生计。该文也展示了研究区域内不同森林管理制度的比较。基于此研究，认为稳定的权属对于森林资源的保护和依赖森林的人们的生计安全是很重要的。哪一种森林权属制度适合于特定的时间和地点或位置更多地是一个情景化的问题，从而，所有制模式需要取决于人们的需要和参与。

最后，该研究提出了建议，以增强不同森林所有制对于依赖森林的使用者利益相关群体获得和提高公正的利益分享和可持续的生计安全的作用贡献。在现有的森林使用者群体中，焦点应该是提高贫穷农户和边缘群体在森林使用者群体执行委员会中的表现。批准租借许可证的权力应该从森林区域主任移交给地区森林办公室，因为这已经是社区森林的现实了。

关键词：森林所有制，生计安全，森林使用者群体，保护，参与，利益分配，尼泊尔

Abstract

Forest land tenure patterns have rapidly changed in Nepal in the past. The historically dominant forest land tenures are becoming extinct and new tenures are occurring. The type and extent of forest land tenure reform vary from country to country, although an objective common to each tenure reform is to share the ownership and management rights and involve multiple stakeholders, along with the state, in the utilization and management of forest resources. Similarly, reformed tenure in forestry is focusing more on addressing the people's livelihood needs on the one hand and considering the global need for biodiversity conservation and environmental protection on the other. Tenure reform processes begun during late 1970s, and institutionalized during early 1990s has promoted decentralized and participatory processes in forest management. The different tenure arrangements associated with forest land and forests, and their dynamic nature, are widely accepted to have profound impacts on forest user's behavior and social welfare. Therefore, this case study examines the distribution pattern, types and number of forest tenure regime and implications of forest tenure regime on the condition of forest. Further, it explores the effects of forest tenure regime on the social, cultural and economic condition of the different wealth class households. This study was conducted in eight case studies districts of Bagmati Zone, Central Region of Nepal. The qualitative and quantitative analyses are based on primary data collected through household survey using stratified random sampling of 266 respondents from three different classes of households after well-being ranking, comprising 133 males and 133 females. Focus group discussions were organized to explore the information on the livelihood characteristics of the forest dependent communities under different forest tenure regimes. Office records, informal interviews and direct observation were the other sources of information for secondary data collection.

Data were analyzed using MS Excel and SPSS software. ANOVA and LSD were used to test the significant differences between rich, medium and poor households on land holdings, livestock holdings, total household income, share of income from private and community forests to the total household income of the sampled households. Descriptive statistics were employed to quantify the mean and ranges of household size, education level, and total income from various source, occupation and age of the respondents. The forests in the study area are divided into two ownership categories: national and private forest. National forests are further categorized into: government-managed forest; community forests; leasehold forests; religious forests and protected forests. The study shows that the ninety-nine percent respondents observed and perceived significant increase in the density and size of trees in the forest after handing over to the community. The result also shows that the share of income from the community forest and private forest to the total household income of poor households is higher as compared to the rich and medium wealth class households. The participation of different social groups in the forest user groups (FUGs) meetings that make rules governing the development, maintenance and use of the forest, revealed that the participation is not uniform for different types of forest management activities. The representation of poor user households and marginalized groups in the forest user group's committee decision making process is found to be worse when compared to the better off households and high caste groups.

Increasing numbers of community-based management regimes have developed innovative means of tenure arrangements to contribute positively to livelihoods of different wealth class households than the government-managed forest and protected forest management regimes. The comparison of different forest management regimes in the study area is also presented. Based on the study it is argued that secure tenure is important for the conservation of forest resources and for the forest dependent people's livelihood security. Which forest tenure regime is suitable at a particular time and place or location is more of a contextual matter, and thus, depending upon people's needs, participation, tenurial modalities need to be determined.

Lastly, the study provides some recommendations to enhance the different forests tenure regimes role/contribution towards obtaining and improving equitable benefit sharing's and sustainable livelihood security within forest dependent user households. In the existing forest user groups, focus should be on improving representation of poor wealth households and marginalized groups in forest user group executive committees. Authority to approve leasehold certificates should be devolved from Regional Director of Forest to District Forest Office, as it is already the case of community forests.

Key words: forest tenure regimes, livelihood security, forest user groups, conservation, participation, benefit distribution, Nepal

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ACRONYMS

ADB	Asian Development Bank
ANOVA	Analysis of Variance
BZCF	Buffer Zone Community Forest
BZUG	Buffer Zone User Group
CAMC	Conservation Area Management Committee
CBD	Convention on Biological Diversity
CBS	Central Bureau of Statistics
CF	Community Forest
CFM	Community Forest Management
CFUC	Community Forest User Committee
CFUG	Community Forest User Group
DDC	District Development Committee
DFO	District Forest Office
DFID	Department for International Development
DFRS	Department of Forest Resources and Survey
DoF	Department of Forest
FAO	Food and Agricultural Organization
FGD	Focus Group Discussion
FINNIDA	Finnish International Development Agency
FRAP	Forest Resources Assessment Programme
EC	Executive Committee
FECOFUN	Federation of Community Forest User Group Nepal
FRA	Forest Resources Assessment
GA	General Assembly
GDP	Gross Domestic Product
GFRA	Global Forest Resources Assessment
GMF	Government Managed Forest
HH	Household
HLFFDP	Hills Leasehold Forestry and Forage Development Project
HLS	Household Livelihood Security
HMGN	His Majesty's Government of Nepal
HQ	Head Quarter
INGO	International Non Government Organization
IFAD	International Fund for Agricultural Development
LF	Leasehold Forest
LFLP	Leasehold Forestry and Livestock Program

LFP	Livelihood and Forestry Program
LFUG	Leasehold Forest User Group
LNP	Langtang National Park
LSD	Least Significant Difference
MAP	Medicinal and Aromatic Plant
MOFSC	Ministry of Forest and Soil Conservation
MPFS	Master Plan for Forestry Sector
NBS	Nepal Biodiversity Strategy
NGO	Non Government Organization
NPC	Nepal Planning Commission
NRs	Nepalese Rupees
NTFP	Non Timber Forest Product
OFMP	Operation Forest Management Plan
OP	Operational Plan
PF	Private Forest
RF	Religious Forest
SD	Standard Deviation
SFM	Sustainable Forest Management
SPSS	Statistical Package for Social Sciences
STG	Special Target Group
TLA	Total Land Area
TLSU	Total Livestock Unit
UNDP	United Nations Development Program
UNEP	United Nations Environment Programme
US $	United States Dollar
VDC	Village Development Committee

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND

Worldwide, about 1.6 billion people deeply depend on forest resources for their livelihoods, and an estimated 400 million are directly reliant on forest resources (World Bank, 2009). At the same time, Forestry Resources Assessment (FAO, 2010) reports that deforestation is ongoing at an alarmingly high rate, mostly through the transfer of forests into agricultural land. Whereas the causes of deforestation are surely multiplying, there is also an rising identification that tenure system of forest resources and forest land plays a role in sustainable forest management (SFM), and therefore the secure tenure is one of the most important mechanisms to ensure accountability and control of forestry operations at the local level (FPP, 2012).

Forest tenure holds a broad concept which includes ownership, tenancy, and other formulated arrangements for the use of forests. Forest tenure is the combination of legally or customarily defined forest ownership rights and arrangements for the management and use of forest resources and also it determines who can use what resources, for how long and under what condition (Reeb and Romano, 2007).

The form and coverage of forest tenure reform in Asia vary from country to country, although having common objective to each tenure reform is sharing the ownership and overall management rights; involving multiple stakeholders, along with the government, in the utilization and management of resources. Similarly, reformed tenure in forestry is focusing more on addressing the people's livelihood needs and income while considering the global need for environmental protection and biodiversity conservation and these trends are replicated in many countries in Asia as reformed tenure models (Dahal and Adhikari, 2008).

It is also reported that the existing forest ownership and tenure arrangements in Asia show that decentralization and devolution in forestry is inadequate where more than 86% of the forests are beneath the direct control of the state (World Bank, 2009). Nevertheless, the tendency also shows that the community managed tenure model is slowly emerging in most of the countries in Asia. For instance, in China, the forest tenure model has significantly shifted towards decentralization at household level. Approximately 52% of China's forests are managed by individual households (Xu and Hyde, 2005). In the case of Nepal, Community Forestry (CF) is known as the changing forest tenure regime, which involves communities for the management of forest resources although, the forestland remains under the control of the Nepal government.

Although, there is mounting recognition of community rights by the state/government in many countries in Asia, the community-based forest tenure model is facing a major challenge because of inconsistent government policy and inadequate institutional capacity. For example, in Nepal, as stated by Dahal and Adhikari (2008), the government is trying to impose tax on transportation and sale of timber harvested from community forests. Government claims of ownership are often challenged by forest dependent

communities, indigenous peoples/tribes and households holdings historical customary rights to the land, and a controversial situation which may sometimes leads to violence. Continued deforestation and forest degradation call into questions the effectiveness of current forest tenure systems. There is growing recognition that tenure security is one of the most imperative mechanisms to make certain accountability and control of forestry operation at the local level and that most of the rural poor people typically linger poor because their control to the land are weak and insecure tenure (Bruce, 2007).

In addition, most of the current forest tenure policies and legal frameworks bound the access to forest resources by local people. In relation to the forests and livelihoods, Frankenberger *et al*., 2002, defines livelihood security as adequate and sustainable access to income and resources to meet basic needs including adequate access to food, potable water, health facilities, educational opportunities, housing and time for community participation and social integration.

The relations between livelihood security and forest conservation & management have numerous dimensions and hence, are interpreted by scholars and practitioners in diverse manners. Roe and Elliott (2005) state that there is a widespread consensus that dependence of rural poor on forest resources is a significant underlying threat to conservation, while Silori *et al*. (2009) view poverty reduction and livelihood security of resource dependent populations and biodiversity conservation as synchronized developmental goals. Agrawal and Redford (2006) on the other means explain the link between poverty and biodiversity as 'complex' and inherent dilemma in designing programs, further explains to this complexity that may beset the achievement of twin objectives. However, despite such complexity of multidimensional phenomenon, poverty alleviation and biodiversity conservation are among the main guiding principles, fundamental goals and part of policy agenda behind the development efforts pursued, particularly in developing country (Gibson, 1999; Daniel, 2000; Peluso and Vandergeest, 2001; Ravishankar, 2004; Agrawal and Redford, 2006; Delang, 2006; Silori *et. al*., 2009). Furthermore, many authors advocate the need of well defined conceptual frameworks if policies in these two arenas are to be combined to achieve a win-win situation.

In order to gain a better understanding of implications of forest tenure regimes on household livelihood security, the following questions need to be answered. Are the defined forest tenure regimes supports to better manage forests and that can contribute to livelihood security of the forest dependent rural people? If such forest tenure regimes exist, what are the implications of forest tenure regimes on the condition of forest and forest dependent people's livelihood security?

1.2 RATIONALE OF THE STUDY

Forest covers 30 percent of the global land area and contains most of the world's terrestrial biodiversity and more carbon than is in the atmosphere. Forests contribute to the overall global energy supply and provide food, fodder, medicines, building materials and paper products as well as cultural, spiritual and recreational havens. They also are vital for climate mitigation and soil and water protection. At the same time, one in every four people on earth, some 1.2 billion very poor people, rely on forest resources for

their daily livelihoods (World Bank, 2009). However, their capability to persist to support their livelihoods through traditional dependence on the forest is under threat.

Forests are a form of common-pool resource and important for rural people, for whom, in some cases, they provide an important part of their income (Das, 2010). Furthermore, forests are the most important ecosystem for protecting biodiversity (Fischer *et al*., 2006). Despite some slowing, deforestation continues at alarming rates (FAO, 2003). Rising population and pressure related to agricultural cultivation expansion, growing wood products demand and allied increases in illegal logging, unsustainable commercial trade of non timber forest products (NTFPs) and development of industries are all element of the state of affairs. Consequently, this circumstance, in line with globalizing economy, has set pressure on countries to reevaluate traditional tenure systems and generated debate on the public sector forest management effectiveness. Rapid transformation in resource tenure patterns, progressively multiparty take holder relations as government being more committed towards local communities empowerment, decentralize decision making process and involvement of private sector in forest management have been witnessed by many countries since the mid 1980s.

Securing tenure rights for forest land is about power; power that comes from owning the resource or having rights to manage it and to use the revenues from it (www.fao.org/forestry/site/tenure). Ecological diversity has also contributed to the evolution of a variety of complex farming systems. About 70% percent of Nepal's population practices subsistence and semi subsistence farming systems which integrate crop production with animal husbandry and depend on forest products for household use and agriculture farming (CBS, 2009). Generally, the role of livestock in farm incomes increases with altitude. Almost all farm households keep some cattle's for farm power and manure, but the exact number of livestock keeping depends on access to forest resources and common pasture for fodder and bedding materials (Singh & Chapagain, 2006).

Forests thus also contribute to maintaining soil fertility by providing raw materials for the domesticated animals that produce farmyard manure, which is still the main source of fertilizer in Nepal, although chemical fertilizers are widely used in accessible areas. Similarly, forests are also a source of wild fruits and other edible plants, and the major source of medicinal plants. In sum, forests are an inalienable part of Nepalese livelihood systems, as it is recognized by existing policies and reflected in the legislative instruments which are currently in force.

China's forest land reform differs from this dominant trend in two imperative customs first, it consists a different starting point in a way that the majority of its forested lands (58%) are already legally owned by collective rather than the state, a small portion of these collectives are composed of indigenous ethnic communities. Secondly, the reforms is widely promoted as a step towards private household property, part of the broader social and political trend aiming for the de-collectivization of China's rural landscape and the establishment of free markets (Xu *et al*., 2010). The transformation of forests, forest products harvesting and pure protection are choices to be made, and the core aim is to identify the management type most adequate for coping with dilemmas and choices between the various options (Casse and Milhøj, 2011). Different forest tenure arrangements may generate different levels of economic benefit for forest

owners, and have different impacts on the environment, society and culture. Likewise, different areas using the same forest tenure system may derive different incomes and benefits (Zheng, 2006).

The underlying rationale for linking forest tenure regimes with the livelihood security of the forest dependent people is the common assumption that secure tenure provides incentives for people to invest time and resources in forest management. Underlying this is the idea that the forest dependent people will look after forest resources if they can benefit from them to secure their livelihood. Taking this statement into account, it is reasonable to conduct a research on how has forest tenure regimes contributed for livelihood security mainly focus on social, cultural and economical benefits of the forest dependent people. What types and security of forest tenure arrangements, which might confine the assurance of people to get involved and invest in forestry that will have positive effects on their lives. This could be comprehensively study by a systematic investigation/exploration of the implications of forest tenure regimes for livelihood security of the forest users in the study area.

1.3 OBJECTIVES OF THE STUDY

The overall objective of this study is to explore the current status and implications of forest tenure regimes for the livelihood security of the forest users in the 8 case study Mid-Hills districts of the Bagmati Zone, Central Region of Nepal. More specifically, the study focuses on the following objectives.

1. To identify the forest tenure regimes based on the type of legal ownership and the level of formal and informal control of and access to resources.
2. To assess forest tenure regimes implications on the condition of the forest in the study area
3. To explore the effects of forest tenure regimes on social, cultural, economical and equitable benefits of the user's households livelihood security.

1.3.1 Research Questions

The study focus to address the following research questions based on each of the objectives stated above.

1. What are the types, distribution pattern and management system of forest ownership?
    a. What are the types and distribution of legal forest ownership?
    b. What is the forest management systems/modalities based on different tenurial regimes?
2. What are the inferences of forest tenure regimes on forest condition?
    a. Are there any improvements on forest condition based under different forest tenure regimes?
    b. Do people perceive the changes in availability of forest resources under different forest tenure regimes?
3. What are the effects of forest tenure regimes on social, cultural and economical condition of forest dependent people’s livelihood security?
    a. How does the forest tenure regime accelerate access to income generating activities and resources to meet basic needs including adequate access to food, potable water, health facilities, educational opportunities, housing and safety net to the forest dependent people?

b. What is the role of forest tenure regimes to promote community participation, empowerment and social integration among the forest dependent people to secure their livelihood?
c. Does a forest tenure regime provide the fair and equitable sharing of benefits among the different wealth class forest dependent households?

1.4 CATERGORY OF USER GROUPS FORMATION IN NEPAL

1.4.1 Community Forest User Group (CFUG)

The dictionary meaning of the term 'community' is a body of people living in one district or having common interests. The concept of community is used in different ways; both laymen and social scientist speak of a community as a neighbourhood, village or small town. Here the term is used to refer to people who represent a special form of society. However in the case of community managed forestry, it is a 'constructed community' because its boundary is defined on the basis of forest and geographic setting. The District Forest Officer (DFO) is authorized to hand over part of the government forests to a CFUG as a community forest to develop, manage, and utilize the forest resources. At first, identification of forest users and boundary of the forest are determined in the primary phase. Secondly, with the support of DFO, CFUG formation is done and the constitution of the group is prepared. Constitution defines the rights and responsibilities of the Chairperson and other dignitaries as well as the general members constituting as Community Forest User Committee (CFUC). The CFUG prepares Community Forest Operational Plan (OP) for the overall management of the forest. The OP describes the detail schedules of forest management and utilization activities of the forest to undertake by the CFUG in the given period. The OP is jointly agreed and signed by the DFO and the Chairperson of the CFUG. The role of DFO staffs is to provide technical support for the preparation of the OP and constitution as well. The community forest is handed over for a period of five to ten years, and can be extended based on the performance of CFUG and the condition of the forest respectively. Fundamentally, a CFUG is formed on the basis of accessibility of users and forest, traditional use rights, and willingness to appropriate management of the forests.

1.4.2 Leasehold Forest User Group

Forests are leased out to groups of poor families or the communities living below poverty line and to institution, industries or organizations for ecotourism purpose. However, very small forest land is leased out for wood based and ecotourism allied industries for the reason that of the lengthy bureaucratic process to follow and the less priority is given to these sort of activities in the forest policy (MPFS, 1988), the Forest Act and the Forest Regulation. Between the promulgation of the Leasehold Forestry Regulation in 1978 and August 2005, only 216 ha of forest were leased out to ecotourism and wood-based industries (Department of Forest, 2005). A special provision of leasehold forestry for poor families was added on an amendment in the Forest Regulation in the year 1989. Similarly, Forest

Regulation 1995, Rule 40, provided a special provision for handing over forest areas to the communities living below poverty line through a project prepared by the government, under the name of Leasehold Forestry. The Regulation also sanctioned the Leasehold Forestry programs executed by the Hills Leasehold Forestry and Forage Development Project (HLFFDP), which was officially established in 1993 with monetary (loan) assistance of International Fund for Agricultural Development (IFAD) and the Royal Netherlands Government for the Technical Assistance component implemented by the Food and Agriculture Organization (FAO). The project was located in sixteen districts of Nepal. The major objectives of the HLFFDP were to reduce poverty of rural poor households and to restore the ecological equilibrium of degraded hills through the implementation of Leasehold Forestry for poor communities. After the completion of the phase I project (HLFFDP) in the year 2003, the Phase II programme Leasehold Forestry and Livestock Program (LFLP) was launched, from the period of 2005 till 2013. The overall goal of Phase II programme is to reduce poverty in the area by allocating leasehold forestry plots to poor families to enable them to increase incomes from forest products and livestock. Specifically the objectives of the programme are to improve household forage and tree crop production; improve household productions from livestock (goats); provide access to microfinance institution and support the government's capacity to implement leasehold forestry in a gender sensitive way. This programme is implemented in 26 out of 75 districts of Nepal. Mostly, the leasehold forests are handed over to groups of poor families. By September 2011, the programme had formed 4,000 leasehold groups comprising 36,000 poor households with control over 16,168.72 hectares of degraded forests across the 26 programme districts of Nepal (LFLP, 2010).

A lease certificates is approved by the Regional Director of Forest. A leasehold forest is handed over for a maximum period of 40 years, which can be extended for another 40 years. As in leasehold forestry, the operational plan provides the basis for management and protection of forest including the utilization and distribution of forest products among the leasehold group members. The operational plan for a leasehold forest is prepared by the leasehold group, with technical assistance and facilitation from the Forestry Ranger, the Livestock Junior Technician and/or local NGOs. The Forest Regulation exempts very poor families from paying lease fees, but others have to pay from 200 rupees (NRs.) to NRs.1500, depending on the geographic region in which the forest is located. Fees are higher in the Terai/Plain areas as compared to the mountain areas. Organized bodies pay higher lease fees than industries or communities, and communities pay the lowest fees. An organization body is an institution that is officially registered by law in the government organization such as NGOs, private companies, etc. are organized bodies.

Leasehold groups are authorized to extract forest products, distribute them among the group members and sell surpluses to outsiders in accord with provisions mentioned in the leasehold forest management operational plan. Leaseholders are also responsible for protecting any surviving old and large trees (a tree defines as perennial plant with self supporting main stem or trunk of more than 30 cm diameter) on

the lease land; however these trees remain the possessions of the government. The provisions also endow that leaseholders can transfer their rights to others after they have successfully completed one-third of their lease period. However, the leaseholders cannot trade the lease land or pledge it as collateral for obtaining loans.

1.4.3 Religious Forest User Committee/Group

A patch of national forest allocated and managed by institution or a religious group for the purpose of religion and cultural activities. Religious forests are spread across 22 districts of Nepal. For religious forest, a plan has to be prepared with the help of forest technician and approved by District Forest Officer to legalize it so that religious forest can use the facility of Department of Forests allocated. The main objectives of the religious forest are to conserve the religions and traditional cultures along with development of forests and biodiversity and to manage and utilize the forests for the religious purposes as well as to meet the needs of the people involved in the activities. Data on the extent of religious forest is limited, but it is comparatively small in terms of forest area handing over for religious significance.

1.4.4 Buffer Zone User Group/Committee

Successful community based resource management initiatives like the community forestry programme and the Annapurna Conservation Area Project (ACAP) encouraged Government of Nepal to embark on a participatory approach for protected area management. In 1992, the government amended the National Parks and Wildlife Conservation Act 1973 to authorize park authorities to declare buffer zones at the peripheries of parks and reserves and allow 30 to 50 percent of the revenue generated from park fees (user fees, ecotourism services etc.) to be reinvested for local development (Khatri, 2010). In the year 1994, the buffer zone program in and around national parks and wildlife reserves was initiated on the basis of several community based conservation initiatives. Between 1996 and 2006, the Government of Nepal established buffer zones around 11 national parks and wildlife reserves covering a total area of 5076.67 square kilometers. So far, US $ 4.2 million from the Nepalese Government and even more than that through projects has been invested in buffer zone development programs that have benefited 0.7 million local people (Acharya *et al*., 2009). Subsequently, the Buffer Zone Management Regulations 1996 and the Buffer Zone Management Guidelines 1999 were framed to facilitate meaningful participation of local communities. The buffer zones comprise of forests, settlements, agricultural land and other land use types. In each parks, the buffer zone support unit implements initiatives through community mobilization. The community mobilization principles advocate the formation of community based organizations such as user groups, user committees and buffer zone management committees. As mandated by the Buffer Zone Management Regulations, a share of the revenue received from the buffer zone is to be spent for local development through the user groups.

The idea is to reduce the negative impact of local communities on protected area resources and thus help conserver biodiversity by providing alternative livelihood and income generating opportunities for

instance in vegetable farming, bee keeping, animal husbandry (poultry, goats and pigs), handicrafts, souvenir shops, hotels, restaurants and nature tourism or to compensate local communities for the losses they incur when a protected area is declared.

For each protected area, one Buffer Zone Development Council (BZDC) is formed, under which User Groups (UGs) can be/are formed at the hamlet or settlement level. Male and Female UGs are formed for each unit. Sub-committees to implement any particular project are formed under UGs. User Committees (UCs) are formed from representative members of UGs at the level of Village Development Committee (VDC). The guidelines provided breakdowns of expenditures, which stated that UGs must spend 30% of their funds on conservation, followed by 30% on community development, 20% on income generation and skill development, 10% conservation education and 10% on administration. Basically, UC have 13 members under the guidelines and at least 4 must be female. Each UG is to elect a chairperson and secretary, and the guidelines require that a woman hold one or the other post. Subcommittees may only be formed with representation of both genders. The chairperson or secretary of a subcommittee must be either female or of a disadvantaged social group.

Buffer Zone User Groups prepares the five years Buffer Zone Management Work Plan with the support of the staff deputed for buffer zone. The Warden is authorized to hand over the allocated or demarcated forest area in accordance to Buffer Zone Management Guideline, 1999, Rule 5.

In conclusion, the theory and empirical evidence indicate that in addition to focusing on the contents of the forest conservation, management and livelihood, it is also important to consider to what extent the different attributes of forest tenure regimes rights are devolved to the local level. The extent of forest tenure regimes and its effect on forest user household livelihood security can be addressed by analyzing the types and distribution of different forest tenure regimes existing in the study area, the extent of forest condition and availability of forest products received by the forest user households, the degree of use rights (access and withdrawal rights) and management rights under forest tenure regimes and its effects on social, cultural, economic and equitable benefits for the people's livelihood security. Other important issues include the nature of the local level organisations to which rights are devolved and the ability of these organisations to represent different social and economical group's interests and manage forests.

The following chapter two provides literature review related to forest tenure regimes and livelihood security framework and the relationship between livelihood security and forest tenure regimes. The description about the country's background in relation to the forest resources status, the detail information about the selected study sites for this particular study and research methodology applied to obtain and analyzing the data's and information are presented in chapter three. Forest policies, laws and state governing structure is presented in chapter four. The results of types and distribution pattern of forest tenure regime; implications of forest tenure regimes on forest condition; effects of different forest tenure regimes on livelihood security of the forest user households, analyses and the main discussion are discussed in chapter five, six and seven. Finally, the conclusions and recommendations based on the findings are presented in chapter eight.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

Without secure rights, forest users have hardly any incentives and frequently lack legal status to devote in managing and protecting their surrounding forest resources. Whilst secure property rights cannot singly guarantee sustained protection and investments in an asset, as they are often an essential conditions and factors to drive ahead. Unfortunately, ownership rights too much if not most of the world's forests are challenged with great political pressure over who owns, and who should own, the forests. This pressure has driven some governments to seek to elucidate and reallocate rights as a means to improve basic human rights and the conditions for sustainable conservation and management of the forest resources.

We cannot deny as tenure rights change sporadically as governments evolve such as actions to privatize forests in New Zealand and South Africa demonstrate, or increasing laws that restrict forest practices in the U.S. exemplify (Siry *et al*., 2009). Governments also may delegate the level of ownership from the national level to the grass roots or community level, which has been institutionalized considerably in the last decade, and may be categorized as public or private ownership. Now, on the other hand, the forest sector is undergoing trade in reforms, also we are witnessing questionably the most imperative set of policy and market shifts since the end of colonial era. These present historic opportunities for, and occasionally threats to, the social well being, livelihoods, rights, freedom and choices, and culture of many of the 1.6 billion poor people who live in and around the forests (ARD, 2008).

A number of forest rich countries are dynamically seeking to reform or supplementary reform their forest sector, looking for novel models of linking local participation and secure ownership. The shift to community tenure rights is anticipated to ensure that local people who live in and around the forests have the rights to conserve and manage those forests better, by means of community based forest management. Forestry has conventionally been the staple of the economy in Nepal, predominantly in rural areas. Land use practice is incessantly changing beneath the influence of human's actions and nature, resulting in a variety of local and global impacts (Walker *et al*., 2002; Thoms, 2008). Managing natural resources and controlling the environmental impacts coupled with land use transform requires an understanding of the underlying causes, which occurred of a multifaceted interaction of biophysical and socioeconomic factors (Serneels and Lambin, 2007; Fox, 2008; Muller, 2009; Rasul *et al*., 2009). Amongst the assorted underlying socioeconomic factors affecting land use change, land tenure has been gradually more acknowledged as a vital component in alleviating poverty, promoting social equality, developing sustainable agriculture and conserving natural resources. There is a universal consensus that secure land tenure directs to incentives that promote investment and efficient use of resources (Chileshe, 2006; Amede *et al*., 2006) whereas a lack of right of entry to land or a stumpy return per area of land, leads to the expansion of agriculture into forested areas and the degradation of natural resources. Forest management regimes in Nepal have been varying due to the efforts to advance resource regimes and benefits to

different stakeholders. The political powers of stakeholders have been shifting as are the management regimes and the tenure arrangements inherent in these regimes.

Concurrent with the need to recognize and grant tenurial rights and incentives on behalf of forest dependent people, is the need to learn more about these constituencies. A major impediment is that national laws and policies concerning the allocation of legal rights to natural resources are still largely controlled by political and economic elites who profit from and therefore perpetuate the status quo (Lynch, 2006). Lately, especially after 1990, the power of people or users has increased, and accordingly, their stakes and participation in resource management have also amplified. But a wide array of tenurial arrangements still exists in the management of forest and trees in Nepal (Acharya *et.al,* 2008).

The emergence of these changes is deeply influenced by the historical land and forest control mechanisms. Forest tenure is a broad concept that includes ownership, tenancy, and other arrangements for the use of forests. Forest tenure is the combination of legally or customarily defined forest ownership rights and arrangements for the management and use of forest resources. Deforestation and forest degradation resulting from population growth, agricultural expansion, increasing demand for wood products and rapid economic growth have triggered debate on the effectiveness of public sector forest management and of current forest resource tenure and institutional arrangements (Reeb and Romano, 2007).

Forest tenure security is imperative for the reason that it is often the foundation for the social identity, personal security, and cultural survival of indigenous peoples and ethnic minorities. Forest tenure is also essential for economic reasons. It has a strong role in determining who benefits or loses in the competition for economic goods and environmental services provided by forest ecosystems. Furthermore, security of tenure is often a prerequisite for capital investment by government or businesses, while conversely conflicts over forest lands discourage investment and undermine sound management. Tenure security also has a strong role in the structure of incentives that motivate protection or destruction of forests. Solid evidence exists, showing that devolving ownership and management authority to local communities and households fosters improved forest conditions (Hatcher, *et al*., 2009).

Security of tenure is recognized as a fundamental requirement to ensuring that resources are managed sustainably. Duration, assurance, robustness and exclusivity have been identified as the main legal elements for secure tenure arrangements. This implies that tenure holders should have assurance that they will be able to benefit from the returns on their investments without interference. Any strategy to support Sustainable Forest Management and enhance the Poverty Alleviation role of forests should prioritize the clarification of tenure rights and mitigate factors that impinge on poor people's access to forest resources (Wiersum and Ros-Tonen, 2005). Does secure ownership lead to sustainable forest management and benefits to the forest users and community? State management remains the best option in some

circumstances, especially for national parks and protection forests. In India-Meghalaya, State-owned forests are the best funded and managed forests (Dasgupta and Symlieh, 2006).

In Vietnam, State forests are probably the best of all tenure systems in terms of forest management, in areas where budget is available (Nguyen, 2006). In India-Orissa, areas under Joint Forest Management are characterized by substantial Forest Dweller control over activities and benefit sharing, and represent a successful example in terms of Sustainable Forest Management (Singh *et al*., 2006).

In Nepal, community forestry captured by elite groups, in community forest, elite groups who hold key positions in executive committees get most of the benefits and opportunities. The active participation of users, especially the poor, disadvantaged groups and women, is difficult to achieve, particularly in decision-making processes and benefit sharing. The monopolization of power by local elite groups is summed up by the term "committee forestry", which is sometime used instead of "community forestry".

2.2 FOREST TENURE SECURITY AND FOREST COMMUNITIES LIVELIHOODS

Forest tenure security for the forest dependent people or communities has drawn increasing attention in recent years from development professionals, including advocates of poverty reduction, forest conservation, environment or climate friendly human actions, as well as those speaking for human rights. A basic assumption of all such groups is that most of the forest dependent people are poor and lack access to alternative property or assets needed for earning and securing their livelihood. In this context, much of the observed forest degradation is due to the centralized state control of forests and natural resources, which keeps the forest dependent people or communities at bay. It is commonly held that, unless local communities are directly engaged in the management of forests and the natural resources there, and also unless they see adequate incentives for themselves through such engagement, the task of arresting or slowing the process of deforestation and forest degradation can be daunting one. And the solely dependent on forest resources to sustain their integrated farming systems and meet their basic forest needs for livelihoods the degradation of forests cannot be restrain. Given these statements, the issue of securing forest tenure for forest users is moving to the center stage in the overall discourse on sustainable forestry and development in Nepal. Since it is believed that the adverse impact of climate change for humanity can be minimized by conserving forests, the advocates of climate friendly human actions, forest rights activists and conservationists concur that concerted efforts are needed for ensuring forest tenure security of forest dependent communities and their livelihoods.

The degradation of forests and decline of forest area in mid hills of Nepal continued during past decades and researchers have attributed this to the inappropriate planning and ambiguities in government policies with regard to the question of tenure arrangements for national forests in the past (Wagley and Ojha, 2008). For instance, even though the Private Forest Nationalization Act 1957 was primarily aimed at

checking deforestation in the country, in practice its implementation has created insecurity with regard to the use rights of forests for the people and to secure their livelihood and therefore, resulted in accelerating deforestation.

Given the failure of the state's bureaucratic mechanisms to promote sustainable and equitable forest resource management, the search for forest management alternatives led to the framing of forest policies during the 1970s, which provided for the placement of the local people at the center stage in the task of managing national forests to sustain and secure their livelihoods in their proximity. Since then, improved and customized version of participatory models under the forest tenure regimes that give different levels of tenure security to local communities in forestry sector have been discovered in Nepal, along with timely reforms in forest policies, legislation and guidelines.

The forest tenure security in relation to forest dependent communities livelihoods in forestry sector are understood differently by different groups of people. A very common definition of tenure security holds that it is equivalent to undisputed ownerships of any property, i.e. defensible claim over certain resources by the communities. That is, it is a secure condition under which any property of resource is held by individuals or group. It is as the degree to which an individual or group feels its relationship with land or other forest resources that support them in difficulty and to meet their basic forest products needs for household consumption and integrated agriculture farming.

2.3 ECOLOGICAL CONDITIONS AND THE FORESTS ROLE IN LIVELIHOOD

Nepal's ecology and environment are diverse and fragile. While the country occupies just over 0.1% of the earth's surface, it supports a disproportionately high number of globally important wild animal and plant species, as well as a wide variety of domesticated plants and animals (IUCN, 2011). Nepal's rich biodiversity has been contributing to livelihoods of people directly by providing nutrition, health care, raw materials, and cash income, and indirectly by ensuring basic services such as water regulation, filtration and air purification. Ecological diversity has also contributed to the advancement of a variety of complex farming systems. Forests cover about 39.6% of Nepal’s geographical area and forests are one of the country’s major natural resources since they are main sources of rural livelihoods, income and employment. The forest sector generates about 9% of Nepal’s GDP (DFRS, 2008) and about 70% of the population depends directly on forests for their forest product needs (timber, fuel wood, fodder and compost), for subsistence farming, and for environmental services such as soil and water conservation, biodiversity conservation and climate change mitigation (Paudel *et al*., 2011). In general, the function of livestock in farm incomes rises with altitude variation. More or less all farm households rear some bovines for farm power and manure, but the precise number of cattle depends on right of entry to forest and common pasture land for fodder and bedding materials for livestock rearing. Forests by this means also deliver to retaining soil fertility by supplying materials for the domesticated animals that produce

farmyard manure, and which is still the chief source of fertilizer in rural Nepal, even though mineral/chemical fertilizers are becoming trendy in accessible areas. In addition, forests are also a source of food (wild fruits and other edible plants), wood, medicinal plants/herbs and other multiple goods and services for hundreds of millions of people. Forest products harbor a significant portion of globe's biodiversity, and perform a range of environmental services. In sum, forests are an inalienable part of Nepalese livelihood systems, as is acknowledged by existing policies and reflected in the legislative instruments currently in force.

2.4 CHANGES IN FOREST TENURE IN GLOBAL SCALE

A considerable transformation has taken place in forest tenure universally, by means of decentralization of management forest area under community ownership (or administration over the past 15 years) (Sunderlin *et al*., 2008). It is seen as a vigorous fashion with each sign that collective tenure will maximize yet again over the next 15 years. So far, acknowledgment of customary and indigenous peoples' rights or reservation of forest lands for community management or administration has imperative implications for the forest policies of forest wealthy nations including both developed and developing, and in relation to the nature of their forest conservation modalities and forest economies. Pooled with spectacular changes in the arrangement of the forest based industry and globalizing markets, this transform generates novel opportunities and challenges for stumpy income forest producers and community enterprises to eradicate poverty and diversify income and livelihood benchmark (Molnar *et al*., 2007). However, the challenges for policy makers and governments is to reform old-fashioned regulatory and incentive frameworks to support these industries, enterprises and be acquainted with the distinctive benefits they consider for the forestry sector along with the rural livelihood security.

2.5 CHANGES IN THE MODEL OF CONSERVATION

As of there is a mounting detection of the degree of human occurrence in the most biological diverse arenas, a huge figure of which accounts to the world's poorest people. More than 1 billion people (at least 25% of which are malnourished) who live in the 25 global biodiversity "hotspots" identified by Conservation International subsist on less than one US dollar per day (Molnar *et al*., 2005). Population growth in the world's last remaining wilderness areas is twice the world average (Cincotta and Engleman, 2000). Acknowledging this altering realism, the current Durban Accord, 2005 from the World Parks Congress sanctioned an extra conventional approach to biodiversity that blends ahead of protected areas and seeks to deal with root causes of biodiversity loss and promote biodiversity at a large scale. At the same time, the present arrangement of public protected areas continues to be thoroughly underfunded despite the fact that not including adequate of the world's priority biodiversity and natural habitats. At the present coverage and quality of protection, biologists estimate that only 50-70% of the existing species will be conserved (GFRA, 2010). Likewise, current schemes for escalating public protected areas in

several developing nations prolong to be deficient in adequate admiration of their impacts on human rights, their social, economic or political costs, or an adequate understanding of alternative preferences. On the other hand, extended lack of transparency over ownership and rights over land, principally regarding the traditional rights of local communities over land use and natural resources, has results the acceleration of conflicts in Indonesia, especially since decentralization (Simorangkir and Sardjono, 2006). All of these accomplishments vary on the accessibility of adequate funds and aptitudes. Other systems are well-organized, for the most part those based on customary settings and community initiative, which are occasionally the only systems in place. These two problems of forest tenure reform and security towards livelihoods are related and should be examined jointly to conquer better solutions. Although research over the past decade in the study area has de-emphasized and questioned simplistic links being made from security to forest tenure regimes, livelihoods remains part of the mix of acknowledged causal factors.

2.6 RESEARCH FRAMEWORK

To date there has not been a direct and comprehensive study of forest tenure regimes effects on livelihood security of the forest dependent households across a large number of Mid-Hills districts in Bagmati Zone, Central Region of Nepal, although several studies have been conducted in a modest way, in a small number of sites, in recent years. One helpful quantitative study was conducted by Acharya *et al*., (2008), who assessed the forest tenure regimes and their impacts on livelihoods in Nepal. His study highlighted the vibrant characteristics of forest tenure, forest management modalities and the tenurial pattern embody as well as their impact on livelihood, income, forest condition and equity in benefit distribution. He highlighted the importance of secure tenure for the conservation of forest resources and for encouraging investment in conservation and management, what type of tenure regime is appropriate at a particular period and place or setting is more of a comparative matter, and thus, depending upon people's involvement, tenurial modalities to be firmed. The forest conservation community increasingly recognizes that forest degradation is not due to local population's lack of interest in protecting or managing resources. Rather, it is caused by the historic centralization of control over forest resources and the resulting problems of enforcing property rights while enabling sustainable livelihoods. The problem of insecure forest tenure derives largely from the fact that governments still officially claim that vast majority of the forests. This is a legacy of imperial times when governments legally usurped land from native dwellers and delegated authority to forest agencies. In the past, (governments and their multilateral and bilateral donors) have, by and large, maintained the view of forests as national goods. Forest tenure security remains a critical issue in terms of devolving management responsibilities without legal tenure reform. Firstly, devolution of management responsibilities is considered a positive step, but it falls far short of full ownership, offering many fewer positive incentives for long term collective action. Secondly, devolution commonly results in competing ownership claims by varied stakeholders, especially where a government retains legal ownership of the local forest land. Given the increasing openness of

governments to community property and forest tenure reform, there is an unprecedented opportunity to mobilize new and greater interest in addressing the linkage between forest tenure regimes and livelihood security of the forest dependent households.

In order to assess the forest tenure regimes and its effects on forest user household's livelihood security, this study used a **livelihood security model** towards forest tenure regimes implications on the livelihood security of the forest dependent people (see Figure 1). This model/approach evolved from the food crisis in the mid 1980s and Sen's (1981) theory on entitlement referring to the set of income and resource bundles (e.g. assets, commodities) over which households can establish control and protect livelihoods. The evolution of the concepts and issues related to this theory eventually led to the development of the broader concept of household livelihood security. The diversity in the interpretation of livelihoods approach has documented by Hussein (2002) which presents the key elements of livelihood approaches of 15 agencies, ranging from bilateral and multilateral to non government organization (NGOs). Of them, CARE considers this approach as its integral part and defines Household Livelihood Security (HLS) as adequate and sustainable access to income and resources to meet basic needs (including adequate access to food, potable water, health facilities, educational opportunities, housing, and time for community participation and social integration) (Rahman and Akter, 2010). This definition is in fact derived from Chambers and Conway's (1992) definition of livelihoods and is linked to basic needs. Chambers and Conway (1992) conceptualize sustainable livelihoods in terms of capacities and activities:

> a livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for next generation: which contributes net benefits to other livelihoods at the local and global levels in the long and short term. (pp 6 – 7) "

This livelihood approach can effectively incorporate basic needs and right-based approaches, which provide an additional analytical lens (Carney *et al*., 1999). This concept of HLS embodies three fundamental attributes of livelihoods: (1) the possession of human capabilities (e.g., education, skills, health, and psychological orientation); (2) access to tangible and intangible assets; and (3) the existence of economic activities (Drinkwater and Rusinow, 1999). The interaction between these attributes defines what livelihood strategy that a household will pursue to reach its desired outcomes known as Household Livelihood Security model.

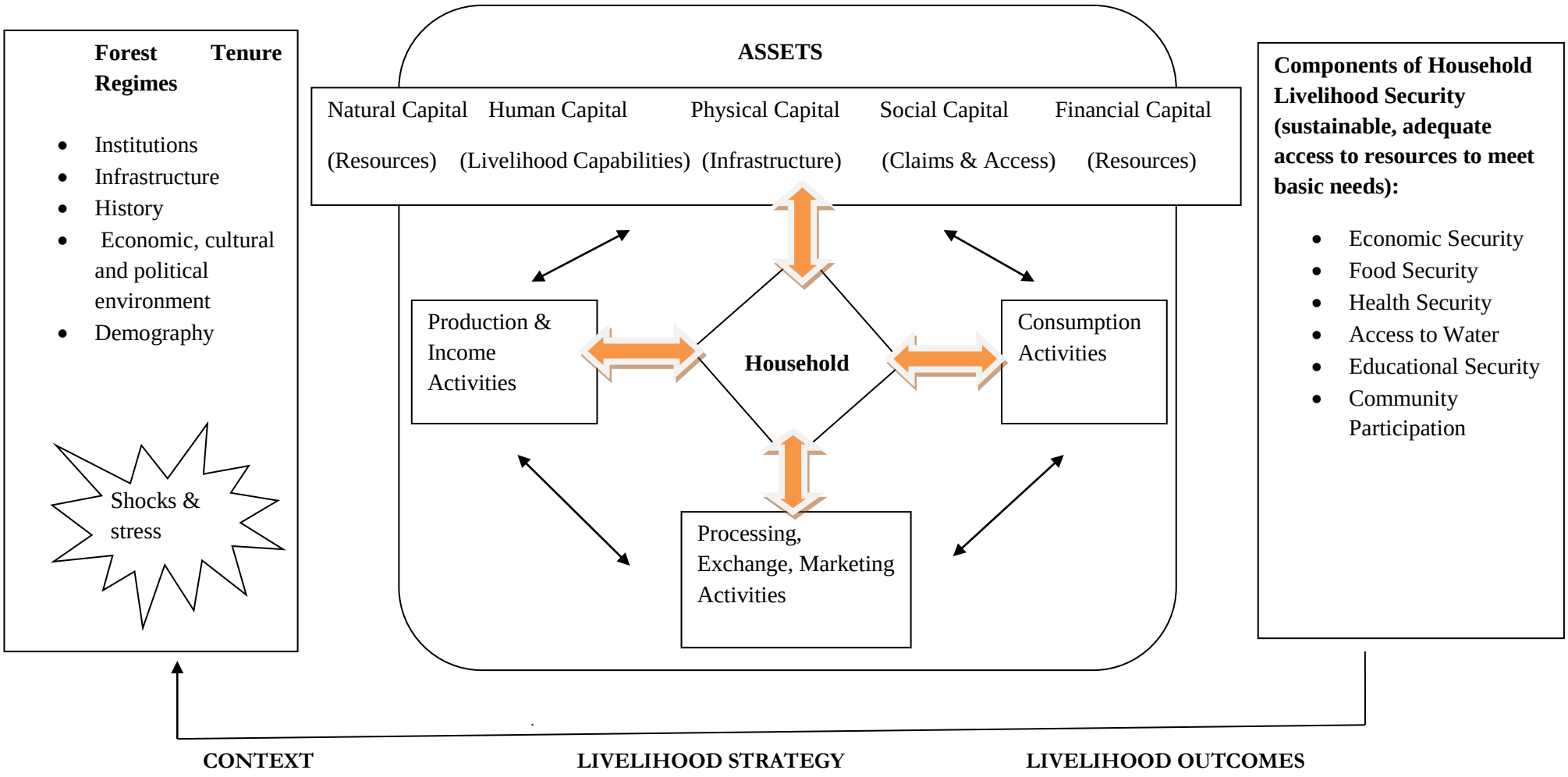

Figure 1: Livelihood Security Model & Forest Tenure Regimes Relationships (adopted & modified from Carney, 1998; Frankenberger and McCaston, 1999)

A common link made between livelihoods and forest resource management in the literature is tenure security (though that security need not reside only in legal term). In general, insecure tenure is correlated with weak forest management (McDermott and Schreckenberg, 2009), the rationale being that insecure tenure fails to provide local forest user with sufficient incentives to manage forest sustainably (Blaser, 2010). However, the two basic components to forest tenure security are the particular rights that are recognized and the matter of whether those rights and responsibilities are secure or not? Key elements of forest tenure security include: legal recognition and support of property rights, the presence of independent judicial arbitration systems, effective regulatory mechanisms and institutions, and a supporting political constituency.

Capital: Tangible or intangible assets that are held by a person or household for use or investment, wealth, in whatever form, capable of being used to produce more wealth, any source of benefit or assistance. Various forms of capital can be accumulated, exchanged, expended and lost, thereby affecting a household's level of livelihood security, quality of life, and its options for coping strategies.

Financial Capital: The financial and liquid economic resources (e.g. savings, credit, remittances, pensions etc.).

Human Capital: The skills, knowledge, capacity of labor and good health, which are important to the pursuit of livelihood strategies.

Natural Capital: The natural resource stocks from which resource flows useful for livelihoods are derived (e.g. land, water, wildlife, biodiversity, and environmental resources).

Physical Capital: Basic infrastructure (e.g. transport, shelter, energy, communications, and water systems), production equipment, and other means that enable people to pursue their livelihoods.

Social Capital: The quantity and quality of social resources (e.g. networks, memberships in groups, social relations, and access to wider institutions in society) upon which people draw in pursuit of livelihoods. The quality of the networks is determined by the level of trust and shared norms that exist between network members. People use these networks to reduce risks, access services, protect themselves from deprivation and to acquire information to lower transaction costs.

Household livelihood security is defined as adequate and sustainable access to income and resources to meet basic needs (including adequate access to food, potable water, health facilities, educational opportunities, housing, time for community participation and social integration). Livelihoods can be made up of a range of on-farm and off-farm activities which together provide a variety of procurement strategies for food and cash. Thus, each household can have several possible sources of entitlement which constitute its livelihood. These entitlements are based on the household's endowments and its position in the legal, political and social fabric of society (Drinkwater and McEwan, 1992). The risk of livelihood failure determines the level of vulnerability of a household to income, food, health and nutritional security (CARE, 2003). The greater the share of resources devoted to food and health service acquisition, the higher the vulnerability of the households to food and nutritional security. Therefore, livelihoods are

secure when households have secure ownership of, or access to, resources (both tangible and intangible) and income earning activities, including reserves and assets, to offset risks, ease shocks and meet contingencies.

Sustainable livelihood is made up of the assets, capabilities, and activities required to earn a living in the short and long-term (Farrington *et al*., 1999; Cinner *et al*., 2010). According to Chambers and Conway (1992), a livelihood is sustainable when it "can cope with and recover from the stress and shocks, maintain its capability and assets, and provide sustainable livelihood opportunities for the next generation." Unfortunately, not all households are equal in their ability to cope with stress and repeated shocks. Poor people balance competing needs for asset preservation, income generation and present and future food supplies in complex ways (Maxwell and Smith, 1992). People may go hungry up to a point to meet another objective. For example, de Waal (1989) found that during the 1984/85 famine in Darfur, the Sudan, and people chose to go hungry to preserve their assets and future livelihoods. People will tolerate a considerable degree of hunger to preserve seeds for planting, to cultivate their own fields or to avoid selling animals. Corbett (1988), in exploring the sequential ordering of behavioral responses employed in periods of stress, found that in a number of African and Asian countries preservation of assets takes priority over meeting immediate food needs until the point of destitution.

Thus, food and nutritional security are subsets of livelihood security; food needs are not necessarily more important than other basic needs or aspects of subsistence and survival within households. Food-insecure households juggle among a range of requirements, including immediate consumption and future capacity to produce.

Simply speaking, livelihood security here refers to the ability of the household to meet its basic needs (or realize its basic rights) from the different forest tenure regimes. These needs include adequate food, health, and shelter, minimal levels of income, basic education, and community participation (Frankenberger *et al*., 2002).

The asset box, shown includes resources to which household members have access (including access to information and other influences), their capabilities, and ability to claim from relatives, the state and other actors. The production and income activities are means to improving livelihoods (Drinkwater and Rusinow, 1999). Households live within socio-economic, political and cultural contexts that influence the livelihood strategies to reach the desired outcomes.

The linkage and an importance of forest tenure regimes for livelihoods in the context of Nepal, derives from the majority of the people in Nepal are small scale and marginal farmers from landless households, whose livelihoods depend on agriculture dominated by crop and livestock farming. Rural households are, therefore, at the centre of the forest, agriculture and livestock interface. Forests have been regarded as an important renewable natural resource base for fulfillment of the basic needs to local people. The importance of the contribution of forest resources to the Nepalese economy is well understood and has been emphasized throughout the nation's history.

Forests are of great significance and have a wide range of values to local people and to the country's economy. Forests have been considered as an essential means of sustaining and securing people's social, economic and cultural livelihood. Therefore, the effect of different forest tenure regimes on forest dependent people's livelihood security is crucial to examine and explores its possible opportunities and constraints existed presently.

CHAPTER 3: STUDY AREA AND METHODOLOGY

3.1 STUDY AREA

3.1.1 Country Background

Nepal, a land locked Himalayan Kingdom, situated in the central Himalaya covering a total land area of 1, 47,181 square kilometers. Out of total land area, mountains and hills occupy 35.2 % and 41.7 % respectively while the remaining 23.1 % is mostly fertile plain known as Terai. The climate varies with altitude. Nepal constitutes wide climatic variations from the sub tropical Terai to Himalayan region along with variation in topography and elevations (Upreti, 2008). Accordingly, the latest physiographic data indicates that Nepal comprises around 4.27 million ha (29% of total land) of forest, 1.56 million ha (10.6%) of shrub land and degraded land, 1.76 million ha (12%) of grassland, 3.09 million ha (21% of farmland), 0.38 million ha (2.6%) water body, 1.03 million ha (7%) of uncultivated inclusions, and 2.61 million ha (17.8%) others (CBD, 2009).

In Nepal, soil formation is correlated to physiographic zone. In the Terai area, alluvial and fine to medium textured soil, in the Siwalik, sedimentary rock and sandy textured soil, in the Midhills, coarse grained sand and gravel and medium to high textured soil and in the High mountain, shallow, stony and glacial soils are found (Dahal and Hasegawa, 2008). Soil erosion is the major cause of land degradation. In Nepal, floods and landslides are thought to contribute to an annual loss of 20-25 tons of top soil per hectare (Singh and Smith, 2009).

Even though, the share of agricultural sector has been decreasing slowly over the last decades, agriculture is still a major part of Nepalese economy. It is the largest contributor to the national economy accounting for about 31 percent of the country's GDP and provides livelihood options to about 66 percent of its population (FAO, 2011). Agriculture is basically subsistence-oriented, dominated by small farmers with less than one hectare on an average (K.C., 2008). Nevertheless, the agriculture sector is steadily transforming from subsistence towards commercialization, diversification of production technology of herbs like *chiraito, allo* and *keshar,* in addition to high value products. And yet, due to difficulties in transportation and prevailing non-competitive markets, especially in remote hilly areas, food security is still a major challenge (FAO, 2011).

According to CBS (2009), there are 3915 VDCs and 58 municipalities in the country. According to population census 2011, total population of Nepal is 26.6 million. Among the total population 48.6 % are male and 51.4% are female. Nepal has more than 100 castes/ethnic groups. About 50.15% of the population constitutes in the Terai region, 43.1% is in Hill and mountain 6.75% respectively. Population growth rate is 1.40 % per annum. The report of the Third Nepal Living Standards Survey (NLSS-III) recorded 5.7% decline in absolute poverty in between 2003-04 and 2009-10. The most comprehensive study of the changing economic dynamics of the population is witnessing poverty go down by 2 percent annually (*The Kathmandu Post, 2011*).

3.1.2 Forest Resources

Nepal's forestry is a wide-ranging land use system. Forest and tree resources provide the vital commodities such as fodder, fuel-wood, grass and timber to the people and serve as an important ecological function such as erosion control, biodiversity conservation and carbon dioxide consumption. The last National Forest Inventory (NFI) was carried out by Department of Forest Research and Survey (DFRS) using the satellite images from the year 1994-1997. According to the inventory report, forest area is about 4.27 million hectares (29%), shrub land area is 1.56 million hectares (10.6%), together with trees and shrubs covered land, total forest area is 5.83 million hectares or 39.6% (FRA, 2010). The tree species in term of the proportion of total stem volume are Sar (*Shorea Robusta*), constituting 28% of total volume; Oak (*Quercus species*), constituting 9.3%; Asna (*Terminalia alata*), constituting 7.6%; Chir pine (*Pinus roxburghii*), constituting 6.3%; *Abies spectabilis*, constituting 4.4%; *Rhododendron species*, constituting 4.2% and *Alnus nepalensis*, constituting 2.9%. The forestry sector contributes 9.45 percent from direct products and 27.55 percent including indirect services to the national gross domestic product (MoFSC, 2009). Forests provide about 40.7 percent of the total fuel consumption and about 17 percent of total fodder requirements of Nepal (FRA, 2010). While revenue from the non timber forest product (NTFP) including medicinal herbs and aromatic plants (MAP) account for 5% of the total revenue collected from the forestry sector. In certain rural areas, the NTFPs alone provide up to 50% of the family income (Upreti, 2008). In Terai plains, forest has decreased at an annual rate of 1.3% from 1978/79 to 1991. The forest area has decreased at an annual rate of 1.7% respectively from 1978/79 to 1994/95, whereas forest and shrub together have decreased at an annual rate of 0.5% (Tamang and Singh, 2009).

3.1.3 Study sites

Nepal is one of the least developed countries in the world with approximately 25.16% of the population living below the poverty line (CBS, 2010). Agriculture provides a livelihood for over 80% of the population and accounts for over 40% of its Gross National Product. Over 85% of the total population lives in rural areas of the country. Nepal is located in South Asia wedged between China on the edge of the Himalayan mountain range (North) and India on the Indo-Gangetic Plain (South). Nepal's Northern boundary (1,236 kilometers in length) is shared with China, and the other border (1,690 kilometers in length) is shared with India. It is a country of large geographic diversity. There are three main geographical regions including the Plain (*Terai*) region, the Hill region and the Mountain region. Mt. Everest, the highest mountain in the world, is located in the northern area of the country. Total Area of the country is 147,181 square kilometers out of which the forest including shrub land covers about 58,280 square kilometers. Capital city of the country is Kathmandu. Nepal is divided into 5 development region, 14 zones and 75 districts. Each district is headed by a permanent chief district officer responsible for maintaining law and order and coordinating the work of field agencies of the various government ministries. Forests in this region are not of commercial value due to the lack of easy accessibility. At the same time, the significant dependence of local communities on forest resources for subsistence farming

and firewood (among other uses) provides substantial incentive for households and to take action collectively (Cooper, 2010). This study was conducted in the eight case studies districts (Kathmandu, Lalitpur, Bhaktapur, Kavre, Sindhupalchowk, Rasuwa, Nuwakot & Dhading), of the Bagmati Zone, Central Region of Nepal as shown in Figure 2. These sites also met the criteria of having management regimes at least 25 years old and covering all types of forest management systems. It has comparable areas of different types of forest regimes, which are adequate for analysis. Additionally, in these sites the full implementation of community forestry/community based management system started in the early 1990s. This is the rationale why this case studies districts was chosen as of the 25 year period as the important timeframe for any change in forest condition/coverage and to explore the impact of forest tenure regimes towards the livelihood security of the forest dependent users.

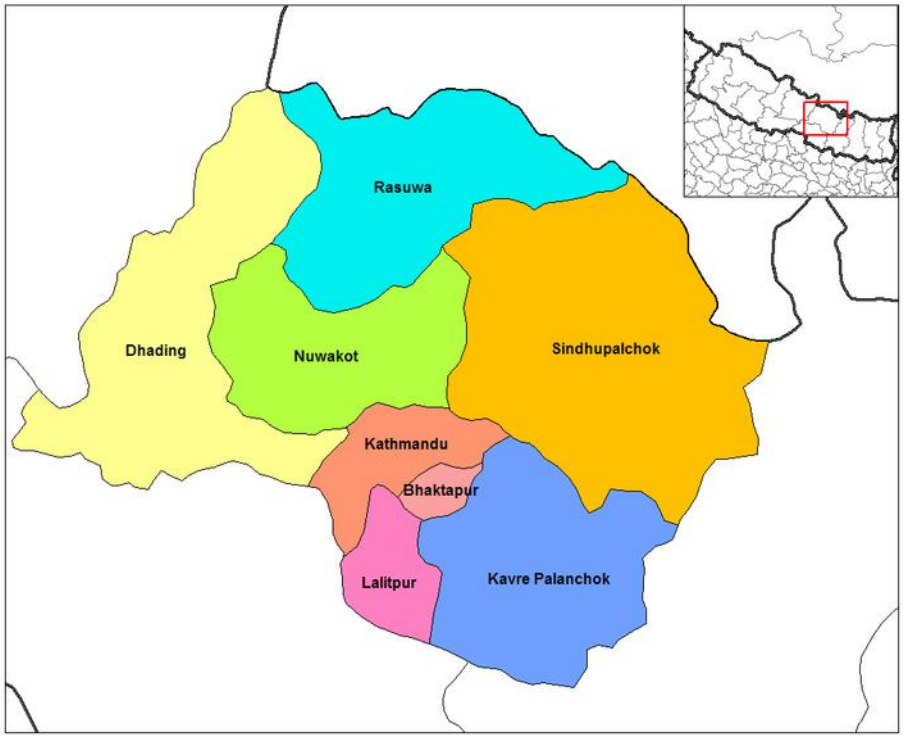

Figure 2: Map of Eight Case Studies Districts, Bagmati Zone, Central Region of Nepal

3.1.3.1 Sindhupalchok District

Sindhupalchok district lies in Bagmati Zone of Central Region of Nepal. Sindhupalchok just 85km away to the north-east of Kathmandu valley and situating in the lap of Jugal Himalayan Range, Sindhupalchok district is one of the biggest districts among eight districts of Bagmati Zone of Central Development Region. The major attractions of the region from the tourism point of view are Helambu, Panchpokhari, Tatopani, Gaurati Bhimeswor Mandir, Bhairavkunda, Dugunagadi, Jugal Himal, Gangjala Pass, Bhemtang, Palchok Bhagawati, Patal Cave, Tripurasundari Temple, Bank of Sunkoshi and Indrawati Rivers, Tamche and Ghunde and Paty Pass. Administratively, the district is bounded by Dolakha & Ramechaap on the east, Nuwakot & Rasuwa on the west, Rasuwa & Tibet, China on the north and

Kathmandu & Kavrepalanchok on the south. Politically the district is divided into 79 Village Development Committee (VDC[1]), 13 Illakas and 3 Election Areas. The headquarters of the district is Chautara. The total area of the district is 2,54,200 hectare out of which agriculture land cover about 29%, forest covers 30.51%, grazing/pasture land covers about 4.65%, mountain covers 1.85%, shrub land covers about 12.69% and others (sandy soil/land, landslides area, water bodies, barren land etc.) cover approximately 21.3%. The district is extended from sub tropical to alpine zone, the altitudinal variation ranges from 850 m to 6850 m above sea level. According to National Population Census (2008), the total number of household in the district 60,452 and total population is 305,857. The population increment is 1.59% and the average family size is 5.06.

According to the District Forest Office (DFO) record, the total number of community forest user groups in the district is 484 with total area 28,280.56 hectares. Total number of household benefited from CF is 54674. This district consist one religious forest (0.17 hectare) name as Mizar Tithing, six private forests (4.52 hectare) registered in district forest office, 366 Leasehold Forest User Groups (LFUGs) with total area 1,676.89 hectares. Total number of households benefiting from Leasehold Forest is 3,184 and the remaining forest areas are managed as National Forest.

Main castes found in the district are Tamang, Chettri, Newar, Brahmin, Sherpa, Kami, Mazzi, Magar, Gurung, Damai, Thami, Sarki etc.

3.1.3.2 Rasuwa district

Rasuwa district lies in Bagmati Zone of Central Region of Nepal. The district of Rasuwa is also known as **The Land of Tamangs**, as nearly 80% of people from this region are from these castes. Tamang is a name of a caste under which there are many different sub-castes. The Southern part of the district contains more than 70% of the population. Administratively, the district is surrounded by Sindhupalchowk on the east, Dhading on the west, Tibet on the north and Nuwakot on the south. Politically the district is divided into 18 VDCs, 162 Wards, 9 Illakas and1 Election Area. The head-quarter of the district is Dhunche. The total area of the district is 151087 hectares out of which agriculture land & grasses cover about 6.3%, forest covers 31.4%, snow covers 16.6%, shrub land covers about 10.4%, barren land 5.9% and others (landslides area, water bodies etc.) cover approximately 29.3%. The district is extended from sub tropical to alpine zone, the altitudinal variation ranges from 614 m to 7,227 m above sea level. According to National Population Census (2008), the total number of household in the district 8,696 and total population is 44,731. The population increment is 1.97% and the average family size is 5.14.

According to the District Forest Office (DFO) record, the total number of community forest user groups in the district is 76 with total area 3,078.79 hectares. Total number of household benefited from CF is 5,395. In this district total 21 private forests (12.53 hectares) registered in district forest office, 1 Langtang National Park covers an area of 171 hectare and details are given below. The remaining forest areas are managed as National Forest by the Government.

[1] A VDC is smallest political unit of the country, which consists of nine wards. There are 3914 VDCs in Nepal.

Main castes found in the district are Brahmin, Tamang, Chettri, Newar, Magar, Kami, Damai, Gurung, Sherpa, Sunar etc.

Langtang National Park (LNP)

It was established in 1976 to conserve the unique flora and fauna of the region. It is the nearest national park of the capital Kathmandu in the Central Himalayan Region. The 1,710 sq. km. of the park extends over parts of Nuwakot, Rasuwa, and Sindhupalchok districts in the southern mountainous terrain of the Nepal-China (Tibet) border. The main purpose of the Langtang National park is to preserve the natural environment, and protecting the endangered wild lives at the same time allowing local people and tourists to follow traditional land use practices that are compatible with resource protection. In 1998 an areas of 420 km2 in and around the park declare as a buffer zone. The park represents a meeting point between indo-Malayan and Pale arctic realms, and holds a rich biodiversity. Buffer zone management is a joint venture between the park office and the local communities. Local communities have a decision-making role in the management of such areas. Additionally, the local communities or the Buffer zone receive 30 to 50 % of the park revenue for the better management of natural resources to ensure a sustainable supply of resources and community development.

September through May offers a variety of natural splendors, from lush temperate river valleys with screeching langur to spectacular old growth forest and glacial-craved cliffs rimmed by snow-covered peaks. The weather is also relatively dry except January-February when one may come across snow. Autumn is the best time to visit the Park. By April bursts of red, pink, and while rhododendrons stretch into towering canopies of fir and oak forests. Advent of warm weather makes the Yak and Chauri herds ascend to higher elevation, making occasional camps in the pasturelands, to follow years of tradition. From June to august, skies are heavy with monsoon rains. During August, a lively festival at Gosaikunda Lake attracts thousands of Hindu pilgrims and September witnesses' spectacular display of wild flowers, while livestock herds, once again, return to lower pastures

Sub-tropical vegetation characterized by Sal (*Shorea robusta*) forest in the southern section of the park is gradually taken over by hill forest (2000-2600m) consisting of Chirpine, Rhododendron, and Nepalese alder. The temperate zone (2600-3000m) is covered mainly by oak forest fading to old growth forest of silver fir, hemlock, and larch in the lower sub-alpine zone (3000-3600m). The Nepalese larch (*Larix nepalensis*), the only deciduous conifer in the region, is found in this park and few places elsewhere. Throughout these zones different species of Rhododendron such as *R. arboretum*, *R. barbatum*, *R. campanulatum*, and *R. lepidotum* (scrubs) to name a few, form a colorful under story. Tree species such as birch, silver fir, *Sorbus microphyla* and twisted *Rhododendron campanulatum* are found near the tree line. It is here at 4000m Juniper and Rhododendron shrubs (*R. anthopogon*) slowly dissolve into expansive alpine grassland meadows. Langtang's expansive high meadows provide summer habitat for numerous ungulate species such as musk deer and Himalayan tahr. The park is also well known for its populations of red panda, Himalayan black bear, snow leopard, wild dog, ghoral, serow and more than 250 species of birds.

3.1.3.3 Kathmandu

Kathmandu district is the capital and largest city of Nepal. It is situated in a valley in the heart of Nepal. The entire terrain of Kathmandu is like a steep incline, descending from the Himalayan heights to the Terai flatland within a short distance. Kathmandu is truly the heart of the Himalayas; it has a wonderful history that goes back to about two hundred years and a very refined culture, the richest of all in Asia. Kathmandu attracts many tourists all year round, and it is not only just a tourist destination it is also an important business hub and a sacred place for pilgrims. It is said that Kathmandu has been found by king Gun Kamdev in AD 723. Administratively, the district is bounded by Bhaktapur & Kavre on the east, Dhading & Nuwakot on the west, Nuwakot & Sindhupalchowk on the north and Lalitpur & Makwanpur on the south. Politically the district is divided into 1 Metropolitan, 1 Municipality, 57 Village Development Committee (VDCs), 15 Illakas and 7 Election Areas. The total area of the district is 41,202 hectare out of which agriculture land covers 19,205 hectares. The forest area cover about 14,118 hectares out of which tree species covers 68%, shrubs/herbs cover about 29% and pasture land covers 3%. The district is extended from sub tropical to alpine zone, the altitudinal variation ranges from 1,372 m to 8,962 m above sea level. According to National Population Census (2008), the total population in the district is 10, 81,845.

According to the District Forest Office (DFO) record, the total number of community forest user groups in the district is 163 with total area 4,864.65 hectares. Total number of household benefited from CF is 18,829. This district have 6 religious forests (39.45 hectares) namely as Shiva Panchwan, Birat Narayan, Mayahepi, Oaso Tapoban, Gorkhnath Gumba and Soyambu. Total number of three Leasehold Forests (LF) covers an area about 39.45 hectares. The remaining forest areas are managed as National Forest. However the number of private forest in the district is not registered in the District Forest Office (DFO), Hattisar, and Kathmandu. Under the District Forest Office, there are 8 Forest Range Posts in different area within the district.

Main castes found in the district are Newar (29.60%), Brahmin (20.51%), Chettri (18.76%), Tamang (1.63%), Magar (1.55%). Main religions in the district are Hindu (75.49%), Buddist (21.66%), Muslim (1.11%), Christian (0.79%), Kirat (0.70%) and Others (0.24%).

Shivapuri Nagarjun National Park (SNNP)

SNNP is situated in the North of Kathmandu Valley. It is only about 12 km from Kathmandu city center. Conservation started in 1976 with the establishment of Watershed Conservation Area. And, in 1984, the area was managed as Watershed and Wildlife Conservation Area. In 2002 the area was gazetted as a National Park and in 2009 Nargarjun Forest Area (15 square kilometers) was included in the park. The total area of the park is 159 square kilometers.

The park lies in the transition zone between Subtropical to Temperate regions. The park consists of mainly four types of forests: Lower Mixed Hardwood Forests, Chirpine Forests, Upper Mixed Hardwood Forests, and Oak Forests. The major floral diversity includes about 2,122 species of flowering plants, 35 species of non timber forest products, 129 species of mushroom including some 50 species of endemic plants. Some common tree species are *Schima wallichii, Castonopsis spp., Alnus nepalensis, Pinus*

roxburghii, *Quercus semcarpifolia*, *Quercus leucotrico phora*, *Rhodendron spp*., *Lithocarpus spp*. Recorded faunal diversity in the park includes Himalayan black bear, Common leopard, Clouded leopard, Rhesus monkey, Common langur, Yellow throated marten, Wild boar, Indian crested porcupine, Barking deer, as well as about 311 species of butterflies.

The park drains to two major basins of Nepal: Gandaki basin and Koshi basin. Everyday about 30 million liters of water is tapped from major rivers and their tributaries of the park for local irrigation, grindings mills, and holy baths.

3.1.3.4 Lalitpur district,

Lalitpur district lies in Bagmati Zone of Central Region of Nepal. Administratively, the district is bounded by Kavrepalanchowk on the east, Kathmandu on the west, Bhaktapur & Kathmandu on the north and Makwanpur the south. Politically the district is divided into 1 Sub- Metropolitan, 41 Village Development Committee (VDCs), 13 Illakas and 3 Election Areas. The headquarters of the district is Patan. The total area of the district is 39,284 hectare out of which agriculture land cover about 39.73%, forest covers 39.62%, shrub land covers about 20.65%. The district is extended from sub tropical to alpine zone, the altitudinal variation ranges from 1,341 m to 2,831 m above sea level. According to National Population Census (2008), the total number of household in the district 68,922 and total population is 3, 37,785. The population increment is 1.46% and the average family size is 4.90.

According to the District Forest Office (DFO) record, there are 2 Illaka (sub-district) Forest Offices and 12 Range Posts. The total number of community forest user groups in the district is 200 with total area 10,935 hectares. Total number of household benefited from CF is 15,640. This district have 3 religious forest (22 hectares) name as Kirat, Bajrabarahi & Shiva Ban Batika, 14 private forests (21.26 hectares) registered in district forest office, 2 Leasehold Forests namely Nepal Gliding Private Limited & Lamatar Resort with total area 12 hectares. The remaining forest area covers about 8,746 hectares are managed as National Forest.

Main castes found in the district are Newar (40.32%), Chettri (19.35%), Brahmin (11.92%), Tamang (11.86%), Magar (3.50%). Main religions in the district are Hindu (70.43%), Buddist (26.25%), Christian (1.67%), Kirat (1.07%), Muslim (0.31%), and Others (0.28%).

Royal Botanical Garden, Godawari (Protected Forest), Lalitpur District

A botanical garden differs fundamentally from any other kind of garden in that it is an institution that carries out scientific research. Therefore, the plant species that are set in a botanical garden are subject to profound biological studies and this garden falls under the Protected Forest. At present, the garden is spread over an area of 82 hectare of varying topography and exposure. Of this, 24 hectare has been developed into various units of gardens. The distance from Kathmandu city to Godawari is 16km, which can be covered in 25-30 minutes by car. The Godawari Phuchowki area is a popular destination for bird and butterfly enthusiasts. In this botanical garden 29 species of birds, 23 species of mammals and 41 species of butterflies are found in the area.

The Garden is surrounded by natural evergreen forests. The temperatures ranges from 20 degree Celsius to maximum of 30 degree Celsius during summer, in winter the temperature sometimes drops to -5 degree Celsius with the maximum ranging from 14 to 20 degree Celsius. During the monsoon the weather is most unpredictable and one can experience a short downpour at any moment. The soil is typically reddish and rocky in places. This garden is the first botanical garden of Nepal established with the aim of serving as a centre for botanical studies, a research centre for *ex-situ* conservation of native flora, and a place of botanical education and aesthetic floral displays for the general public. The is a delightful place, pleasantly landscaped with lawns and flowerbeds, borders and terraces, arboretums and pergolas, picnic-shed-houses and specialized sections like the Orchid House, Fern Garden, Cactus House, Tropical House, Bulbous Garden and a number of glass houses. Some of the common trees in the garden are *Alnus nepalensis, Prunus cerasoides, Schima wallichii, Castanopsis indica, Castanopsis tribuloides,* and *Ilex excelsa.* Common shrubs include *Berberis aristata, Berberis asiatica, Mahonia napaulensis, Pyracantha crenulata, Rosa moschata* and *Rubus ellipticus.*

The Garden also cultivates plants that are threatened in the wild and provides information that might assist in the re-introduction of these plants in their natural habitat. The Garden is member of the Botanical Garden Conservation International (BGCI), an international network. The principal objectives of this Garden are: a) to develop and maintain a diverse living collection of plants b) to conserve plant diversity through collection, propagation and exchange c) to support teaching and research in plant biology d) to promote understanding and appreciation of plants and the natural environment e) to promote the development of gardens and landscape gardening in Nepal and f) to share and exchange knowledge and experience with other botanical institutions.

3.1.3.5 Nuwakot district

Nuwakot district lies in Bagmati Zone of Central Region of Nepal. The district contains places of historical significance such as Nuwakot Palace located in the village of Nuwakot and Devighat located at the confluence of the Tadi and Trishuli Rivers. Administratively, the district is bounded by Sindhupalchowk on the east, Dhading on the west, Rasuwa on the north and Kathmandu the south. Politically the district is divided into 1 Municipality, 61 Village Development Committee (VDCs), 560 Wards, 13 Illakas and 3 Election Areas. The headquarters of the district is Bidur. The total area of the district is 1,121,00 hectare out of which agriculture land cover about 53.8%, forest covers 32.1% , grass/pasture land covers about 1.1% and others covers about 13.0%. The district is extended from sub tropical to alpine zone, the altitudinal variation ranges from 457 m to 5,144 m above sea level. According to National Population Census (2008), the total number of household in the district 50,810 and total population is 2, 88,478. The population increment is 1.59% and the average family size is 4.43.

According to the District Forest Office (DFO) record, there are 1 Illaka Forest Offices and 8 Range Posts. The total number of community forest user groups in the district is 321 with total area 22, 566.66 hectares. Total number of household benefited from CF is 34,461. This district have 7 private forests (21.56 hectares) registered in district forest office. The remaining forest areas are managed as National Forest.

Main castes found in the district are Tamang (38.52%), Brahmin (20.72%), Chettri (13.43%), Newar (7.60%) and Rai (3.32). Main religions in the district are Hindu (61.52%), Buddist (37.92%) and others (0.76%).

3.1.3.6 Dhading district

Dhading district lies in Bagmati Zone of Central Region of Nepal. Administratively, the district is bounded by Kathmandu, Nuwakot & Rasuwa on the east, Gorkha on the west, Tibet on the north and Makwanpur the south. Politically the district is divided into50 Village Development Committee (VDCs) and 3 Election Areas. The headquarters of the district is Dhading Besi. The total area of the district is 1,92,487 hectare out of which agriculture land cover about 38.11%, forest covers 48.23% , grass/pasture land covers about 8.28% and others covers about 5.38%. The district is extended from sub tropical to alpine zone, the altitudinal variation ranges from 300 m to 7,110 m above sea level. According to National Population Census (2008), the total number of household in the district 64,819and total population is 3, 38,658. The population increment is 1.35% and the average family size is 5.39.

According to the District Forest Office (DFO) record, there are 1 Illaka Forest Offices and 8 Range Posts. The total number of community forest user groups in the district is 612 with total area 25,489 hectares. Total number of household benefited from CF is 63,587. The total number of LFUGs in this district is 401, covering an area of 1,536.01 hectares. Total number of household benefited from LF is 3,405. This district have 20 private forests (13.3 hectares) registered in district forest office. The remaining forest areas are managed as National Forest.

Main castes found in the district are Tamang (21.48%), Brahmin (16.96%), Chettri (15.52%), Newar (9.58%) and Magar (8.47%). Main religions in the district are Hindu (73.89%), Buddist (22.48%), and Christian (3.38%), Muslim (0.18%), Kirat (0.01%) and others (0.06%).

3.1.3.7 Bhaktapur district

Bhaktapur district lies in Bagmati Zone of Central Region of Nepal. Based on the size, this district is the smallest district in Nepal. This district is also famous for tourism and historical places such as Jyale Durbar, Madhyakalin Durbar, Chongunarayan Temple, Pachtalle Temple etc. Administratively, the district is bounded by Kavrepalanchowk on the east, Kathmandu & Lalitpur on the west, Kathmandu & Kavrepalanchowk on the north and Lalitpur on the south. Politically the district is divided into 2 Municipalities, 16 Village Development Committee (VDCs), 11 Illakas and 2 Election Areas. The total area of the district is 11,900 hectare out of which agriculture land cover about 80.39%, forest covers 16.64%, shrubs land covers about 1.27% and others covers about 2.26%. The district is extended from sub tropical to alpine zone, the altitudinal variation ranges from 1,331 m to 2,200 m above sea level. According to National Population Census (2008), the total number of household in the district 41,253 and total population is 2, 25,461. The population increment is 2.71% and the average family size is 5.47.

According to the District Forest Office (DFO) record, there are 4 Range Posts. The total number of community forest user groups in the district is 59 with total area 18, 36.85 hectares. Total number of household benefited from CF is 9,267. The total number of LF in this district is 1(Hotel Mount Monastry Private Limited), covering an area of 24 hectares. This district have 2 private forests (2.5 hectares)

registered in district forest office and 1 religious forest (Bindabasini) covers about 1 hectare. The remaining forest areas are managed as National Forest.

Main castes found in the district are Newar (89.86%), Chettri (18.3%), Brahmin (10.20%) and Tamang (6.53%). Main religions in the district are Hindu (89.86%), Buddist (9.40) and Others (0.74%).

3.1.3.8 Kavrepalanchowk district

Kavrepalanchowk district lies in Bagmati Zone of Central Region of Nepal. Administratively, the district is bounded by Ramechaap & Dolakha on the east, Kathamandu, Lalitpur & Bhaktapur on the west, Sindhupalchowk on the north and Sindhuli & Makwanpur district on the south. Politically the district is divided into 3 Municipalities, 87 Village Development Committee (VDCs), 15 Illakas and 3 Election Areas. The headquarters of the district is Dhulikhel. The total area of the district is 1,40,486 hectare out of which agriculture land cover about 43.8%, forest covers 28.2% , shrubs land covers 24.3%, grass/pasture land covers about 2.7% and others covers about 1%. The district is extended from sub tropical to cool temperate zone, the altitudinal variation ranges from 275 m to 3018 m above sea level. According to National Population Census (2008), the total number of household in the district 72,055 and total population is 3, 85,672. The population increment is 1.72% and the average family size is 5.3.

According to the District Forest Office (DFO) record, there are 1 Illaka Forest Offices and 8 Range Posts. The total number of community forest user groups in the district is 514 with total area 23,060.03 hectares. Total number of household benefited from CF is 41,946. The total number of LFUGs in this district is 310, covering an area of 1,692.16 hectares. Total number of household benefited from LF is 2,697. This district have 3 private forests (1.18 hectares) registered in district forest office. The remaining forest area 28,279.37 hectares are managed as National Forest.

Main castes found in the district are Tamang (34.27%), Brahmin (22.65%), Chettri (13.07%), Newar (14.21%), Magar (4.63%) and others (11.17%). Main religions in the district are Hindu (65%), Buddist (30.5%) and Others (4.5%).

Table 1: Description of Selected Community & Leasehold Forest User Groups

Name of CFUGs/ LFUGs	Address	Total Households (HHs)	Sampled HHs	Forest Area (ha)	Date of Hand Over	# of Executive Committee Member	Major Species
Baisipati Mahila	Saibu- 4, Lalitpur	40	8	1.55	1999	9	*Pinus wallichiana*(Gobre sallaa), *Alnus nepalensis*(Utis)
Naudhara	Godawari-5, Lalitpur	105	18	174	1995	11	*Castanopsis hystrix*(Paatle Katus), *Schima wallichii*(Chilaune), *Quercus incana* (Baanjh), *Myrica esculenta*(Kaaphal), *Rhododendron spp.*(Guras), *Machilus odoratissima*(Kaaulo), *Myrsina semiserrata*(Kaali kaath), *Myrsina capitellate*(Seti kaath)
TOTAL		145	26	175.55			
Champadevi	Kritipur-8, Kathmandu	190	25	136.2	1994	13	*Castanopsis hystrix*(Paatle Katus), *Schima wallichii*(Chilaune), *Quercus incana* (Baanjh), *Myrica esculenta*(Kaaphal), *Rhododendron spp.*(Guras), *Machilus odoratissima*(Kaaulo), *Myrsina semiserrata*(Kaali kaath), *Myrsina capitellate*(Seti kaath)
Chunpaharo	Kritipur-8, Kathmandu	107	15	88.25	1993	9	*Pinus wallichiana* (Gobre sallaa), *Alnus nepalensis* (Utis) , *Castanopsis hystrix* (Paatle Katus), *Schima wallichii*(Chilaune)
TOTAL		297	40	224.45			
Chameli	Dadhikot-2, Bhaktapur	58	10	11.5	1994	9	*Myrica esculenta* (Kaaphal), *Rhododendron spp.*(Guras)
Patletar	Dadhikot-2, Bhaktapur	47	9	13.16	1994	11	*Myrica esculenta*(Kaaphal), *Rhododendron spp.*(Guras), *Alnus nepalensis* (Utis), *Schima wallichii* (Chilaune)

TOTAL		105	19	24.66			
Name of CFUGs/ LFUGs	**Address**	**Households (HHs)**	**Sampled HHs**	**Forest Area (ha)**	**Hand Over Date (English)**	**# of Executive Committee Member**	**Major Species**
Joong-gang Dhanda	Chilime-1, Rasuwa	32	10	28.64	1994	13	*Pinus wallichiana* (Gobre sallaa)
Sayaubari Buffer Zone CF	Laharepauwa-8, Rasuwa	115	10	141.8	1999	11	*Pinus wallichiana* (Gobre sallaa)
TOTAL		147	20	170.44			
Ganeshthan Mahila	Bidur-5, Maazitar, Nuwakot	31	6	3.1	1999	9	*Pinus wallichiana*(Gobre sallaa), *Shorea robusta* (Sal), *Schima wallichii*(Chilaune)
Maazigaon	Bidur-8, Maazigaon, Nuwakot	120	22	87.75	1995	11	*Pinus wallichiana* (Gobre sallaa), *Shorea robusta* (Sal), *Schima wallichii* (Chilaune), *Ficus retusa* (Jaamun), *Syzygium cerasoides* (Kyaamunaa), *Alnus nepalensis* (Utis), *Myrica esulenta*(Kaaphal)
TOTAL		151	28	90.85			
Hathi Danda	Phalametar-9, Kavre	36	6	171	1996	9	*Castanopsis hystrix* (Paatle Katus), *Schima wallichii* (Chilaune), *Myrica esulenta* (Kaaphal), *Rhododendron spp.* (Guras), *Machilus odoratissima* (Kaaulo), *Quercus incana* (Baanjh), *Myrsina semiserrata* (Kaali kaath), *Myrsina capitellate* (Seti kaath)
Chaurkuna Bhirpani	Salle-4,5,6, Kavre	104	20	46.93	1995	11	
Gourung Danda LFUGs	Rayale-6, Kavre	10	10	5.75	1994	10	*Castanopsis indica* (Katus), *Schima wallichii* (Chilaune), *Pinus roxburghii* (Khote Sallaa)
Rupse Pokhari	Methinkot-10,	6	6	5.57	1998	6	

LFUGs	Kavre						
TOTAL		156	42	229.25			
Name of CFUGs/ LFUGs	**Address**	**Households (HHs)**	**Sampled HHs**	**Forest Area (ha)**	**Hand Over Date (English)**	**# of Executive Committee Member**	**Major Species**
Nepane Ban	Sanosirubari- 5, Sindhupalchok	88	15	86.31	1999	7	*Schima wallichii* (Chilaune), *Castanopsis hystrix* (Paatle Katus), *Rhododendron spp.* (Guras), *Pinus wallichiana*(Gobre Sallaa)
Laxmi Mahila	Sanosirubari- 6, Sindhupalchok	46	8	9.03	1992	9	
Kalimati Harre LFUGs	Thulosirubari-6, Sindhupalchok	7	7	1	1995	7	*Schima wallichii* (Chilaune), *Pinus wallichiana*(Gobre Sallaa), *Alnus nepalensis* (Utis), *Shorea robusta* (Sal)
Lekhpadera LFUGs	Thulosirubari-6, Sindhupalchok	5	5	1	1994	5	
TOTAL		146	35	97.34			
Bageshowari	Pinda-3, Dhading	116	24	115	1998	11	*Castanopsis indica* (Katus), *Schima wallichii* (Chilaune), *Shorea robusta* (Sal)
Amaltari	Pinda-3, Dhading	40	10	34.49	1999	13	
Belabhot LFUGs	Jiwanpur-8, Dhading	14	14	6.08	1996	14	n/a (Degraded land)
Chandipakha LFUGs	Jiwanpur-7/8, Dhading	8	8	1.8	1998	8	n/a (Degraded land)
TOTAL		178	56	157.37			

Baisipati Mahila (women) Community Forest User Groups (CFUGs) is located in ward # 4 of Saibu Village Development Committee (VDC), Lalitpur district. Total 9 executive members are in Community Forest User Committe (CFUC) comprising majority of Chettri ethnic group. It consists total 49 household members residing around the forest area. The community forest (CF) area is only 1.55 hectare and the major species are *Pinus wallichiana* and *Alnus nepalensis*. The CF is handed over to the users in 1999 by District Forest Office (DFO) Lalitpur. Naudhara CFUGs is located in ward # 5 of Godawari VDC, Lalitpur district. Total 11 executive members are in the CFUC comprising of Brahmin and Chettri ethnic group. Total 126 households are the general members of CFUG. Total CF area is 174 hactare with the major species of *Castanopsis hystrix, Schima wallichii, Quercus incana, Myrica esculenta, Rhododendron spp., Machilus odoratissima, Myrsina semiserrata, Myrsina capitellate.* The CF was handed over to the user groups in 1995 by DFO Lalitpur.

Ganeshthan Mahila (women) CFUGs is situated in ward # 5 of Bidur VDC, Mazzitar, Nuwakot district. Total 9 executive members are in CFUC comprising with the Brahmin and Chettri ethnic group. The total 31 households are the members of the CFUG. The CF area is 3.1 hectare and composed of major species *Pinus wallichiana, Shorea robusta, Schima wallichii* etc. The CF is handed over to the users in 1999 by DFO Nuwakot. Mazzigoan CFUGs is residing in ward # 8 of Bidur VDC, Mazzigoan, Nuwakot district. Total of 11 executive members in the CFUC, consisting of Newar, Chettri, Tamang and Brahmin ethnic group. Total of 146 households are the general members of CFUG. Total area of CF is 87.75 hectare with major species of *Pinus wallichiana, Shorea robusta, Schima wallichii, Ficus retusa, Syzygium cerasoides, Alnus nepalensis, Myrica esulenta.* The CF was handed over to the users in 1995 by DFO Nuwakot.

Champadevi CFUGs is situated in ward # 8 of Kritipur Municipality, Kathmandu district. Total 13 executive members are in CFUC comprising with the Chettri, Newar and Brahmin ethnic group. The total 231 households are the members of the CFUG. The CF area is 136.2 hectare and composed of major species *Castanopsis hystrix, Schima wallichii, Quercus incana, Myrica esculenta, Rhododendron spp., Machilus odoratissima, Myrsina semiserrata, Myrsina capitellate* etc. The CF is handed over to the users in 1994 by DFO Kathmandu. Chunpaharo CFUGs is residing in ward # 8 of Kritipur Municipality, Kathmandu district. Total of 9 executive members in the CFUC, consists of Chettri andTamang ethnic group. Total of 132 households are the general members of CFUG. Total area of CF is 88.25 hectare with major species of *Pinus wallichiana, Schima wallichii, Alnus nepalensis, Castanopsis hystrix.* The CF was handed over to the users in 1993 by DFO Kathmandu.

Chameli CFUGs is situated in ward # 2 of Dadhikot VDC, Bhaktapur district. Total 9 executive members are in CFUC comprising with the Brahmin and Chettri ethnic group. The total 68 households are the members of the CFUG. The CF area is 11.5 hectare and composed of major species *Myrica esculenta, Rhododendron spp.*etc. The CF is handed over to the users in 1994 by DFO Bhaktapur. Patletar CFUGs is residing in ward # 2 of Dadhikot VDC, Bhaktapur district. Total of 11 executive members in the CFUC, consists of Brahmin ethnic group. Total of 57 households are the general members of CFUG. Total area of CF is 13.16 hectare with major species of *Myrica esculenta, Rhododendron spp., Alnus nepalensis, Schima wallichii.* The CF was handed over to the users in 1994 by DFO Bhaktapur.

Joong-gang Dhanda Community Forest User Groups (CFUGs) is located in ward # 1 of Chilime VDC, Rasuwa district. Total 13 executive members are in Community Forest User Committe (CFUC) comprising majority of Tamang ethnic group. It consist total 32 household members residing around the forest area. The community forest (CF) area is 28.64 hectare and the major species are *Pinus wallichiana*. The CF is handed over to the users in 1994 by DFO Rasuwa. Sayaubari Buffer Zone CFUGs is located in ward # 8 of Laharepauwa VDC, Lalitpur district. Total 11 executive members are in the CFUC comprising of Tamang and Chettri ethnic group. Total 155 households are the general members of CFUG. Total CF area is 141.8 hactare with the major species of *Pinus wallichiana*.. The CF was handed over to the user groups in 1999 by DFO Rasuwa.

Hathi Danda CFUGs is situated in ward # 9 of Phalametar VDC, Kavre district. Total 9 executive members are in CFUC comprising with the Brahmin and Chettri ethnic group. The total 36 households are the members of the CFUG. The CF area is 171 hectare and composed of major species *Castanopsis hystrix, Schima wallichii, Myrica esulenta, Rhododendron spp., Machilus odoratissima, Quercus incana, Myrsina semiserrata, Myrsina capitellate* etc. The CF was handed over to the users in 1996 by DFO Kavre. Chaurkuna Bhirpani CFUGs is reside in ward # 4,5 & 6 of Salle VDC, Kavre district. Total of 11 executive members in the CFUC, consists of Chetri, Tamang and Brahmin ethnic group. Total of 135 households are the general members of CFUG. Total area of CF is 46.93 hectare with major species of *Castanopsis hystrix, Schima wallichii, Myrica esulenta, Rhododendron spp., Machilus odoratissima, Quercus incana* etc. The CF was handed over to the users in 1995 by DFO Kavre.

Nepane Ban CFUGs is situated in ward # 5 of Sanosirubari VDC, Sindhupalchok district. Total 7 executive members are in CFUC comprising with the Brahmin, Chettri and Tamang ethnic group. The total 103 households are the members of the CFUG. The CF area is 86.31 hectare and composed of major species: *Schima wallichii, Castanopsis hystrix, Rhododendron spp., Pinus wallichiana* etc. The CF was handed over to the users in 1999 by DFO Sindhupalchok. Laxmi Mahila CFUGs is residing in ward # 6 of Sanosirubari VDC, Sindhupalchok district. Total of 9 executive members in the CFUC, consists of Newar and Chetri ethnic group. Total of 56 households are the general members of CFUG. Total area of CF is 9.03 hectare with major species of *Schima wallichii, Castanopsis hystrix, Rhododendron spp., Pinus wallichiana* etc. The CF was handed over to the users in 1992 by DFO Sindhupalchok.

Bageshowari CFUGs is situated in ward # 3 of Pinda VDC, Dhading district. Total 11 executive members are in CFUC comprising with the Brahmin, Chettri and Tamang ethnic group. The total 157 households are the members of the CFUG. The CF area is 115 hectare and composed of major species *Schima wallichii, Castanopsis indica,Shorea robusta* etc. The CF was handed over to the users in 1998 by DFO Dhading. Amaltari CFUGs is residing in ward # 3 of Pinda VDC, Dhading district. Total of 13 executive members in the CFUC, consists of Chetri, Brahmin and Tamang ethnic group. Total of 48 households are the general members of CFUG. Total area of CF is 34.49 hectare with major species of *Schima wallichii, Castanopsis indica, Shorea robusta* etc. The CF was handed over to the users in 1999 by DFO Dhading.

3.2 RESEARCH METHODOLOGY

3.2.1 Selection of the Study Area

Nepal is divided into five development regions (eastern, central, western, mid-western and far-western); fourteen zones (bagmati, bheri, dhawalagiri, gandaki, janakpur, karnali, koshi, lumbini, mahakali, mechi, narayani, rapti, sagarmatha, seti) along with 75 administrative districts ranging from high Himal to flat area known as Terai. This study covers eight different mid-hills districts i.e., Kathmandu, Lalitpur, Bhaktapur, Kavre, Sindhupalchowk, Rasuwa, Nuwakot and Dhading of the Bagmati Zone, Central Region of Nepal. These Mid-Hills case studies districts of Nepal were purposely chosen for the research because of the following reasons:

1. These districts are pioneer districts in the Mid-Hills where different forest tenure regimes were initiated from very beginning in early 1990s.

2. The integrated subsistence farming (crop production with animal husbandry) economy prevalent in the mid-hills districts areas depends, directly or indirectly on forests for livelihoods.

3. They represent various cultural groups (heterogeneous: more than one cultural group; homogeneous: single cultural group).

4. They represent both the *kipat* (communal) and *raikar* (state landlordism or non-communal system) systems of forest land tenure regimes.

5. Community based forest management approach was first developed in the Mid-Hills districts, primarily in response to the forest-based agricultural subsistence lifestyle.

6. These districts represent the Central Mid-Hills ecology as a whole (elevation: 600-4000m, climate, biodiversity, and accessibility).

7. This kind of study was not carried out in these Mid –Hills districts before.

3.2.2 Wealth Ranking of Sampled User's Household

The study was conducted in sixteen community forest user groups (CFUGs) representing both semi-urban and rural settings, nine leasehold forest user groups (LFUGs), eight registered private forest, four religious forest, one buffer zone user group (BZUG) and one protected forest area of eight districts of Bagmati Zone, Central Region of Nepal, where community based forest management program has been practiced for many years. The districts chosen for the study represent the typical Mid- Hill region of Central Nepal in terms of the dynamic evolution of forest management regimes and socioeconomic background of the rural hill inhabitants.

Detailed information on the existing socio-economic situation of member households in sixteen CFUGs (two from each district), LFUGs, BZUGs, private forest owners (registered) and religious forest committee/groups was collected from a household survey carried out during February-June 2010. This

included information on types and distribution of forest tenure/management regimes; inferences of forest tenure/management on the condition of forest and effects of forest tenure regimes on social, cultural and economical condition of forest dependent people's livelihood security in the study area.

A prior invitation was made to all the households in the Forest User Groups (FUGs) to send a representative to a general meeting. Following introductions and explanations of the study objectives was clarified with the representatives. Wealth ranking (see Adams *et al*., 1997) based on participatory technique was used to determine the relative socio-economic status of each household in each selected forest users groups. The empirical validity of this method as a means of socio-economic stratification of households has already been tested in forest management related research in Nepal (see Richards *et al*., 1999). A group of user's committee members, FUGs members and other key person viz. school teacher, VDC secretaries, holy person, VDC leaders were asked to categorize all households into different wealth classes (rich, medium and poor) using their own criteria (Table 2). The name lists of the forest user group members were taken from the constitution of each forest user groups. The name of each head of the households was written on a card and shown to the participants to verify their wealth condition and rank them. During the process, the participants discussed with each other, finalized the socio-economic status of each household and categorized them into the three different wealth classes. At FUGs household level, different wealth classes (rich, medium and poor) were used as the sampling strata. The major classification or criteria were based on food sufficiency level; number of livestock holding; income source from secure off-farm job; some members having access to off-farm job and households members mostly engaged in wage labor in surrounding villages. Detail criteria of the wealth ranking (rich, medium and poor) used by participants are presented in Table 2.

Table 2: Criteria used by participants to group households (HH) into different wealth class in the study area

Wealth class	Criteria
Rich	Surplus production from own land; large number of livestock holding; at least one family member engaged in a government job, business or other secure off-farm job with a good cash income; children attend schools and colleges in towns; most family members are literate; acquired high percentage of forest products from private land.
Medium	Sufficient food for 6-12 months with no surplus sale; moderate number of livestock holding; some households with access to off-farm income; send children to schools and colleges in nearby villages; do not lend or borrow money to/from other people; have several trees on private land, acquired moderate percentage of forest products from private land.
Poor	Sufficient food for 6 months or less than 6 months; small number of livestock holding; mostly engaged in wage labor in surrounding villages; send children to schools in the village; relatively acquired low percentage of forest products from private land.

Source of data: Field Survey, 2010

3.2.3 Nature and sources of data

3.2.3.1 Primary data collection

a. ***Reconnaissance survey***

A preliminary survey conducted prior to field observations. This survey was conducted in order to identify the general features and existing situation or the prevailing situation of the study area. Rapport building with the users was a major objective of this survey. At the same time this survey also identified key informants of the study area to assess at the later stage of the study. Users were also informed about the objectives of this study to facilitate the primary data collection procedure.

b. Key Informant Interviews

Key Informant interviews conducted with District Forest Officer's, Forest Ranger's, Forest Guards, Village's Leaders, Forest User's Group Committee Members, Registered Private Forest Owner's and authorities including National Level forest staffs in the respective study areas. All necessary protocols were made with the village headmen/women and other key local leaders to solicit their moral support for the exercise. This involved explaining to the local leaders the objectives of the study, the possible time frame to last, mode of conduct and the type of support expected from them during the entire exercise. Besides interviews, field observations, personal conversations with different people in the site were also conducted to support the semi-structured interview.

c. Focus group discussions

Group discussions with village committee members and major users identified during the reconnaissance survey conducted with the objective to identify, understand and describe the common and shared characteristics among the forest dependent community members livelihood system including the information on trends on the livelihood systems and their security as perceived by the forest dependent community members. These group discussions were based on a semi-structured questionnaire and open ended on the nature on discussion to obtain the required information.

d. Household survey

Household survey was conducted to identify differences among the forest dependent households of the community and comparison of households of both similar and different livelihood systems. Household interviews also focused on the constraints and opportunities faced by the individual forest user or families and to map intra-household dynamics, such as allocation of food, resources, decision making, tradeoffs, household demography, assets and resources, months of self- provisioning, proportion of income spent on food, times of seasonal stress and specific coping strategies. Taking into account the rural context where people are skeptic to structured questionnaire and formal interviews, the research was designed on the basis of semi-structured questionnaires. One household constitute as one respondent. As the household

survey was the main source of data it consisted of the following activities: questionnaire design and pre-testing, sampling design and interviewing the respondents.

e. Questionnaire design and pre-testing

The draft household questionnaire was developed before field visit, while at the China Agricultural University for the fulfillment of this particular PhD course (see annex I). At the field level the questionnaire was pre-tested together with enumerators in one of the forest areas. Thereafter, the final version of questionnaire was produced for use and collection of data in the field.

f. Sampling design

Detailed discussion and meetings with the National, Regional and District Forest Office staffs were held for analyzing the different forest management regimes official documents (CFUGs, LFUGs, Private Forest, Protected Forest, Religious Forest records). Depending on the population distribution of user's group and the size of community forest, the survey ensured that proportionate numbers of households were selected for interviews in each CFUG for both districts representing rural and semi-urban settings. Based on the records/name lists of the selected CFUGs, wealth ranking exercise was conducted with the help of key informants and the committee members in each CFUG. Most commonly three wealth classes rich, medium and poor were identified using criterion for wealth ranking. Out of total 1,325 households from the all selected Forest User Groups, 20% (266) households were selected using stratified random sampling method. The sample consists of households from rich, medium and poor wealth ranks in a proportion of 2:4:4 and equal proportion of respondents based on gender. In terms of changes in coverage of forest and its condition in the study sites during the last five years, I did not use physical measures of forest conditions such as basal area or species diversity, but instead focus on subjective assessments of forest conditions by forest officers and local community members (Coleman, 2009). The perceptions on forest conditions were recorded in two ordinal scales "improving" and "declining". "Improving" is understood to signify perception of an increase in forest cover and abundance of tree and shrub species, and "declining" signify their measurement of reduction in the cover of woody vegetation and species in the provided forest area (Gautam, 2009).

g. Interviewing the respondents

Data was gathered through personal interview using an interview schedule. Interview was conducted in Nepali with the help of hired & trained enumerators/interviewers. All necessary protocols were made with the village headmen/women and other key local leaders to solicit their moral support for the exercise. In light of this, courtesy calls were made to all the relevant traditional and local leaders, government officers, and even local political leaders. Besides interviews, field observations, personal conversations with different people in the site were also conducted to support the structured interview. Before and during the household interviews, the objectives of the survey were made clear to the household being interviewed. During household interviews, the researcher also ensured that focus is on the questionnaire to avoid

unnecessary digressions. In the case of some questionnaires not being correctly filled or not clear callback were made in the given time frame.

h. Participant Observation

Researcher was involved in the data collection in user's household and field level, district forest office meetings, CFUGs/LFUGs/BZCF groups meeting and other related activities to know and internalized the genuine context. This method helped to get on-site information on the forest management system, organization of meetings and general assembly, importance of forests viewed on the basis of economic, cultural and social values, and patterns of forest products extraction, distribution and utilization and ultimate dependency of forest users on forest resources to secure their livelihood.

3.2.4 Secondary data collection

Secondary data was collected from review of literatures, which was basically done prior to the field study. Literature relevant to this study was also reviewed. At the same time literature review of forest policy and practices, forest management guidelines, forest resources profile, forest sector monitoring and evaluation reports (district/regional/national/international level), forest operational/management plans and constitutions was done during the period of field study. And the other required secondary data was collected through the different authorities (i.e. selected Village Development Committee/Provinces, Central Bureau of Statistics, Ministry of Forest and Soil Conservation, Department of Forest and other forest related agencies), reports, publications and websites.

3.2.5 Analysis and Interpretation of Data

Collected data were coded before they were analyzed using statistical software in the computer. The descriptive statistics such as frequencies, percentages, measure of central tendency, standard deviation and minimum, maximum were calculated for presenting and summarizing the demographic data.

Multiple comparisons of means was done in Statistical Package for Social Science (SPSS) with Analysis of Variance (ANOVA) and Least Significant Difference (LSD) between different wealth class households and variables such as total land area (TLA), total livestock unit (TLSU), various forest products collected, source of forest products, forest condition improvement. To find the types and number of forest tenure/management regimes and improvement in forest condition after handed over of forest to the forest dependent user's among different wealth class households were presented using Microsoft excel program. Interpretation of the effects of forest tenure regimes on social, cultural and economical condition of forest dependent people's livelihood security was done through subjective perspective.

3.2.5.1 Analysis of Variance (ANOVA):

One-way Analysis of Variance (ANOVA) was used to test the significance of difference of followings with respect to well-being classes (i.e. rich, medium, and poor) of CF users at 5% level of significance:

- total land holding
- livestock holding
- total household income

The decision on significance or insignificance was done on the basis of calculated P value at 5% level of significance. When the P value is less than 0.05, the mean difference in the household income, CF income, forest products income and users input is significant. In the case the P value is greater than 0.05, the mean difference on those tested factors between rich, medium and poor categories of household is insignificant.

3.2.5.2 Least Significant Difference (LSD):

LSD was used for pair comparison between two categories of the users' households at 5% level of significance after the application of one way ANOVA. LSD test is the simplest of the procedures for making pair comparisons. The procedure provides for a single LSD value, at a prescribed level of significance, which serves as the boundary between significant and non-significant difference, between any pair of treatment means. That is, two treatments are declared significantly different at prescribed level of significance if their difference exceeds the computed LSD value; otherwise they are not considered significantly different. The LSD test is used only when the F test for treatment effect is significant and the number of treatments is b = not too large, say, less than six (Jayaraman, 2000).

The interpretation of the result is the same as in the ANOVA. At 5 % level of significance, the mean difference between the pairs is significant when P value is less than 0.05 and insignificant when the P value is greater than 0.05.

CHAPTER 4: FOREST POLICIES, LAWS AND STATE GOVERNING STRUCTURES

4.1 CONTEXT

Nepal has witnessed considerable shifts in forest policy and management approaches since the beginning of the twentieth century when serious public concern regarding the use of the country's forest resources began (Gautam *et al*., 2004; Basnet, 2009). Before 1957, a huge section of the country's forest were owned, managed and utilized privately, even though some area of forest were underneath other forms of tenure arrangement, for instance, owned by religious committee and the State. During the year 1957, the government nationalized (Private Forest Nationalization Act 1957), the entire forests and took over the management accountability of the forests on their own. One of the reasons for nationalization was that these forests were of strategic importance for the national economy, producing not only private goods but also public goods and services (such as watershed value and environmental functions). Nevertheless, this fundamental transform in forest tenure was supplemented by the execution of government funded resettlement systems, which drawn in clearing several thousand hectares of forest lands in the southern plains area, also called the Terai. The common consequences on nationalization of forest and forest clearing derived to illegal tree felling in nationalized forests and the establishment of illegal settlements on forest lands. It is generally believed by most scholars that nationalization of the forests led to rapid forest depletion and deforestation. In reviewing the past system, an imperative element that was neglected in the nationalization of forests was the scale of rural people's reliance on forests and forest resources for an extensive series of forest products such as fodder, bedding materials for animals, roofing materials for houses, fuel wood for cooking and heating purpose, to make agricultural tools/implements and other non timber forest products for sustaining their livelihood and its security. The government's various policies in the past to give management responsibilities to communities and certain targeted groups on long term tenure basis for community development and poverty reduction. But with regard to ownership, the government's attitude is that of a landlord who thinks that he owns the forest and those using it as a community or leasehold forest are only tenants. The synopsis of different forms of forest tenure management regimes in Nepal is presented in Box 1 below.

Box 1: Overview of Forest Tenure Management Regimes in Nepal by Period

Period	Type of government	Forestry focus
1800-1850	Shah monarchy	- Gift of forestlands in place of payment for services to state, mainly in the hills
1850-1920	Rana feudal regime	-Gift of tax-free forestlands in lieu of payment for services to state; extension of practice to Terai areas -Extraction of Terai timber to supply to British India
1920-1960	Rana feudal regime to	-Export of timber

	democratic government to Shah monarchy (autocratic government)	-Clearance of forests for resettlement -Nationalization of forests
1960-1970	Shah monarchy	-Industrialization -Provision of Panchayat forest made for local control -Enactment of protection-oriented forest laws -Continuation of resettlement in Terai forest areas -Continuation of timber exports
1970-1980	Shah monarchy	-Eco-forestry policy doomed -Introduction of CF but hesitation to give greater benefits and control to users -Continuation of timber exports
1980-1990	Less autocratic government, constitutional monarchy	-Emphasis on importance of participatory forestry by the new forest act, adoption of community-based forest management approaches by government -Introduction of benefit-sharing mechanism between the government and people -Land tenure remains with government -Imposition of ban on timber exports
1990-2000	Democratic government, constitutional monarchy	-Continuation of efforts for community-based forest management -Emergence of NGOs; emergence of pro-poor models -Emergence of forest user groups' federation - Promulgation of a new Act (1993) giving more rights to users; development of management guidelines; -Initiation of Terai forest management efforts -Realization of NTFPs' potential -Initiation of long-term leasing of forest
2000-onwards	Democratic government and political crisis with emergence of autocratic rule; role of monarchy reduced after April 2006	-Development of forest policy for Terai, Inner Terai and Siwaliks; putting of focus on conservation in the Siwaliks -Participatory forestry and resource management gets a setback during the monarchical rule in this period -Emergence of community-based enterprises - Viewing of forests as a source of livelihoods - Utilization of forests for poverty reduction

Source: Adopted from Acharya et al., 2008

After witnessing, that the government's or state management of nationalized forests was commonly deprived for the reason that it disregarded the periodically experienced traditional or customary system of

management of natural resources by the community as common property. Consequently, this directed towards acknowledgment of decentralization of forest management through community based management approach, primarily on pilot basis. As a consequence of the optimistic results accomplished from the pilot program, the government determined to recognize officially the decentralized management of nationally owned forests during the late 80s. So this provides an insight on the context for the development of the different forest tenure/management regimes over time and its inseparable relationship of forest resources with livelihoods of forest dependent communities that are observable in Nepal even today.

4.2 FOREST POLICY AND PRACTICE

Nepal forestry sector policy can be divided into three broad groups, which are: privatization (pre- 1950), nationalization (1957 and up to the mid 1970s) and the community oriented approach which started in the late 1970s with the introduction of community forestry concept. Subsequently, the democratic revolution in 1950, the government nationalized all forests in 1957 in an effort to avert the feudal Rana rulers as of ongoing to utilize Terai forests as their personal possessions. The Private Forest Nationalisation Act 1957 was principally concerned with bringing an end to haphazard felling of trees in the Terai forests and the unregulated trade of timber with a vision to safe guard the further degradation of forests throughout the country. Nonetheless, the nationalisation of all forestland in 1957 and following protectionist practices by the government destabilized indigenous or traditional management systems and lead to overgrazing and random harvesting of forest product. This accelerated degradation of the landscape and caused deforestation on a massive scale, which gave rise to the emergence of the concepts of community forestry in Nepal.

Community forestry has evolved as one of the major mechanism of Nepal's forest development strategy during the past 30 years in order to preserve the forests with support from the government and donor agencies (Yadav, 2012). Community forestry is most precisely and beneficially understood as a community based management approach indicating a broad range of activities which connect rural people livelihoods with forests, trees, and the products and benefits to be received from the forests. Accordingly, Kanel and Dahal (2008) states that community forestry is successful in decentralizing forest management activities, and creating greenery environment and financial capital through community forest user groups. Regardless of the somewhat depressing political and socio-economic background, it is commendable that the community forestry policy has made substantial development so far in Nepal.

The most important national policy and legislation currently guiding forestry in the country comprises the Forest Act, 1993, the Forest Rules and Regulations 1995, and the Community Forestry Guidelines, 2009. The Act sets out Nepal's legislation on all aspects of forestry. An important policy document that formed a basis for elaborating all these legislations was the 25 year Master Plan for the Forestry Sector, which was approved in 1989 and has now come to an end of its period of coverage. The formulation and

execution of the Master Plan 1989 can therefore be considered a turning point in the history of forestry sector policy in Nepal.

A new Forest Sector Strategy for a further 15 years is under development (SDC, 2010). However, the process of formulation is not speeding up, as the Constitution Assembly (CA), (which was formed after the election in April 2008, officially abolished the monarchy on May 28th 2008), and was dissolved automatically on May 27th 2012 without fulfilling its mandate of producing a new constitution. Therefore, the Government of Nepal has declared a new CA election date for 22nd November 2012. The Master Plan for the Forestry Sector, 1989 recognized community and private forestry as the largest among the six primary forestry programs and realized that the restoration of public forestlands could only be achieved through the transfer of forest access and management rights (tenure) to local people (the users). It envisioned that people should manage all accessible forestlands principally through the establishment of FUGs as the appropriate local management bodies accountable for protection, development and sustainable utilization of forest resources (Chakraborty, 2008). The plan also calls attention to the need for retraining the whole forestry staff for their new roles as advisors, facilitators and extension workers. Further, the Forest Act of 1993 categorized national forests into five sub-categories, namely community forestry, leasehold forest, government-managed forest, religious forest and protected forest.

In 1998, National Planning Commission (NPC) of Nepal declared leasehold forestry as a priority programme for poverty alleviation. A total of 26 out of 75 districts have been identified and implementing leasehold forestry programme for poverty alleviation, 10 districts were already under this project by 1999 with initiative of International Fund for Agriculture Development (IFAD) with Ministry of Forestry and Soil Conservation, Department of Forests (LFLP, 2010). The Leasehold Forestry Policy, 2002, envisages the granting of leases to: (i) commercial forestry enterprises; (ii) entrepreneurs for eco-tourism; and (iii) households living below the poverty line (IFAD, 2009).

Similarly, a number of forests are owned, controlled and protected by the state as national forests. And some areas have been kept under Protected Areas (PAs) system, which form about 23% of the total land of the country (FRA, 2010). The National Park and Wildlife Conservation (NPWC) Act, 1993, Buffer Zone (BZ) regulations and guidelines are the legal tools for the protected areas declaration and management. Conservation Areas (CA), Hunting Reserves (HR), Wildlife Reserves (WR), National Parks (NP) and Buffer Zone (BZ) are the main categories of PAs system. Patches of national forest are also handed over to the religious institutions or committee to manage the forest resources for religious purposes, called as religious forest. Since 2000, the government also adopted a separate policy for the Terai, Inner Terai and Churia forests management. According to this policy the forests are managed as national forest under a collaborative forest management while setting aside barren lands, shrub lands and isolated forest patches for handing over as community forests (DoF, 2009).

4.3 STATE GOVERNING STRUCTURES

Around 1880, Ban Janch Adda (forest inspection office) was first established, since then the forestry administration in Nepal has undergone sequences of essential changes and has been considerably prolonged over the years (Luintel and Chhetri, 2008). Based on the official record significant changes in the organizational structure of the Department of Forest took places during the year 1976, 1983, 1988 and 1993 (DoF, 2009). Even though Parliament is the main authority in Nepal, executive authority is put into effect by a Cabinet consisting of the Prime Minister and Ministers. The Ministry of Forests and Soil Conservation (MoFSC) , in coordination with the National Planning Commission, acquires the operational responsibility for episodic policy planning and implementation of forestry and interrelated matters, which is leaded by a Minister or Minister of State.

The Department of Forests was established in 1942 with the primary role protection and management of the national forests. Since 1942, it has undergone a series of restructuring processes in order to make the organization compatible with the changing context. However, still the institutional set up remains unusually hierarchical, particularly in the traditional attitudes of government bureaucrats and the slow process of transformation of the role of the foresters. At present, operational responsibilities are commended to five specialized departments operating as 5 Regional Directorates, responsible for coordinating, planning and monitoring district forestry programmes; 74 district forest offices, responsible for planning and implementation at the district level; 92 *Ilakas* (sub-districts) forest offices and 698 range posts.

Forest Act, 1993 and Regulation, 1995, under this act and regulation, the role of forestry staff changed from custodial one to facilitative one. This regulatory policy has provided ample opportunity for the involvement of people in the management of all kinds of forests. The Forest Act, 1993 has categorized Nepal's forests into six classes. These are: Government Managed Forests, Community Forests, Protected Forests, Leasehold Forests, Private Forests and Religious Forests. Both the Forest Act, 1993 and Regulation, 1995 are consistent with the policy recommendations outlined in the Master Plan for the Forestry Sector, 1989. The chief of department concerns with private forestry (for registration purposes only), community, religious and leasehold forestry comes under the Department of Forests (DoF). The Department of Forests is by far the largest organization within the ministry and almost 70 percent of the staff under the ministry work within the DoF and its regional and district offices. The department has three divisions, namely: the Community Forestry Division, the Planning and Monitoring Division and the National Forest Division. The Community Forestry Division facilitates the implementation of community forestry which is identified as the keystone forestry programme in Nepal. The district forest offices are disaggregated into five different categories (category A, B, C, D & E) depending upon the size of the district, the available forest area and the number of offices and staffs. The clearest manner in which to understand the hierarchical structure of the organization is presented in Figure 3 below.

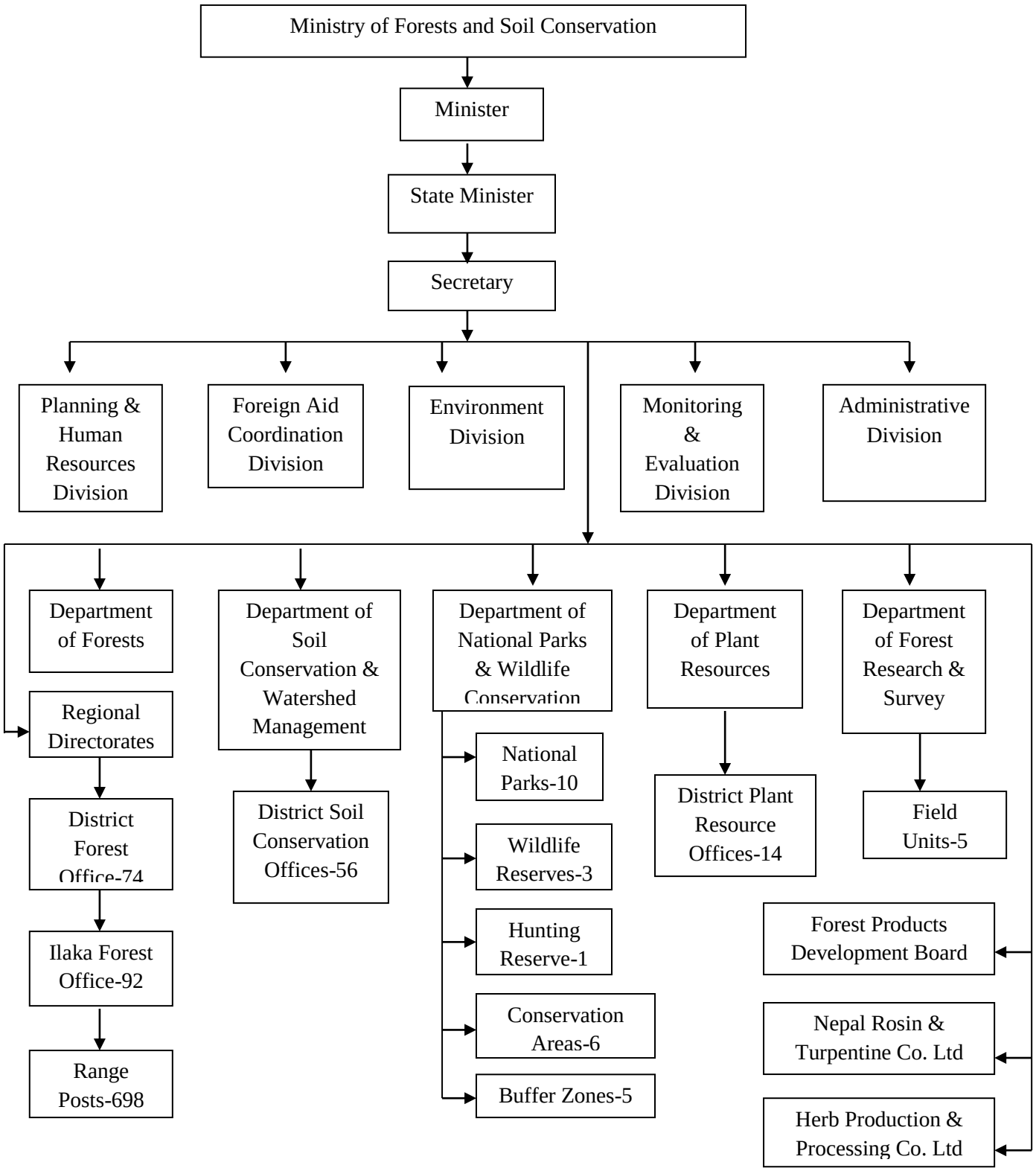

Figure 3: Hierarchical Structures of the Ministry of Forests and Soil Conservation

Source: Ministry of Forests & Soil Conservation (MoFSC), 2009

4.4 KEY POLICIES FOR FOREST MANAGEMENT SYSTEM IN NEPAL

Forest has historically held a central place in livelihood practices and national politics in Nepal because of their importance in rural livelihoods and state revenues (Ojha, 2008). Most forests in rural Nepal were controlled and managed by local communities until the late 1950s, when the state took control. The call for citizen participation begin in the late 1970s when the government explicitly admitted that it could not protect the country's forests without the active participation and cooperation of local forest dependent people or citizens. As the state moved further into the era of planned development after the World War II, national bureaucracies assumed political and economic control of resources in a ways that served the interests of the ruling elites. A number of laws were enacted to enforce national control over forests, which effectively expanded the forest bureaucracy and excluded local people[2]. Although it was implicitly assumed that transferring forests from private groups to the state would enhance people's access to forest resources, in reality the state instituted stringent regulations to exclude people from controlling forest resources and created a strong techno-bureaucratic field (Ojha, 2008).

Efforts to share power over forests with local people started in 1978 with the institution of Panchayat (local government) forest regulations, prompted by the central government's realization that the state forest bureaucracy could not protect forests without engaging the local people[3]. This move was part of the Monarchial Panchayat system's strategy to prevent growing anti-Panchayat resistance, by offering people some economic and symbolic spaces in the local Panchayat. In the meantime, donors were exerting pressure on the government to shift away from centralized practices of development toward more decentralized processes.

During the 1970s, the recognition of Himalayan degradation as a serious environmental crisis increased pressure on international development institutions and donor governments to contribute to the conservation of the Himalayas. This led to shift in the development discourse away from an emphasis on infrastructure and technology transfer towards environmental issues (Cameron, 1998). Moreover, Nepal's strategic geopolitical situation (being located between China and India) and fragile environmental condition attracted donors who viewed forestry ant the environment as the key element of integrated conservation and development activities. Several International agencies assisted the Nepalese government in formulation the Master Plan for the Forestry Sector (MPFS), which recognized the need for the local people's participation in the conservation and management of the country's forest resources. In 1989, as the MPFS was being finalized and formally adopted by the government, an ongoing

[2] Two laws are noteworthy here: the Forest Act of 1961 and the Forest Protection Special Act of 1967. The latter even authorized local forest guards to shoot people who used forests illegally.

[3] The Panchayat system was headed directly by the King. It has three tiers of elected bodies of Panchayat politicians- Village Panchayat, District Panchayat and National Panchayat. Despite the election of Panchayat members, the real power was derived from the monarchy.

movement against the Panchayat system by the citizenry also culminated in the reinstatement of multiparty democracy in the country. The decision of the subsequent governments further strengthened the regulatory framework of community based forest management in line with the MPFS.

The most significant regulatory development in support of community managed forestry was the enactment of the Forest Act in 1993 by the first elected parliament after the 1990 movement for democracy. The 1993 Forest Act guaranteed the rights of the people and to meet their basic forest products need to sustain their livelihood in forest management, as briefly summarized in Box 2. Nepal become the world's first country to enact such radical forest legislation, allowing local communities to take full control of government forest patches under a community managed forestry programme. International agencies continued to support the process of reorienting government forestry officials to work as facilitators of community based forest management and away from their traditional policing roles.

Box 2: Forest User Groups Rights as per the Forest Act (1993) and Forest Regulation (1995)

1. **Rights to self- governance**

- Communities have rights to form a forest user groups as per their willingness, capacity and customary rights.
- Community forest boundaries will not be restricted to existing administrative or political boundaries
- Government can dismantle the Forest User Groups (FUGs) if the latter is found to engage in large scale deforestation but it is duty of the government to reconstitute the Forest User Groups.
- FUGs can elect, select or change executive committee member anytime.
- FUGs can punish members who break their rules.
- FUGs can amend or revise their constitution at anytime.

2. **Right to forest management and utilization**

- There is no limit to the forest area that can be handed over to communities.
- FUGs can make optimal use of their forest by growing cash crops together with forest crops.
- FUGs can utilize their fund for any purpose (but 25% of income from forest must be spent in forest development).
- FUGs can freely fix prices and market their forest produce.
- FUGs can establish enterprise and make profits.
- FUGs can seek support from any organization.
- FUGs can raise funds by various forestry and non forestry means with all income going to group

funds with no requirements for sharing financial revenues with government.

- FUGs can invest in any areas, persons or development activities according to the decision of FUG assembly.

Sources: Adopted from Pokharel et al., (2008); Forest Act 1993; Forest Regulation 1995.

The community based management programme in Nepal evolved from a primarily protection oriented, conservation focused agenda during its initial years of implementation to a much broader based strategy for use, enterprise development, and livelihood improvements. This occurred through an often conflictual process spread out over more than a decade, during which sustained efforts to engage a policy dialogue with a range of community managed forests stakeholders helped to clarify issues and develop a common vision. Evolution occurred across policies, institutions, and implementation modalities, ultimately leading to a much stronger, more sustainable and effective community based management system. This community based management programme has also been adapted and scaled up in different contexts in Nepal, leading to other forest management regimes of forest governance: community forestry, leasehold forestry, religious forest, collaborative forest management, community based watershed management, and integrated conservation and development (Ojha and Timsina, 2008).

One of the keys to the establishment and successful outcome of community based management regimes was the creation of appropriate institutional structures at local, meso and national levels that included downward accountability and relatively unrestricted decision making at the local level and effective cross scale interactions among these various institutions (McDougall *et al*., 2008). Other institutional factors in the successful evolution of community based management regimes included efforts to improve the inclusion of all social groups (especially after the mid 1990s, when the Maoist movement also gained momentum through the agenda of inclusion), concomitant democratic processes (Pokharel *et al*., 2007), and provision of adequate time and space for frequent discussion, exchange, adaptation, inclusion and interaction among stakeholders (Banjade *et al*., 2007).

CHAPTER 5: DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS OF THE USER'S HOUSEHOLDS

The results and discussion part is divided into three chapters, whereas, chapter five illustrates the demographic and socio-economic characteristics of the sampled forest user households in the study area. Chapter six presents the findings of the distribution pattern, types and condition of the different forest tenure regimes existed in the study area. Accordingly, chapter seven describes the findings based on the effect of different forest tenure regimes on the livelihood security of the forest user households under different wealth classes in the study area.

5.1 SOCIO-ECONOMIC CHARACTERISTICS OF THE RESPONDENTS

Socioeconomic characteristics such as age structure, education level, occupation, occupation, household size, ethnic/caste composition, land holding, livestock holding and sources of income of the respondents are presented and analyzed in this heading. Brief description of these characteristics is supportive to understand the socioeconomic status of the household and area under study. As this study is focused on the livelihood security of the forest dependent people or users through forest tenure regimes therefore, socioeconomic characteristics of the respondents provide quick understanding of the scenario of socioeconomic condition of the users in the study area. Out of 1,325 households, total 266 households (20%) were selected as sample size of which 54 (20%) were from rich class, 106 (40%) from medium class and 106 (40%) from poor class and the equal proportion of respondent based on gender. Descriptive statistics of the variables under the study area are presented in Table 3.

Table 3: Descriptive statistics of variables (N=266)

Variables	Minimum	Maximum	Mean	Std. Deviation
Respondent age	20	85	46	11.65
Respondent education	1	4	3	0.78
Respondent occupation	3	7	3	0.86
Household size	1	16	6	2.21
Total land area (ha)	0	2.4	0.4	0.39
Total livestock unit	0	16	2.5	2.83

Source of data: Field Survey, 2010

5.1.1 Caste/Ethnic Composition of the Respondents

The Nepalese social structure is mostly heterogeneous in nature and composed of caste, ethnicity, gender, different economic class and positions in bureaucracy and political systems as well as the level of education. The Caste culture is unique in Nepal and there are four hierarchies in the Caste system, which are Brahmin, Kshatriya, Vaishya and Dalit or Sudra. The respondents interviewed in the survey were belonging to different castes/ethnic groups. All the caste systems are grouped into main four categories. They are [4]Brahmin & Chhetri, Newar, Tamang & Others and Dalits[5]. Based on the category, Brahmin & Chhetri were dominant (46%) followed by Tamang & Others (36%), Dalits (12%) and Newar (6%).

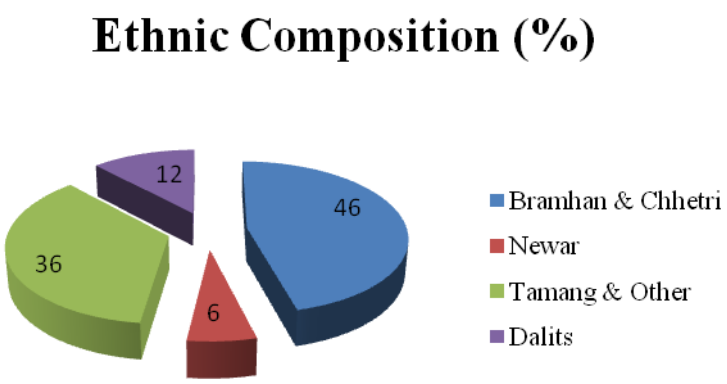

Figure 4: Caste wise representation of the respondents (N=266)

5.1.2 Occupation Status of the Respondents

People simply eke out their livelihood tapping the natural resources available in their surrounding areas. Occupations refer to all the activities of earning by people for sustaining their livelihood and fulfillment of requirement on a daily basis. The respondents of study area are involved in a variety of occupation such as agricultural farming, business, services, pension holders etc.

[4] Brahmin & Chhetri are considered as so called "Higher Caste"

[5] Dalits are considered as so called "Lower Caste"

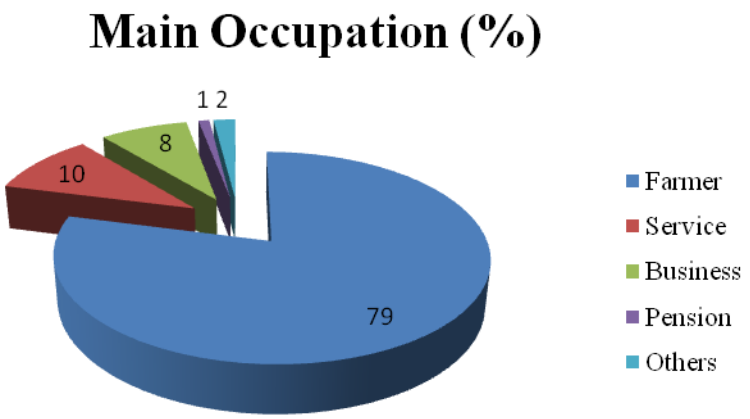

Figure 5: Occupational Status of the Respondents (N=266)

Figure 5 shows that most of the respondents (79%) are engaged in agricultural farming in study area, 10% of the respondents holds services, 8% are involved in business, 1% in pension holder and 2% in others occupation such as labor, social works etc. Consequently, the larger numbers of respondents are involved in agriculture profession means more dependence on forest to fulfill their farm needs to be received from the forest products.

5.1.3 Education Status of the Respondents

Education is measured as one of the major factors influencing people's knowledge, attitude and perceptions. The education level of respondents were broadly classified into four categories such as Illiterate, Primary level, Secondary level and College level. Education level of the respondents also determined participation in different communities.

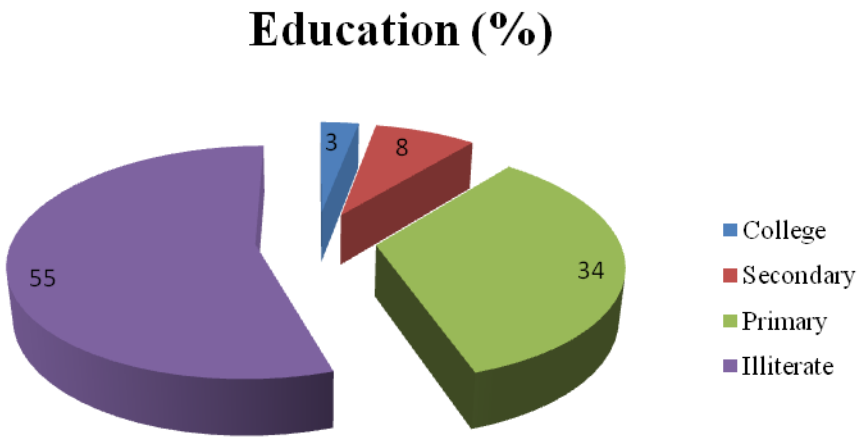

Figure 6: Education Level of the Respondents (N=266)

Accordingly, education is also considered as the foundation of civilization and indicator of development. The levels of literacy and educational attainment among the communities explain the overall social status. According to the figure 6, most of the respondents (34%) had completed the primary level, 8% had completed the secondary level, only 3% had received the college level education and 55% of the respondents were illiterate. Most of the respondents of the Brahmin / Chherti were found literate up to the secondary level and higher level of illiteracy was found in lower caste and Tamang & Other community. It indicates that the most of the household heads lack basic education. These imply that the levels of education of the people involved in user groups are mostly from the poor households.

5.2 LAND HOLDING

Land is an imperative natural capital for inhabitants living in rural areas (Shahbaz, 2009). Information related to land and its uses was collected from the respondents to find out whether forest tenure regimes had some impact on land use. Three major types of agricultural land are owned by households in the study area. *Khet* land (irrigated) consists of leveled terraces (with bunds to hold water) under various irrigation systems on which mainly rice and wheat is cultivated. It is the most valuable land as it yields two major crops per year. *Bari* land (non-irrigated) consists of out-sloped, rain-fed terraces, which yield one crop of maize or millet per year. *Kharbari* land (non-irrigated) is set aside for grass production (for roofing thatch and livestock feed). The cultivation system in Nepal is both irrigated and non-irrigated. The production in the irrigated land is higher than the non-irrigated land. Those who have more irrigated land can produce more grain to secure the whole year food needs, while those who don't have such land depend on the other sources of livelihoods such as crop sharing, bounded labor, and daily labor.

Table 4: Land holding (ha) under different wealth class households (N=266)

	Range			
Land holding	Minimum	Maximum	*Mean	S D
Rich	0.45	2.4	0.75 a	0.63
Medium	0.16	1.3	0.37 b	0.26
Poor	0	0.8	0.21 c	0.20

*The mean values of land types under each wealth class followed by different letters (a, b, c) in the same column were significantly different at P=0.05.
Source of data: Field Survey, 2010

The most important cropping practices are maize based on the non-irrigated *bari* land, and rice based on irrigated *khet* land. Rice and maize are the two major staple crops of the region, wheat, millet, barley, mustard, lentils, corn, and soyabean are also grown. In addition to cereal crops, vegetables like tomatoes, onion, lettuce, beans, peas and potatoes; and fruits such as banana, orange, lemon, peach, plum, papaya and apples are cultivated. Referring to the above results it shows that there is a high significant difference ($p < 0.05$) between the lands owned by households in different wealth classes (Table 4), with the wealthier households owning more land on average compared to the poorer households. The inequality is

exacerbated for the reason that wealthier households acquires a bigger proportion of the better quality land including other types of land, whereas poorer households have less or no land.

5.3 AGRICULTURAL PRODUCTION AND FOOD SECURITY

Agriculture plays a key role in the livelihoods of the rural people and is the main source of income for the rural households in Nepal. As a result of rapid population growth, agricultural stagnation, and a range of institutional failures, the threat of a serious food crisis in Nepal is substantial. Nepal's most recent, Global Hunger Index (GHI) score is 20.6, which places it 57th out of 88 ranked countries; western regions of the country score far lower (Hollema and Bishokarma, 2009). Agriculture remains mostly subsistence oriented, whereby farm production income is the largest contributor (besides off-farm) to the household's total income. About 69 percent of the total population depends on agriculture for their livelihoods (CBS, 2010). However, the livelihoods are risky and uncertain at the best of times of the majority of rural people. About 20 percent of the rural population is generally secure in normal time and the situation is worse in central region of Nepal (Hollema and Bishokarma, 2009). The top 20 percent of people include the wealthy landowners and rich peasants: those who have reasonable access to large amounts of productive land and food security from their own production.

Unfortunately, the reflections/confirmation of these scenarios is observed on the present study, since the study is also carried out in the Central Nepal. The majority of households (Figure 5) in the study area are also involved in agriculture farming to fulfill their daily needs. The household who possess enough farming land either involve directly themselves in farming or they give their land to others for cultivation on a basis of crop sharing. Those who cultivate other's land have to share the crop productions by 50% with the land owners. The landless and those who have not adequate land to secure their livelihoods practice such a crop sharing system or engaged in daily labor in the rural area since the crop productions from their farm land are not sufficient to for a whole year of time. They do not have stock crop until the next harvesting period of crops.

Table 5: Agricultural production and food security (N=266)

Question	Responses (Period)	Wealth Classes (No. of Respondents)			Total
		Rich	Medium	Poor	
Do the agricultural production sufficient for whole year?	Less than 6 months	0 (0)	0 (0)	92 (86.8)	92
	6 to 12 months	54 (100)	106 (100)	14 (13.2)	174

Figures in the parenthesis indicates the percentage input

The situation of food insecurity was found to be more common in the study of households in Central region of Nepal. In the survey, while asking about food sufficiency months for one crop calendar year among the different wealth classes, 100 % from rich said: enough for year and with surplus of sale; 100 % from medium said: enough period ranges from 6 to 12 months but with no surplus of sale; and 13.2 % from poor said: enough period only up to 6 months and 86.8% from poor said: enough period for less than

6 months (Table 5). Accordingly, NPC (2009), the survey data shows that 13 percent of hill people and 66 percent of the Terai people have sufficient for one calendar year of the crop, whereas 87 percent of hill people and 34 percent of the Terai people do not have sufficient food for one calendar year so, their livelihood remain at risk and vulnerable. The reasons behind these facts are: the productivity is higher in Terai region than in the hill region, which is also due to the scale of landholding by the people in the region; irrigation facility remains the plus points. The overall situation of food security in all studied user groups based on different wealth classes is presented in the Table 5.

The data shows that the food security situation among rich and medium wealth class households are better (100% users have adequate food sufficiency) than compare to poor wealth class households. As it is obvious that the rich and medium wealth class households owns large scale of productive farm land and grow various crops to encompass food security. This implies that only very few users are secure to their livelihoods as compared to the users involved in poor wealth class households in terms of dependency on agriculture crop production solely.

5.4 LIVESTOCK HOLDING

Livestock is an integral part of nearly all rural livelihoods in Nepal (Paudel, 2011). A very high proportion of poor and marginalized farmers depend on livestock as their main or supplementary source of income. Cattle and buffalo contribute more than 70% to the livestock sector. In addition, because of the religion, cattle are perceived as the holy animal by the Hindus whose percentage is more than 75 in Nepal. Livestock is a major capital asset in the study sites, which plays a critical role in maintaining the fertility of agricultural land. Buffaloes and cows are kept mainly for milk and manure production; oxen for draught power/ploughing and manure; and goats for meat.

Livestock plays a significant role in maintaining the fertility of agricultural land and for some households livestock is the only source of cash income in the study area. Livestock have been playing an important role in influencing the socio cultural life of the rural people. Even their relationship and dependency on forest resources has been largely determined by the size and number of their livestock holdings. As the rural people life is fully dependent on animal resources, they need fodder and leaf litter for feeding animals owning to which their interest in forest management has been boosted up. The sampled households were 54 (20%) from rich wealth class, 106 (40%) from medium wealth class and 106 (40%) poor wealth class. Communities keep cows, ox, buffaloes and goats for milk and meat, draught power, and manure (dung).

Table 6: Number of sample households and livestock holding for different wealth class (N=266)

Wealth class	Sampled households	Number of livestock unit			
		*Cow	*Ox	*Buffalo	*Goat
Rich	54	1.2a	1 a	1.9a	1.3a
Medium	106	0.9b	0.5b	1.5b	1.2a
Poor	106	0.5c	0.1c	0.6c	1.1a

All the buffaloes, cattle and goats owned by the household are converted into livestock unit (LSU) using, 1 LSU= 1 buffalo=1.2 cow= 4 goats= 5 sheep= 2 calves (Thapa and Poudel, 2000).

*The mean values of livestock holding under each wealth class followed by different letters (a, b, c) in the same column were significantly different at *P=0.05*.

Source of data: Field Survey, 2010

Table 6 shows that the average livestock holding for all user households is four livestock units where 1 LSU = 1 buffalo = 1.2 cow/ox = 4 goats (Thapa and Poudel, 2000). There is a significant difference ($p<0.05$) between the cow, ox, and buffalo owned by different wealth class households whereas there is no significant difference between the goat owned by rich, medium and poor wealth class households. It is due to the reason that the price of cow, ox and buffalo are too high as compared to goat for poor household to afford. Buffaloes also require more fodder and since rich households have more access to fodder sources on their own land (tree, grass and crop residues), they can maintain them more easily. Wealthier households also own more oxen because they have more land and need oxen for ploughing. Poor households have proportionately equal number of goats as rich households for the reason that they are cheaper to buy and comparatively easier to maintain. This findings is parallel with Malla *et al*. (2009), as the author stated that the livestock (goats) holdings among rich and poor households is equivalent as the cost embedded less which is affordable for poor.

5.5 TOTAL HOUSEHOLD INCOME FROM VARIOUS SOURCES

The household economy in the society depends on the income derived from different sources. Table 7 describes the magnitude of income from various sources, including community forest and private forest, to the economy of the sampled household of three wealth categories from the selected CFUGs/LFUGs. Non-farm source of the income (mostly income from in country and foreign services) is the major source of the sampled household which comprises the average mean NRs. 81567 among the other mean income sources (Table 7). Agriculture is the second largest income source NRs. 21065 followed by livestock supports NRs. 13566 of the total household income. Community forest contributes only NRs. 5247, and NRs. 2952 from Private forest, out of the total household income. Forest products from private lands contribute still less in terms of direct cash but it should also be covered in calculating the household total income as remarkable quantities are consumed by the household. The high share of income from non-farm sources is due to the high rate of foreign employment from most of the households (mainly in Gulf countries).

Table 7: Annual average net income per sample households in terms of income sources (NRs.*)

Income source	Minimum	Maximum	Mean	S D
Agriculture	395	120925	21065	24454
Livestock	0	59100	13566	12000
Non-farm	0	312400	81567	74947
Community Forest	145	23655	5247	5214
Private Forest	0	11600	2952	2175
Total Forest	3430	46500	15784	9153

Source of data: Field Survey, 2010

***Note: US $ 1 is equivalent to NRs 85 at present**

Mean annual income of rich class of household is NRs. 219649.8 whereas medium class has NRs. 103853.8 and the poor class household has only NRs. 43338.1 respectively (Table 8). In the study area, the minimum income of the rich households from various sources varies from NRs. 85630 to NRs. 381090. The minimum income of the medium households from various sources varies from NRs. 47175 to NRs. 238035. Similarly, the minimum income of the poor households from various sources varies from NRs. 15785 to NRs. 98980 (Table 8).

Table 8: Annual average income per household according to different wealth class (N=266)

	Wealth class	*Mean	S D	Minimum	Maximum
Total	Rich	219649a	80157	85630	381090
Household	Medium	103853b	41838	47175	238035
Income	Poor	43338c	21335	15785	98980

Source of data: Field Survey, 2010

***Note: US $ 1 is equivalent to NRs 85 at present**

One way ANOVA suggests that there is significant difference *(P value <0.05)* in average annual household income between rich, medium and poor wealth class of user households.

As the wealth class is regulated based on the income source and income earned during a given period of time therefore, the significance difference between the rich, medium and poor do occurs. As this figure could be posits that economic differences among the households also form a basic level of heterogeneity therefore, it may lead the members of the user group may have diverse preferences for forest products. Similarly, (Sapkota and Odén, 2008) stated that the term heterogeneity is often used to describe inequalities in income and private endowments, inequalities in contribution to collective action, inequalities in benefits derived from the common pool resources and inequalities in outside earning opportunities.

CHAPTER 6: FOREST CONDITION AND DISTRIBUTION OF FOREST TENURE REGIMES IN THE STUDY AREA

6.1 CHARACTERISTICS OF DIFFERENT FOREST TENURE REGIMES

In fact the issue of forest tenure arrived into prominence at the present than never before in history of forest sector. As of it is endorsed mainly to climate change calamity and mechanism through which the polluter countries mean to work in partnership with developing countries to battle against climate change stimulated potential catastrophe. Undeniably, complex tenure arrangements are more the rule than the exception (Unruh, 2008). The dispute of climate change and other issues encompass the forestry tenure issue to the public interest. Further than climate change and disaster, there is a great deal of ponder on the role of tenure in sustainable forest management, with implications on forest conservation and the livelihoods security of forest dependent communities, seeing as the majority of them are poor living in developing countries. Nepal is one of the few countries to formulate progressive forest policy and legal frameworks to recognize different types of forest tenure system based on the ownership (such as national forest[6] and private forest[7]) and management regimes (State, Community, and privately managed forests). Under this framework, community forestry in the study area has been practiced for more than two decades. One of the objectives of this study is to assess the types, distribution and management system of forest tenure regimes in the study site. The existing status of forest tenure regimes in the study area is illustrated in Table 9 below.

Table 9: Types and Number of Forest Tenure Regimes in the Study Area

District	Community Forest #	Religious Forest #	Private Forest #	Govt. managed Forest #	Leasehold Forest #	Protected Forest #
Lalitpur	200	3	14	1	3	1
Kathmandu	163	6	0	1	3	1
Bhaktapur	59	1	2	1	1	0
Dhading	612	0	20	1	401	0
Rasuwa	76	0	0	1	0	1
Nuwakot	321	0	0	1	0	0
Sindhupalchok	484	1	8	1	366	0
Kavrepalanchok	514	0	3	1	310	0
Total	**2429**	**11**	**47**	**8**	**1084**	**3**

Source of data: Field Survey, 2010

[6] National Forest is defined as all forests other than private forests, regardless of the demarcation of their boundaries and including cultivated or uncultivated land, roads, lakes, ponds, rivers, streams and the shingly land that is surrounded by or in the vicinity of a forest.

[7] Private forest is defined as all the planted, nurtured or conserved forest in any private land that belongs to an individual as per the prevailing law.

The Table 9 shows that highest number of community forest is located in Dhading district whereas; the lowest number of community forest is located in Bhaktapur district. This is due to the fact that the Bhaktapur district is smallest districts as compared to the other districts in the study area. Similarly, it imply higher in the case of number of private and leasehold forest as well in Dhading district. Although, the largest district is Sindhupalchok, the number of community, private and leasehold forest comes in third range as per ascending order. The reason behind this are: the high rate of handing over of community and leasehold forest per year to the community; increasing demand from the rural forest dependent people; and potential number of national forest area in the Dhading district. Among the different types of forest tenure regimes in the study area, community forest hold the greater number (2429), followed by leasehold (1084), private (47), religious (11), government managed forest (8), and protected (3) respectively. This finding is corroborated with Kanel (2012), as mentioned that community forestry is the country's dominant forest tenure regime handed over to the group of people by the government.

Accordingly, in this case study sites the extent to which the area of different forest management regimes distribution depends on a multitude of factors such as total area of each districts; altitudinal variation/slope and accessible forest area. In order to analyze the present scenario of the different forest tenure regimes the following categories of Sunderlin *et al*. (2008) are used here in this study to denote various types of tenure categories, in which various bundles of rights are enjoyed by the owner of the land be it the state, community, or private. Public lands administered by government (which can also include some protected areas and forest lands awarded as concessions for extractive industries); Public lands designated for use by communities and indigenous people: land set aside on a semi-permanent but conditional basis and where governments generally retain strong authority; Private lands owned by communities or indigenous peoples: forest lands where (in theory) rights cannot be unilaterally terminated by a government without some form of due process and compensation (so a more extensive bundle for communities than above); and Private lands owned by individuals or firms: where a government cannot unilaterally terminate the rights without due process or compensation. The present status of an area covered by the forest tenure regimes under different categories in the study area is shown in Table 10.

Table 10: Present forest area under categorized forest tenure regimes in the study area

Type of Forest	Area in Hectare	Percent
Public: Administered by Govt.		
Government Managed Forest[8] (GMF)	85463.37	40.52
Protected Forest (PF)/National Parks	267	0.13
Public: Designated for use by communities and indigenous people		
Community Forest[9] (CF)	120111.54	56.95
Leasehold Forest[10] (LF)	4954.54	2.35
Religious Forest[11] (RF)	61.88	0.03
Private: Owned by individuals and firms		
Private Forest (PF)	35.68	0.02
Total Forest Area	**210894.01**	

Source of data: Field Survey, 2010

The table above shows that 40.52% forests are government-managed forests and 0.13% protected forests, which equals to total 40.65%, under public forest area administered by government. Similarly, 59% (56.95%, community forest; 2.35% leasehold forest; and 0.03% religious forest) accounts under community- managed forest, and 0.02% privately managed. In regard to the area managed by community dominates against the government and privately managed forest in the study area. As of this findings is opposite with the authors Niraula and Maharjan, (2011), who stated that the high percentage of area under government management. On the other hand, it may be due to the reason that the number of districts covered by the authors varies in calculation of total managed area and similarly, the time frame for conducting survey by various parties in the particular area. The figure also represents that all categories of forest tenure regimes have defined boundaries and tenure clarity. However, it is worth to mention that not the entire forest categories under "Private Forest Owned by individuals and firms" are essentially privately owned in legal terms neither they are designated to individuals by the state for the proper and optimum use of the forest resources. During the field study in Sindhupalchowk and Kavre districts, it was found some contested areas of private forests that are not registered legally but being managed by

[8] Under the National Forest; Government managed forest is defined as national forest managed by the government including Protected Forest/National Parks.

[9] Community forest is defined as national forests that have been entrusted to forest user groups for development, conservation and utilization in the interest of the community.

[10] Leasehold forest is defined as national forests that have been leased for the specified purposed to a legally defined institutions, forest-based industry or community.

[11] Religious forest is defined as national forests that have been entrusted to any religious entity, group or community.

individuals. Therefore, these types of forests are highly unsecured in terms of tenure rights and livelihood security of forest dependent individuals.

The existing status of the number of households involved under community managed and privately managed forest in the respective districts are given in Table 11 below. The figure shows that the total number of households under community forest consists 243799; religious forest 106, private forest owners 47, and leasehold forest 9292 respectively. In the case of community, private, and leasehold forest, the highest number of household members covers in the Dhading district, as the number of community managed and privately managed forests are also greater (Table 9) in compare with the rest of the districts.

Table 11: Number of Household Members in Forest Tenure Regimes in the Study Area

District	Community Forest (HHs)	Religious Forest (HHs)	Private Forest (HHs)	Leasehold Forest (HHs)
Lalitpur	15640	27	14	2
Kathmandu	18829	61	0	3
Bhaktapur	9267	13	2	1
Dhading	63587	0	20	3405
Rasuwa	5395	0	0	0
Nuwakot	34461	0	0	0
Sindhupalchok	54674	5	8	3184
Kavrepalanchok	41946	0	3	2697
Total	**243799**	**106**	**47**	**9292**

Source of data: Field Survey, 2010

6.2 PRIVATE FORESTRY IN THE STUDY AREA

The term "private" is used consistently in relation to classification of forests. Some definitions (FAO, 2011), of "private forest" include forests controlled by groups as well as individuals. In this study, a use of the term "private forest" refers only to forests under the control of individuals: where a government cannot unilaterally terminate the rights without due process or compensation. The Master Plan for the Forestry Sector, 1988 is the basic policy for the private forestry sector. It is the basic guidelines for the implementation of the private forestry program. In the study area the majority of forest user households also practice some level of private forestry with scattered plantings of multipurpose trees. In fact, the main constraint of expansion of private forestry is land unavailability as most of the rural people execute subsistence farming to fulfill their daily needs. However, the forest user households plant trees in the boundary of *Khet* and *Bari* land as the tree functions as the wind break and also protects the other crops growing in the farm lands. Beside the scattered plantation by the households, the number of forest user's households is also solely involved in plantation business on their private land areas, although the privately owned forest accounts only 0.02 percent (Table 10).

6.2.1 Private Land Type and Number of Trees

Those who have *Kharbari* land have planted mostly with trees as those type of land means as barren land where the agriculture crops are not grown due to infertile land. Majority of trees grown were found (68.13 average numbers of trees) in *Khet* land and a greater number of trees were planted by the registered Private Forest (PF) owners with 54.08 average numbers of trees. Similarly, trees grown in *Bari* land consists 18.63, Homestead 1.98, and *Kharbari* 1.8 average number of trees respectively. As the user households in the study area plant trees in the alley of the *Khet* land which functions as windbreak and boundary around the cultivated area with agricultural crops. The result shows that although people have only *Khet* land, they still have been planting trees in these areas as well, including in *Bari* land, Homestead and *Kharbari* land area.

Table 12: Number of trees grown in different land types

Category of respondents	Statistic	Bari Land	Khet Land	Homestead	Kharbari	Average mean
Household	Mean	4.63	2.38	3.04	2.49	3.13
	Std. Deviation	16.17	7.80	4.99	8.71	
	Minimum	0	0	0	0	
	Maximum	100	60	23	54	
PF-registered	Mean	42.11	174.21	.00	.00	54.08
	Std. Deviation	110.97	340.20	.00	.00	
	Minimum	0	0	0	0	
	Maximum	460	1500	0	0	
PF-unregistered	Mean	9.14	27.80	2.92	2.92	10.69
	Std. Deviation	35.64	25.14	6.03	6.03	
	Minimum	0	0	0	0	
	Maximum	165	85	18	18	
Average		**18.63**	**68.13**	**1.98**	**1.8**	

Source of data: Field Survey, 2010

From the household survey and office record of the District of Forests in the study areas, the tree species planted in private forests were collected and recorded. Types of species planted in the private forests are Pine (*Pinus wallichiana*), Rudraksha (*Elaeocarpus ganitrus*), Chandan (*Santalum album*), Painyu (*Prunus cerasoides*) , Bakaino (*Melia azederach*), Tanki (*Bauhinia purpurea*), Siris (*Albizia lebbeck*), Utis (*Alnus nepalensis*), Champ (*Michelia champaca*), Lapsi (*Choerospondias axillaris*), Dudhilo (*Ficus nemoralis*), Dhupi (*Cupressus spp*), Aaru (*Amygdatis persica*), Naspati (*Randia aliginosa*), Sal (*Shorea robusta*), Chilaune (*Schima wallichii*), Guras, Bamboo (*Dendrocalamus spp*), Kaphal (*Myrica esculenta*),

Kalikath (*Myrsine semiserrata*), Koiralo (*Bauhinia variegata*), Nigalo (*Drepanostachyum annulatum*), Kutmiro (*Litsea monopetala*), Mango (*Mangifera indica*), Nimaro (*Ficus auriculata*), Kyamun (*Cleistocalyx operculatus*), Badhar (*Artocarpus lakoocha*), Padari (*Leea crispa*), Sissoo (*Dalbergia sisso*), Kadam (*Anthocephalus chinensis*), Simal (*Bombax ceiba*), Botdhairo (*Lagerstroemia parviflora*), Lankuri (*Fraxinus floribunda*), Kainyo (*Wendlandia puberula*), and Amala (*Phyllanthus emblica*). These are the major tree species grown in the privately managed forests in the study sites, and the tree species seedlings are distributed by the District Forest Office, if any individuals/owners are willing to plant the species in their private land. Beside the distribution of seedlings, District Forest Office staffs are also suppose to provide technical support to those who seek assistant in terms of plantation, management, silvicultural operations, monitoring, and harvesting and linkage development with potential traders for marketing the final products. However, in practice these services are set off in job description of District Forest Office staffs and providing these services are on irregular basis.

6.2.2 Share of Private Forest Income to Household Income

In the study area, there are lots of private trees grown in the farm boundaries and marginal lands of the respondents. Those private trees support farmers/forest user's households providing small woods, fuel wood, tree fodder and forage materials. Also a remarkable quantity of ground grass is collected from the farmlands to feed their livestock. When we look at the share of private forest income to household income according to different wealth classes, the mean annual income of a rich class household is getting NRs. 4166, a medium class NRs. 2884 and a poor class households receives NRs. 1725 (Table 13).

Table 13: Annual average private forest income and its share in total household income according to different wealth class (N=266)

Household Category	Income from Private Forest (NRs.)	Total Household Income (NRs.)	Share of PF income in total household income (%)
Rich	4165	219649	1.9
Medium	2884	103853	2.8
Poor	1725	43338	4.0

Source of data: Field Survey, 2010

***Note: US $ 1 is equivalent to NRs 85 at present**

From the analysis it is found that the percentage of share for the poor class households seems greater, although the absolute income from private forests also is more to the richer households followed by the medium class households. It is due to the fact that the total household income of rich households from other sources is greater than the income share from private forest. Poor class household is receiving 4%, medium class 2.8% and the rich class households are receiving 1.9% of their total household income from private forests (Table 13).

6.3 GOVERNMENT MANAGED AND PROTECTED FOREST

Government-managed forests occupy the area of 85,463.37 ha or 40.52%, and protected forest area covers 267 ha or 0.13% out of the total forest area in the study sites. Based on the forest tenure categories total of 85,730.37 ha or 40.65% forest area is administered or managed by the government in the study sites. The government- managed forests is regulated by the Forest Act 1993 and Forest Regulations 1995. Based on the interview with the District Forest Officers, and Department of Forest Staffs, relevant data is gathered under government managed forest in the study areas. Some of the District Forest Officers stated that, people are allowed to collect grasses, dead branches and certain fruits only during the certain period or occasionally assigned by the District Forest Officer however; this type of activities is not seen in all study areas. The level of concessions to collect these items is mainly dependent upon the decisions of the forest guards and to a certain extent of forest officers. From time to time, the government has devised different modalities to manage this type of forests. One of this is the Operational Forest Management Plan (OFMP). Protected areas are another type of forestland managed by the government. There are a total of one protected area (Royal Botanical Garden, Godawari, Lalitpur District) covering an area of 82 hectares, including two national parks Langtang National Park, Rasuwa District covered an area of 171 Hectares and Shivapuri National Parks, covers an area of 14 Hectares, Kathmandu District located in the study area. These Government-managed forests are managed according to the National Parks and Wildlife Conservation Act 1973. There are provisions in the act for strict and government-led protection of wildlife and their habitats. A series of amendments in the act provided slightly participatory schemes such as buffer zone with which local people living in surrounding areas are provided with incentives (30-50% of the income earned by the national parks, and entry to the park for the collection of thatch grass twice a year) to contribute to the conservation. However, the act does not make specific case for indigenous communities or for poor and marginal households to fully enhance or support their livelihoods, although all the people from the community are entitled to get benefits in the form of community development or other development activities in the particular site. Furthermore, it is claimed that the authorities used these provisions ignoring customary rights of indigenous peoples, which have direct bearing on the livelihood of indigenous communities and poor people. However, the concept of community participation is exclusive under the government managed and protected forests rather it is focused towards the conservation of biodiversity and produce timber and other high value forest products which ultimately contribute in the national economy.

6.4 STATUS OF RELIGIOUS FOREST IN THE STUDY AREA

Religious forests provide the value in terms of biodiversity and land use by the local religious institutions or groups. Religious forests are managed through the stewardship of group of religious people. Religious forests form a special component of the forest resource that underpins the religious beliefs of group of people. Religious forests are distributed in Lalitpur, Kathmandu, Bhaktapur and Sindhupalchowk districts of the study area. Basically, religious forest is a patch of national forest allocated and managed by institution or a religious group for the purpose of religion and culture and their uses limited to the religious

purposes. The forest plan for religious forest is prepared with the help of forest technician and approved by District Forest Officer to legalize. Based on the personal interview with the religious forests group Chairperson following data was collected and presented in Table 14.

Table 14: Current Status of Religious Forests in the Study Area

District	Name	Address	Area in Hectare	No. of HHs
Sindhupalchok	Mizar Tithing	Badegoan-9,	0.17	5
Bhaktapur	Bindabasini	Katunje-8	1	13
Kathmandu	Shiva Panchayan	Jorpati VDC-5	0.5	7
	Birat Narayan	Mulpani VDC-4	0.24	7
	Mayahepi	Kathmandu Municipality-16	2.48	9
	Oaso Tapoban	Goldhunga VDC-6	1.85	9
	Gorakhnath Gumba	Shesnarayan VDC-1	3	13
	Soyambu	Kathmandu Municipality-15	31.38	16
		Sub Total	***39.45***	***61***
Lalitpur	Kirat Religious Forest	Dhapakhel Ga. Bi. Sa, Ward # 1, Lalitpur	2.34	7
	Bajrabarahi	Chapagoan Ga. Be. Sa, Ward # 3	18.29	13
	Shiva Ban Batika	Nakhipot, Lalitpur	0.63	7
		Sub Total	***21.26***	***27***
TOTAL			**61.88**	**106**

Source of data: Field Survey, 2010

For a variety of plant species that are worshipped as sacred, it is seen in the study sites that their conservation has assisted by a deliberate proliferation and protection in the landscapes for religious purposes. The direct contribution of religious forests to biological conservation and the protection of forest soils in the study may be small, but it is likely that the return of species to degraded sites outside religious forests would be more difficult in modified landscapes if these remnants is not conserved for religious purposes and to meet the necessity of forest products required by the user households for religious ceremonies. This type of religious forest management system have brought up the cohesion between the religious groups representing as a social capacity for managing resources as common property and fulfilling the demand of forest products needed by the user households for religious purpose and the religious firm and beliefs have high importance as the part of livelihood strategies of the user households in the study area as well as in Nepal in wider context.

6.5 EXISTING COMMUNITY-MANAGED FOREST CONDITION IN THE STUDY AREA

Forests are important natural capital, which combined with other assets contribute to sustain livelihoods, especially among the poor (Somorin, 2010). Unsustainable forest operations and other pressures on forest resources, such as gathering excessive fuel wood, can lead to forest degradation and permanent losses in

biodiversity. The community management of local forest patches has resulted in revitalization of the forest species or vegetation in areas were almost denuded before the communities took over the proper management of the handed over forest by the District Forest Office.

The forest user perceptions, predominantly concerning the changes in tree species, robustly support the improvement of forest vegetation and shrubs in the selected community forest. According to household survey 99 % respondent perceived/observed that there has been significant increase in the density and size of trees in the forest area after handing over the forest patches to the groups by the government (Figure 6). This finding is parallel with the many authors (Pokharel *et al*., 2007; Dev and Adhikari, 2007) who reported Reforms on forest tenure from state control to community ownership have significantly improved forest condition in Nepal. In almost all the Livelihoods and Forestry Programme (LFP) qualitative baseline study sites (see LFP, 2003), informants report that forest conditions are improving and 82% of household survey respondents stated that the quality of their community forest is improving and consistent supply of forest products received by the forest users. This is consistent with research of (Gautam *et al*., 2007; Gautam *et al*., 2009; Yadav *et al*., 2009; Springate-Baginski *et al*., 2010) that finds community forestry successful in terms of forest protection and regeneration. Respectively, a number of studies have shown an increased forest cover and biodiversity due to decentralized and community based management of the forests. Accordingly, Coleman, 2009, argues that monitoring regularity, the existence of rights to local users to harvest from the forest, and socio-economic condition are associated with positive forest conditions. During the time of forest handing over to community the most of the community forest area was degraded and the community initiated the plantation in the forest area and protected it as the stage of saplings. Through the support of District Forest Office regular forest management silvicultural operation techniques were applied to grow the trees subsequently and as needed. Natural regeneration was also occurred through the protection of forest area from any kind of activities in the forest area. As the time passes by the degraded forest area turned into the real forest area with forest vegetation. It is also due to the reason that in practice, many, possibly most, FUGs strictly protect and 'close' their newly handed over forests during the first five years of operation (Edmonds, 2005 and Springate-Baginski *et al*., 2007). Although there are criticisms on the role of community based forestry in biodiversity conservation because some of the management practices may not encourage biodiversity conservation (Acharya, 2007).

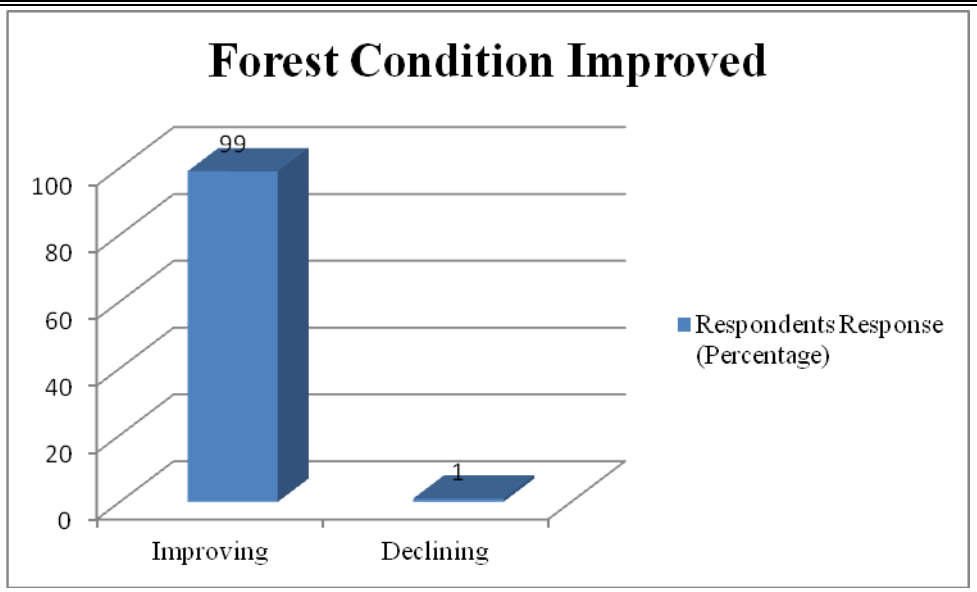

Figure 7: Improvement in forest condition

However, in line with the forest area/size coverage and contribution of forest condition improvement to the livelihoods of forest dependent users has been noted based on perception of the respondents, in this study. More strongly this findings is corroborated with Niraula and Maharjan, (2011), they found that compared to the other types of regimes, government and private forests , community forests have relatively higher rates of afforestation and lower rates of deforestation. The authors also attribute this to the forest user group's collective action for forest management practices of good governance, and monitoring and enforcement of local rules that the groups themselves prepare. Likewise, these findings corroborate an earlier photo monitoring analysis that compared photographs of landscapes over time to assess forest cover change (Pokharel and Mahat, 2009) in the part of Central Region, Nepal. The increase in forest area and the higher density of trees in Community Forests indicate that people have more incentive to conserve and manage forests (mainly through natural regeneration) in Community Forests than in Government-managed Forests. On the basis of different wealth classes, the responses received from the rich, medium and poor wealth class has no significant difference, which means all the wealth class groups agree and perceived the same. Therefore, it can be summarized that due to the improvement in the condition of community managed forests, forest users are receiving sufficient amount of forest products and which contributes to livelihood security of the forest dependent users in the study area. The following sub-section presents that due to the improvement of the condition of the community-managed forests, the changes in availability of forest products recorded.

6.6 CHANGES IN AVAILABILITY OF FOREST PRODUCTS

In order to find out, the changes in availability of forest products, the respondents were asked if they experienced any changes in terms of obtaining forest products from the forest or not? If yes, then what are the changes? Based on the response, 97% respondents stated the significant changes in terms of

obtainable forest products from the community-managed forests and that contributes to their livelihood security (Figures 8). The couple of reasons for changes in availability of forest products mentioned by the respondents are; firstly, after handing over the forest to the forest user groups by the government, the users formed executive committee and management committee to meet the forest products demands of the users as well as to maintain the productivity of forest resources in the forest area; secondly, the number of days open to obtain the forest resources from the forest was only on quarterly basis, however it could not fulfill our daily needs, but now we are obtaining forest resources from the forests on monthly basis and fulfill our demands to sustain our livelihood, thirdly, they also realized that the proper management of forests is important and it makes them feel secure to sustain their livelihood. As it is clear that after the formation of various forest tenure regimes the availability of forest products have been changed and meets the supply and demand of forest products to the forest dependent people in the study area. A number of long-term studies on supply and demand of forestry products have been conducted in previous years (e.g., Sedjo and Lyon, 2007; FAO, 2008; Hagler, 2009; Sohngen *et al*., 2009) and reported that community forestry supports forest users to get enough amount of forest products as required. The study also projected a shift in harvesting pattern from natural forests to plantations. As most of the part of National Forest handed over to the community groups are basically degraded land and where the communities do the plantation, protection and harvesting and extraction of forest products to fulfill the daily needs of the dependent users. For example, Hagler (2009) suggested the industrial wood harvest produced on plantations will increase from 20% of the total harvest in 2010 to more than 40% in 2030.The annual need for forest products must be determined differently from the availability of forest products. One can assume that the need for forest products also largely independent on climate change and land use effects, at least until available timber supplies have been nearly consumed, forcing prices so high that users cannot afford to purchase them. The simplest assumption is that the need for forest products is proportional to population size and associated regional prosperity, although FAO (2003) depends on gross domestic product (GDP) in more complex and assumption laden demand models for forest products (Baudin, 2009).

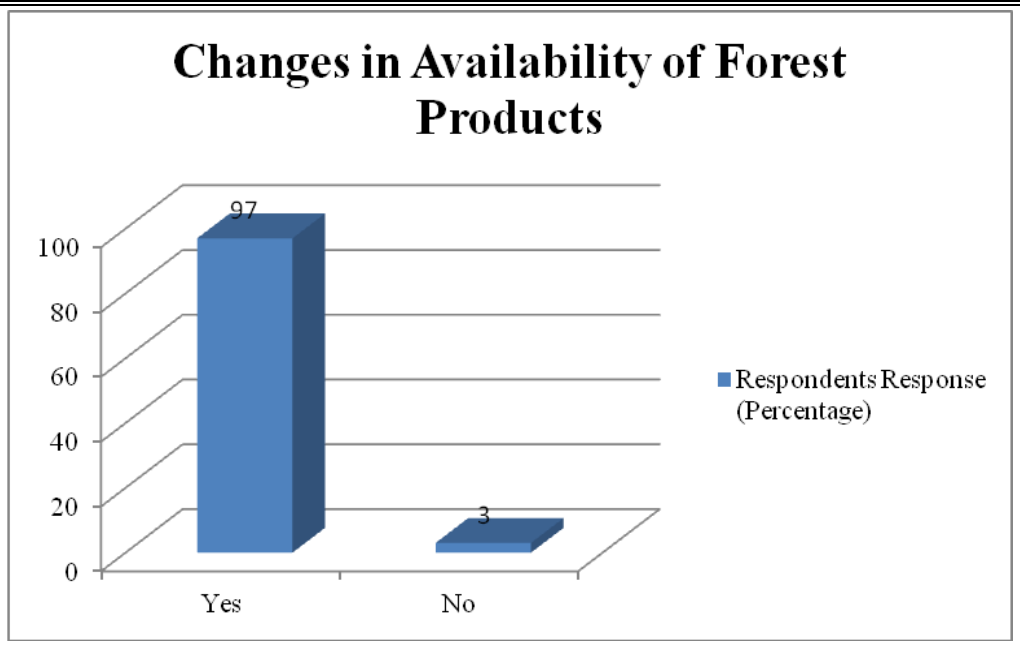

Figure 8: Changes in availability of forest products

The positive changes in availability of forest products determines that the community-managed forest is supplying the forest products to different wealth class households as needed. This finding is similar with the authors, Gautam *et al*., 2004, reported that with improved forest conditions, the availability of forest products, local people's rights of access and the supply of forest products to poorer households have increased. And, there is no significant difference between the responses received from rich, medium and poor wealth classes, which indicates that all the households from different wealth classes experienced the changes in a same way before and after the formation of community-managed user groups, and its relation and importance towards the forest user group's livelihood security.

CHAPTER 7: INFLUENCE OF FOREST MANAGEMENT REGIMES ON LIVELIHOOD SECURITY OF USER GROUPS

7.1 LEASEHOLD FOREST AND ITS EFFECT ON FOREST USER'S LIVELIHOOD

Leasehold forestry specifically targets to the poorest and marginalized households. It aims to raise the incomes and improve the living conditions of poor families, while restoring the degraded forests. Only degraded forests or shrub lands with or without scattered trees are leased out as leasehold forest. The leasehold forest area is leased out for 40 years with possibility of renewal for another 40 years. To implement the poor focused leasehold forestry, the Government of Nepal launched the first forage based project, which was called Hills Leasehold Forest and Forage Development Project (HLFFD), ran from the year 1993 to 2003. The Department of Forest took a lead role in the project. Other supporting line agencies were the Department of Livestock (DLS), Agricultural Development Bank of Nepal (ADBN) and Nepal Agricultural Research Council (NARC). Through, the Small Farmer Development Programme (SFDP), identified families below poverty line, registered leasehold groups and credit services for such groups in the study area. After the completion of first phase project, the Leasehold Forestry and Livestock Programme (LFLP), took over as an extension of HLFFD, started since 2005 and project period until 2013. LFLP is no longer restricted to only forage development but it includes the livestock development programme within it. The principle rationale to launch LFLP as the continuation of pro-poor leasehold forestry stems from the findings of the Interim Evaluation of HLFFD that the transfer of degraded forests to the poor households could both reduce poverty and reforest the hills. The leasehold forestry programme is launched only in three districts (Kavre, Dhading and Sindhupalchowk) of the study area. Based on this context the leasehold forestry programme is examined and user's households were interviewed and all the user households are from the poor class households. As a result, this study revealed that the degraded lands have started being reclaimed through the plantation grasses, fodder and tree crops by the leasehold forest user households. This findings is similar with the NPC, (2009) reports that 644 plants per hectare, which includes 253 poles and 56 trees, as against the baseline data, which counted maximum 20 trees per hectare during the hand over period. It may be due to the reason that the 95% of user's household stated of practicing stall feeding to the livestock rather than over grazing. A vast majority of poor user households (97%) expressed that due to the LFLP they have gained the asset ownership of land, improved skill to manage the degraded forest land, increased literacy of leasehold members and time saved in collecting fodder and fuel wood. Before this programme the poor user households had to walk far in search for fodder and fuel wood but now the time for collecting fuel wood and fodder is saved by 2.5 hours per household per day. The household are using the saved time for social activities such as livestock rearing, agricultural labor, kitchen gardening, attending meetings and tending children in order to enhance their quality of life. Leasehold groups have developed their own savings mechanisms and cooperatives (deposits NRs. 10-25 per day) from which they can obtain loans; this has drastically reduced their dependence on local moneylenders who charge exorbitantly high interest rates. This type of activities

have made positive impact on their social capital as well as the recognition of the access of the poor households to forest resources have build self confidence and self esteem to cope up with their vulnerability. From the survey it shows that although the leasehold user households are benefitting from this programme but the correlation of leasehold forestry with the subsequent change in physical capital of leaseholders are lacking, however, due to the support from the programme the leasehold forest user households are able to gain access to small infrastructures in building culverts, drinking water supply, renovating school and improving local trails. Accordingly, the formal process to get approved as Leasehold Forest has to undergo long bureaucratic process as the application package has to reach to the Ministry of Forest and Soil Conservation (MoFSC) for approval through District Forest Officer, Regional Directorate and Department of Forest and in result it takes one year to complete the forest lease process. It can be summarized that the from leasehold forestry, the poor user households are getting benefits to improve the quality of their life and positive impact on forest resource condition in the study area. However, due to the lengthy and complex process of forest handover as leasehold forest, the poor users are reluctant to take part.

7.2 CONTRIBUTION OF COMMUNITY FOREST INCOME TO USER'S HOUSEHOLD LIVELIHOOD

Forest management in Nepal has long been influenced by environmental discourses derived from the Theory of Himalayan Degradation (Eckholm, 1976). Consequently, conservationist view has largely dominated the policies and practice of forest management. The conservationists views are reflected in regulatory framework that often constrain forest product sale and enterprise development (Timisina, 2005; Bhattarai and Dhungana, 2008).

These policies are based on implicit assumption that increased market transactions may threat sustainability of the forest resources. Bampton and Cammaert (2007) have demonstrated how constraining regulations has led to reduced timber rent through discouraging timber sale in open market. Similarly, Iversen *et al*. (2006) have shown that the widespread hidden subsidy practiced by the CFUGs has reduced the overall income made by the CFUGs through timber sale.

The second factor for low forest based income is the imperfect or underdeveloped market for forest products and poor capacity of the forest users in engaging with this market. There is little local market available for forest products apart from timber. They are either sold in India or exported to third country often via Indian channels. Often there are numerous intermediaries along the long value chain that make the whole business inefficient and less profitable (Subedi, 2006). The worst victims are the primary producers who share very small part of the consumer price. Therefore, despite huge potentials of Non Timber Forest Products (NTFPs) as indicated by the literature, little income has been earned from the forest products.

Another aspect of forest based income is governance of the income and its investment pattern. Large part of the forest based income goes to the local groups such as CFUGs, CFM group and BZCF group. These incomes are often invested in infrastructure and other community development activities which may have

little direct benefit to the individual households and their livelihoods. The poor in particular benefit even less from conventional community development activities. There are only few activities though which poor households have benefited – employment in forest management activities and community development activities funded by the forest based income, and pro-poor income generation activities. According to Kanel (2006), only about three percent of the total CFUG income is spent in pro-poor activities. The current scenario of poor performance on contribution of community based forestry in increase income at community and household level (particularly of the poor households) is being changed through several practical innovations. For example, to increase the pie of the community, there are several initiatives made in the five research sites through enterprise development, more efficient management practices and better access to the market for timber and non-timber forest product. Similar successes are also reported elsewhere (Subedi, 2006; Pandit *et al*., 2008). For transforming community based forest governance to make it more inclusive, gender sensitive, pro-poor oriented and livelihoods improvement cantered, there are several methodological innovations are being made (Mahanty *et al.*, 2006; Banjade *et al*., 2007; Pandit *et al*., 2008).

Although the fund of the community forest managed groups spent group funds much on the community development activities but the various forest products received from the community forests by the forest user households is undeniable. And which ultimately contributes to income of user households obtained from community forests. The following sub section will provide the gross and net income of households received from community forest under different wealth class users.

7.2.1 Gross and Net Income per Household from Community Forest under different wealth classes

Community forestry is one of the major sources of ground grass, fodder, fuel wood, timber and leaf litter to the forest users. Besides, the benefit from community forest provides several other indirect benefits to the user's households such as water source, forest soil and fresh air. In the study area it is found that most of the forest products derived from the community forests are consumed in the household and not sold out the community forest user groups. The mean gross income of a household from community forest is NRs. 10377 (Table 15). Whereas, the mean net community forest income of a household per year from the use of forest products is NRs 5227 as shown in (Table 16).

Table 15: Annual mean gross community forest income of a household according to different wealth class

Household Category	N	Mean Gross Income (NRs.)		
		Mean	Minimum	Maximum
Rich	54	11440	1500	33000
Medium	106	9728	2680	19550
Poor	106	9962	2345	29400
Total	**266**	**10377**		

Source of data: Field Survey, 2010

***Note: US $ 1 is equivalent to NRs 85 at present**

Table 15 and 16 shows, that poor class household are getting low gross and net income from community forest than the rich class households. The income is still low for medium class households. The reason behind this may the fact that the poor households have less land and livestock ownership and so utilize less quantity of fodder, leaf litter and grass. Also the poor class households use very low quantity of timber. The medium class households, though they have larger number of livestock as compare to poor households, they use low amount of forest products from community forest and use more from their private farmlands. Rich households use more timber than other two classes of user households, so they are getting higher gross and net income from community forests.

The findings are parallel to that of Richards *et al*. (1999) and Adhikari (2004) in case of poor households which confirm that poorer households are currently benefiting less from community forest mainly because they have less livestock and farm land, which provide the main demand for forest products as inputs. But percentage share of community forest income to the total household income to the poor class households is more than the medium and rich class households (see Table 17).

Table 16: Annual mean net community forest income of a household according to different wealth class

Household Category	N	Mean Gross Income (NRs.)		
		Mean	**Minimum**	**Maximum**
Rich	54	6111	145	23655
Medium	106	4221	165	13105
Poor	106	5350	290	19780
Total	**266**	**5227**		

Source of data: Field Survey, 2010

***Note: US $ 1 is equivalent to NRs 85 at present**

The result obtained from one way ANOVA test and LSD test indicate that there is no significant difference *(P value>0.05)* in the mean gross and mean net community forest income between the rich, medium and poor classes of user households at 0.05 levels.

7.2.2 Share of Community Forest Income in Total Household Income

The share of community forest income in total household income under different wealth class households is shown in Table 17 below.

Table 17: Annual mean community forest income and its share in total household income according to different wealth class (N=266)

Household Category	Community Forest Income (NRs.)	Total Household Income (NRs.)	Share of CF income in total household income (%)
Rich	6111	219649	2.7
Medium	4221	103853	4.0
Poor	5350	43338	12.3

Source of data: Field Survey, 2010

***Note: US $ 1 is equivalent to NRs 85 at present**

Likewise the mean annual household income per household from the community forest is NRs. 5227 (see Table 16). Where a rich class household gets NRs. 6111, medium class household gets NRs. 4221 and a poor class household gets NRs. 5350. The findings show that the share of community forest income in poor class total household income covers 12.3 % followed by medium class 4.0%. And the rich class households are receiving 2.7% of their total household income from community forest.

7.3 USER' S PARTICIPATION IN FOREST MANAGEMENT ACTIVITIES AND WELL BEING

An examination in the participation of user households under different social groups in the Forest User Groups (FUGs) meetings that make rules governing the development, maintenance and use of the forest, revealed that the participation is not uniform different types of forest management activities (Figure 8). The result shows that, the user's participation is more actively involved in the regular meetings and General Assembly (GA), comprises 99% user household participation. The regularity in organizing the GA meetings implies that the executive committees in the study sites are also responsible for making necessary rules and decisions using the authority that usually rest on the GA. All the user households are also greatly participate in the forest management activities such as forest protection activities (90%), forest products utilization (88%), and followed by community development activities (75%). In the arena of decision making process, the forest user committee member households are mainly involved in regular monthly meetings. The result shows that more than 50% forest user committee member households are regularly participating in the user defined forest management activities in the study area. In a case of participation in trainings programs, the level of all user households' participation encounters only 51% (Figure 9). It is due to the fact that the training, workshop organized by the District Forest Office, the participation in such activities is executed by the chairperson and some other forest user committee members participate. Therefore, the entire user household's level of participation in trainings category shows, lower than in other forest management activities. Mainly the user committee member participates

in the training activities withhold to the understanding of what being presented in the trainings sessions and to transfer knowledge to the user households whenever possible and required.

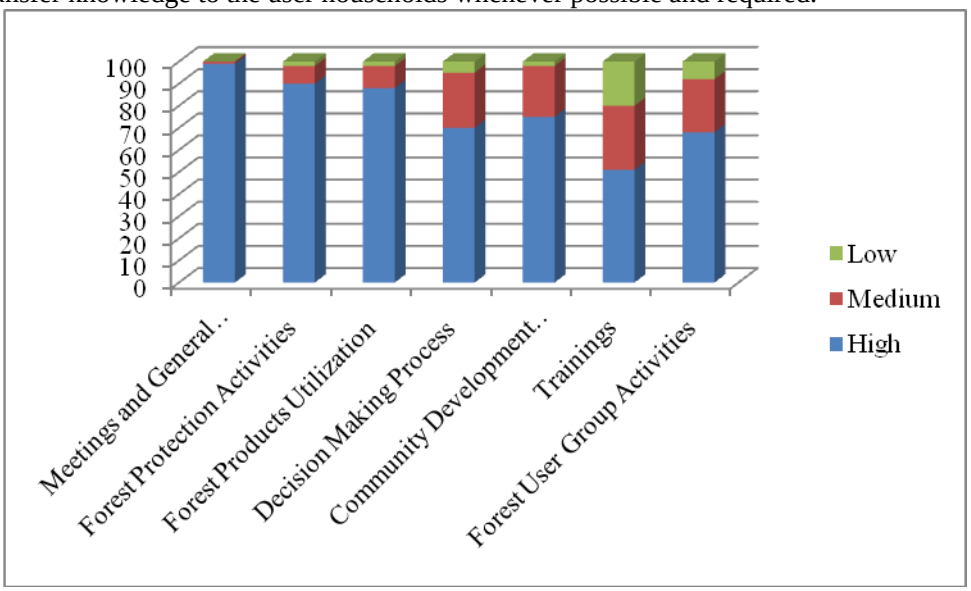

Figure 9: Level of participation in various forest management activities

In the study area the category under the Forest User Group Activities includes such as inauguration of temples, environmental campaign etc. The level of participation of all user households in forest user group activities consists 68%. However, this type of activities is not executed in regular basis or it is held occasionally therefore, the number of time user households attended in this activity varies annually.

In addition to income and tangible goods, the community-managed forests are also providing non-tangible benefits that are contributing to people livelihoods and social status. Some of the factors identified in the study area associated with community-managed forests that have affected the sense of well-being include: self-esteem, sense of control and inclusion, sense of improvement in the local environmental condition, and acknowledgement of the user groups achievements by outsiders. Activities such as participatory management of forests and community development have supported in increased well-being especially of all category of user households. However, Regmi (2008); Lama (2009) argues that there are certain factors affecting participation such as age, sex, marital status, literacy and wealth affects individual participation, mainly the participation of women in user committee work. Taking this point into account, the participation of women in the overall forest user's activities in the study sites such as general meetings comprises low as compare with men. It is found that due to the reason, that the women are more engaged in heavy workload in household activities, timing and duration of meetings held, and men's resistance equity in benefit sharing mechanisms are the major factors affecting participation of women in the study area.

7.4 FOREST PRODUCTS COLLECTION FROM COMMUNITY FORESTS

Forest is an important natural capital and a main source of livelihood (Vedeld *et al*., 2004; Warner, 2008). The contribution of forests in fulfilling basic needs of user households for essential forest products is

found to be variable across the sixteen CFUGs. Generally, the forest user group collects fuel wood, ground grass, fodder, leaf litter and timber. The utilization of these collected forest products are for various purposes such as cooking, heating, animal feed and produce organic fertilizer. Timber distribution is available for free of cost to the households who are affected by natural disaster such as fire, floods and to undertake rituals ceremonies.

The sampled households collects fuel wood (96% hh) for heating and cooking, ground grass (75% hh) and fodder (65% hh) for animal feed, leaf litter (71%) to make organic manure, timber (68% hh) and ceremonial produce (72% hh) for ritual ceremonies (Figure 10). Fodder collection in CF occurs primarily at the end of the dry season, mainly from April to June; collection of leaf litter from CF for animal bedding and mulching is a common practice. Households in the study area use a combination of dry leaf litter, non-palatable green vegetative material, crop residues and remains of uneaten fodder as animal bedding. The majority of bedding materials originate from CF, shrub lands and grasslands. It is harvested by lopping and is gathered as litter; timber is supplied to build houses as per the request of households who need to construct a new house. The number of trees supplied for building a house varies from one to three depending upon the size of the house and the tree and for ritual ceremonies they collect dead, dry and disease woods, dry fallen leaves, dry twigs found in the CF.

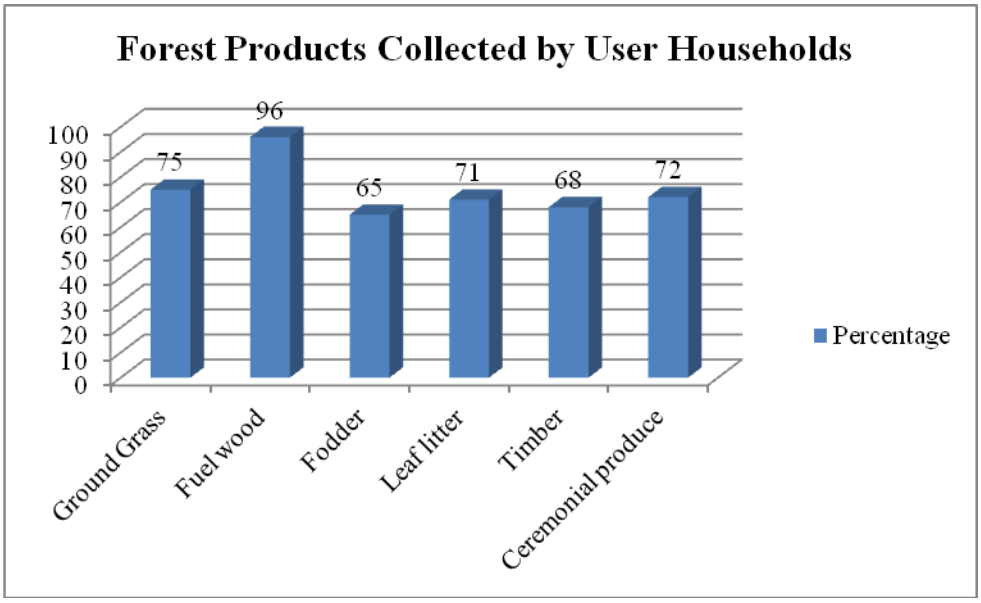

Figure 10: Various forest products collected by user households

The qualitative interviews and observations revealed in the remote study sites that the intensive use of wood as fuel for cooking and heating of the houses, was due to the non-availability of alternative sources of energy. This findings are corroborated with some previous researchers (Bhattarai and Dhungana, 2008; Hussain, 2009; Mehmood, 2010) who concluded that increasing demand for forest wood by the local population for household and other subsistence needs is one of the main 'pressures' on forests. Natural gas was not available in all of the rural study sites. There is electricity supply in most of the study sites, but the higher cost of electricity restricted its use for cooking and heating purpose. In addition to the

collection of essential forest products, the community based forests are also providing several other benefits to the local villagers and the surroundings. In order to highlights such as recreation area (picnic spots, hiking), cremation spot for the majority of Tamang community, clean water, river sites, religious point (temple inside the forest area), aesthetic value, edible fruits, wild animals etc. Although the direct contribution of community forestry to income generation is not substantial, however, only ten community forest user groups have assigned community forest guard and paid NRs. 1000-1500 in monthly basis. Rest of the CFUGs circulates the guarding system by the individual households on rotation basis. Other earned income at community level is largely spent in community level physical infrastructure development with limited contribution on increase in direct household income. The following figure 11 highlights the various forest products collected by the user households according to different wealth classes in the study area.

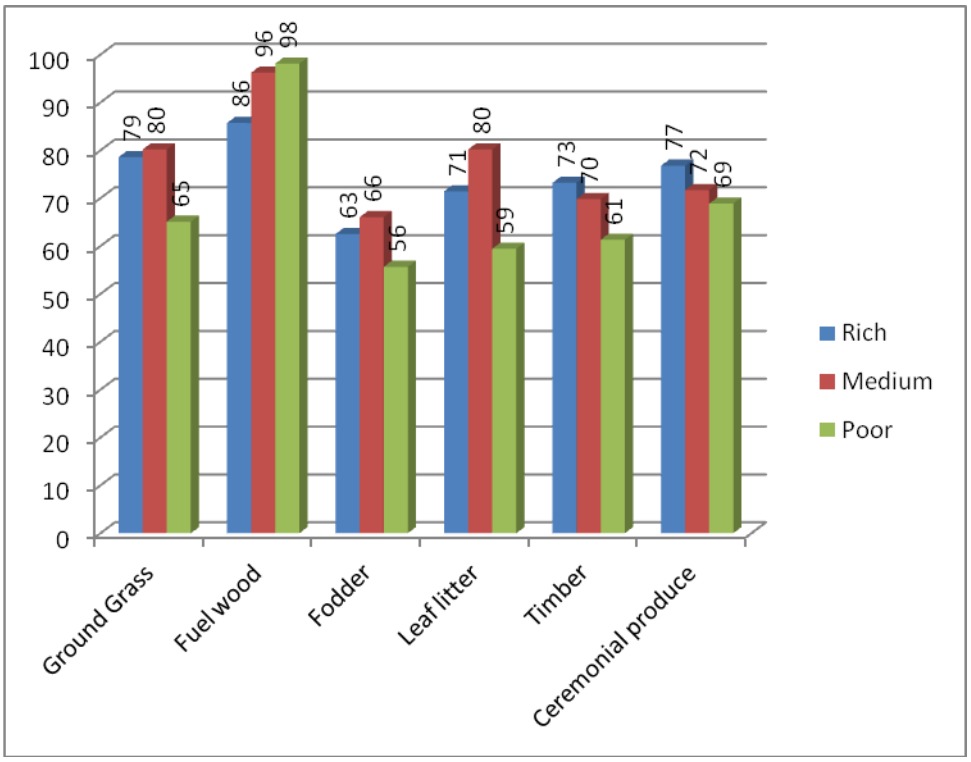

Figure 11: Various forest products collected by user households under different wealth class

The results show that the 98% of the poor class households collects fuelwood from the community-managed forests, followed by 96% of the medium class households and 86% of the rich class houeholds respectively (Figure 11). As from the it can be analyse that the fuelwood collection by poor class households acquire highest percent beside that in rest of the other types of forest products collection shows lowest percentage as compared with the medium and rich class households. It is due to the reason that the area of land landing and livestock holding (Table 4 & 6) is greater in the medium and rich class households than the poor class households. Therefore, they requires and collects more forest products as compared to poor class households. This finding of Escobal and Aldana, (2009) also confirmed that poor households derived a relatively large share of fuelwood from community forest compared to the better-off households in the same community. It can be summarized that the various forest products derived from

the community-managed forests are contributing to rich, medium and poor class households in order meet their basic needs and support to secure their livelihood.

7.5 SOCIAL NETWORKING AND CAPACITY BUILDING AMONG USER'S

Social capital refers to the institutions, relationships, and norms that shape the quality and quantity of a society's social interaction. Social capital is not just the sum of the institutions which underpin a society-it is the glue that holds them together (www.worldbank.org). Since the forest tenure reform has largely transferred management responsibilities to the local groups, it has promoted various community based institutions, thus enhancing social capital. Consequently, in the study sites, the local people/forest user's households have formed various groups and sub-groups, their networks have built alliances with other civil society organizations and coordinated with local governments for development activities. For example, they have formed national networks such as Federation of Community Forestry Users of Nepal (FECOFUN[12]), cooperative of Leasehold Forest (LF) user groups and a VDC level committee of conservation area management committee (CAMC). FECOFUN established in 1995, is a representative body of the community forest user groups. The role of FECOFUN is to advocate the rights of community forestry users; strengthen local capacity; establish linkages; lobby on behalf of the forest users and provide legal advice and assistance to forest user groups. Many of the local groups have also formed networks based on issues or territories (or political boundaries) such as a VDC level coordination committee (in Lalitpur district). As a result, the local forest management groups have become the windows for development activities, conflict resolving mechanisms, including peace building and democratizing society (Pokharel *et al*., 2007)

Community forestry, Leasehold forestry, Religious forest, Buffer zone forest users in the study area fundamentally also involves in handing over user rights of the government-owned forests to the groups of local people who customarily hold the *de facto* user rights of such forests. The amendment of the Forest Law in 1993 and 1995 put the control of forests into the hands of the resource users organized into Forest User Groups. The responsibility of management, development, and utilization of forest areas has been handed over to Forest User Groups, with property rights given to them in order to gain access to forest resources. Forest User Groups are legitimized as an autonomous institution of the local community, and comprises of various castes and ethnic groups with different social, economical, and cultural backgrounds within a community. Through the development of locally-based institutions, individual actions at the community level are shaped, and interactions with other actors are structured. For example, in Champadevi, Chunpahara, Naudhara, Baisipati Mahila, Joong-gang, Sayaubari, Maazigaon, Hathi Danda, Nepane, Amaltari CFUGs etc., where the forest has been managed with a high degree of collective action by forest user households, forest conditions have improved in terms of the increase in abundance of

[12] FECOFUN is an autonomous, non-profit, membership organization that is accountable to its constituency-the forest user groups. Almost five million people are affiliated with the network, and it is one of the largest civil society networks in Nepal.

tree species and shrubs. Despite the characteristics of this community-which has a large membership, increasing population growth, and fluctuating migrant patterns it overcomes potential problems of cooperation by establishing smaller subcommittees and subgroup activities. Within the subgroups, forest resource management activities and products are allocated. The formation and implementation of the self-governing Forest User Committee/Groups at the community level has been causative to livelihoods by enhancing social and human capital in the study area.

Similarly, many members of the Forest User Groups have participated in several trainings, workshops and study tours organized by District Forest Office and in some cases jointly by the District Forest Office and Donors and FUGs. Mainly, the trainings provided are forest management, non timber forest product management, record keeping, and silvicultural operations, and strengthening social networking, skill development to the forest user household members. Although those expansion activities are principally focused on humanizing understanding and skills in different dimensions of community forest management, they are essential in enhancing overall individual capacity building of the user households. During the field study it is also revealed that a number of the user group leaders who participated in several community managed forestry extension activities in the past have presently taken up high level of managerial (e.g. manager of local cooperative bank/saving and credit groups) or political (e.g. Village Development Committee Chair) positions at the Community/Village level. In all the sites, community forestry has stimulated cooperative activities in the community after the handing over of government owned forest to the local community. Cooperative harvesting within the forest in most of the study sites, various groups are formed such women group with the objective of forest-based income generation; saving and credit group to save money with the goals to use the savings in period of financial crisis at household level of each member and to better secure their livelihoods.

7.6 COMMUNITY FUND ALLOCATION AND COMMUNITY INFRASTRUCTURAL DEVELOPMENT

Fund generating from various activities of the forest user groups are the significant outcome of community-managed forest in the study area. The forest user groups generate funds from various activities for instance, selling of forest products outside the group, levy from group members, fine and penalty, and donation from government organizations, non government organizations, international non government organizations, subsidized distribution of forest products to the group members are the important source of income. The current status of forest user groups fund is given in Figure 12.

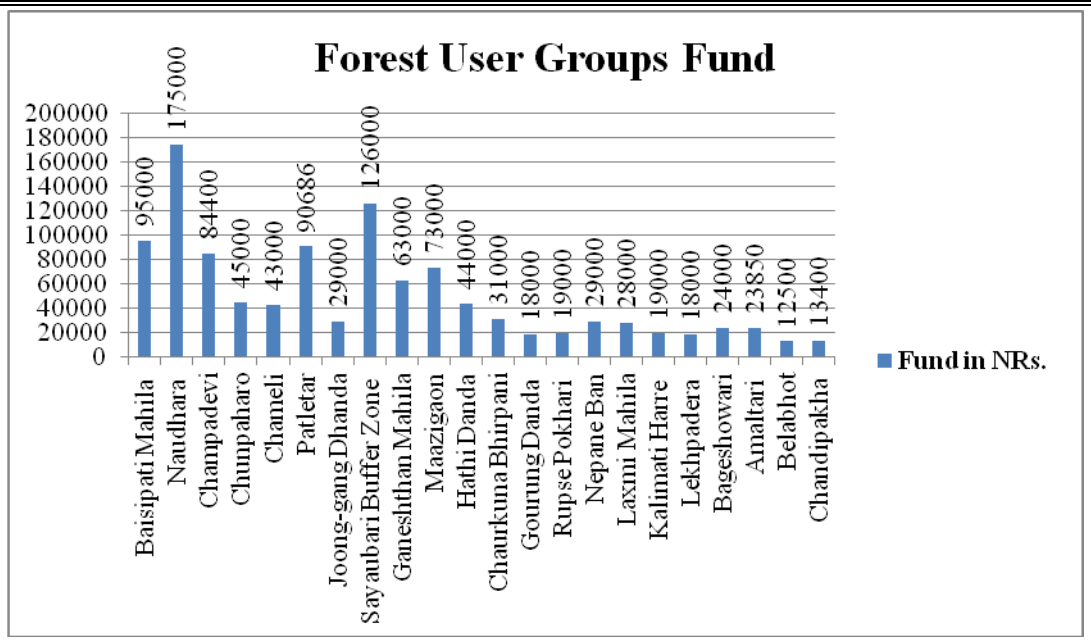

Figure 12: Status of Forest User Groups Fund in their own Bank Account

The Naudhara FUG has the highest amount of savings (NRs. 175000 = US$1902) in their bank account, which was the balance of 2009/10 of the studied period. Similarly, the saving of Baisipati Mahila was NRs. 95000, Champadevi was NRs. 84400, Chunpaharo was NRs. 45000, Chameli was NRs. 43000, Patletar was NRs. 90686, Joong-gang Dhanda was NRs. 29000, Sayaubari was NRs.126000, Ganesthan Mahila was NRs. 63000, Maazigaon was NRs. 73000, Hathi Danda was Nrs. 44000, Chaurkuna Bhirpani was NRs. 31000, Gourung Danda was NRs. 18000, Rupse Pokhari was NRs. 19000, Nepane Ban was NRs. 29000, Laxmi Mahila was NRs. 28000, Kalimati Harre was NRs. 19000, Lakhpadera was NRs. 18000, Bageshowari was NRs. 24000, Amaltari was NRs. 23850, Belabhot was NRs. 12500 and Chandipakha was NRs. 13400. The total savings amount of these groups was NRs. 1103836 in their bank account during the period of data collection. Each fiscal year the Forest User's Committee presents the fiscal year budget to the forest user group's member and accordingly they allocate the budget in different development activities. The fund generated by the community-managed forest user groups from different sources in the study area is given in Figure 13 below.

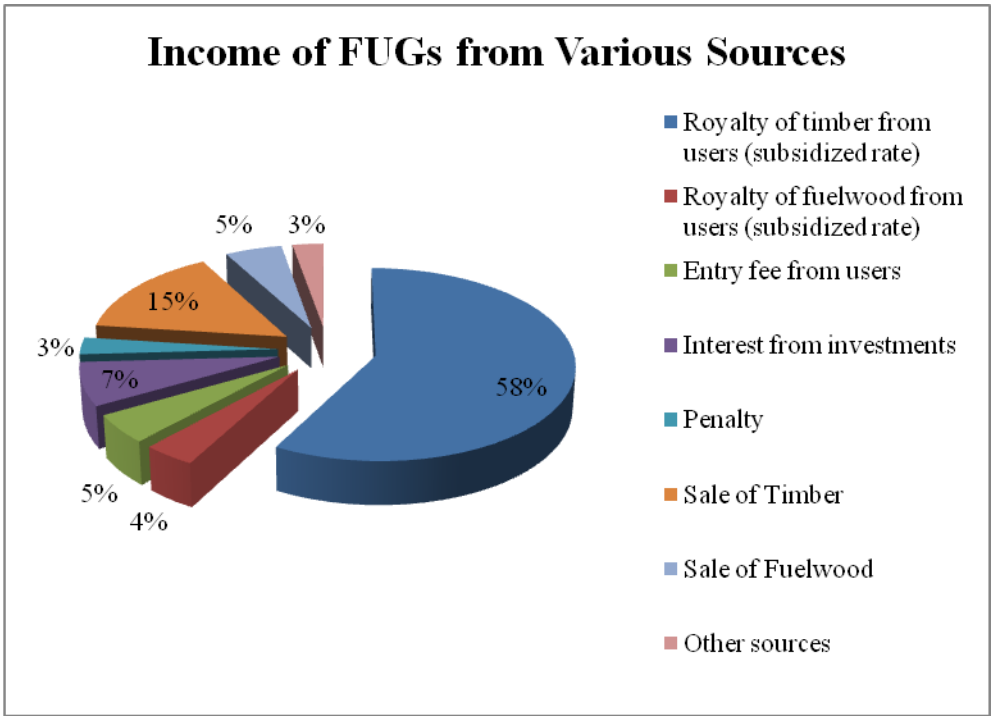

Figure 13: Fund generated by forest user groups from different sources

The forest user groups collects fund from various sources and the majority of sources of fund constitute royalty of timber from users, royalty of fuelwood from users, sale of timber, sale of fuelwood, entry fee from users, interest from investment of group funds within the users, penalty on abuse of rules and other sources such as kind supports, donations. The data for the group fund is collected from forest user groups Operational Plan (5 years) so that the result can be generalized for the selected community forest user groups. The majority of the income of the user groups comes from the royalty received from the users for the use of timber products for construction works, which is 54% of the total fund (Figure 13). Large quantity of timber in the study area comes from Sal, Chilaune and Pine. In the study of Pokharel (2009) found that the income from the timber comprises 48%. It may be due to the variation of in the price of timber over time. On the other hand, the similarity in these studies, the largest income in the forest user groups fund comes from the sell of the timber either outside the group or inside the group at subsidized rate. Timber is generally used by the better-off user households than the poor user households. So this finding is parallel with (Kanel and Niraula, 2006; Bampton and Cammaert 2006; Iversen *et al*., 2006), who reported that the poor user households are getting less benefit from community forest in terms of timber products. Similarly, Kanel (2006), found a significant income being generated from community forestry as compared to the revenue generation by the large areas of government managed forests.The expenditures of forest user group fund in various activities is shown in Figure 14 below.

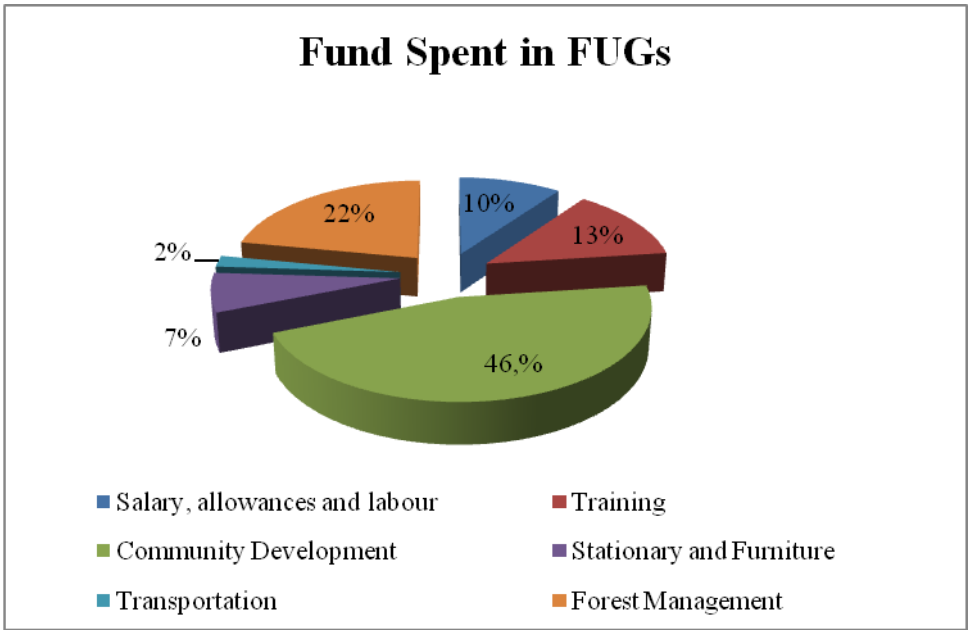

Figure 14: Fund spent in various activities by CFUGs

The FUGs funds are spent on various development activities such as graveling and building concrete village roads, supporting schools and clubs, and constructing culverts and bridges and of course in the forest management activities. In the study it has been found that the Naudhara FUG has spent NRs. 70000 on village road construction that connects their village settlement to the main market area. The Joong-gang Dhanda FUG has donated about NRs. 4000 to the local primary school to contribute the salary of a locally hired school teacher. The Laxmi Mahila FUG distributes the group fund amount NRs. 9000 as a subsidize loan to their group members to invest in small-scale enterprises: goat farming, chicken farming, pig farming. The Hathi Danda FUG has spent NRs. 15000 on drinking water supply to the areas where there was lack of drinking water sources. Figure 14 shows that among the total fund in FUGs, 46% are spent on community development activities, followed by 22% in forest management activities, 13% in training programs to the user group members, 10% for the salary, allowances and labor cost for the hired staffs, 7% in stationary and furniture and 2% of fund are spent on transportation purposes. Most of these have benefitted all the forest user's group members equally. As expressed by the respondents, particularly, the improvement of school facilities has been greater benefit to each member as they can afford to send their children to school and receive basic education. In the study, I also tried to verify the forest user committee decision from the forest user group members regarding the group fund utilizations. In the interview, it was also asked, to the users, in which area they want to invest their group fund. Various responses were obtained, however many users have raised voice as they would like to spend their group fund on community development and forest management activities in order to get more benefits from forests and community infrastructural development.

7.7 CULTURAL AND TRADITIONAL VALUES OF FORESTS PERCEIVED BY USER'S

For all communities surveyed, the forest is seen to have a significant cultural and spiritual value that is essential to the social framework of the village communities, particular among the older generation and those who are well established in the study area. Similarly, many aspects of Nepali culture reflect the close integration of spiritual values and beliefs with the natural environments. Rivers, Lakes, mountain peaks, and forest areas are considered as sacred abodes of Hindu gods and goddess. There is a deep-rooted belief that spirits reside in the body of certain trees and plants, while certain species are protected as the incarnation or favorites Hindu and Buddhist deities. These ceremonies still carry a great deal of belief in them, across the sampled areas, and a range of respondents stated that area of forests and lakes are traditionally preserved close to places of worship and sites of religious significance and killing of animals around such places are prohibited. Such cultural values are favorable for conservation of biodiversity, natural resources and the beliefs and attachment resided between the user households and nature as part of their livelihood securing activities.

Cultural values also underpin many of the indigenous forest management practices which have existed in study area and for many years, particularly in remote areas. Communities have regulated access to and harvest of a wide range of forest products, often based on the cultural value a group attaches to particular products. For example, indigenous knowledge of medicinal plants is held by specific groups who have traditional rights to harvest, while is some areas wild mushrooms are collected only by one group, even though others have access to the same area of forest. Transhumant livestock owners have developed a management system that makes effective use of seasonal availability of fodder in different ecological zones, often paralleled by a symbiotic relationship with settled cultivators whose lands gain fertility from animal manure and as a means for their livelihoods.

The biocultural perspective is entirely a product of the crisis narrative. While there are certainly very good reasons to be concerned about the rapid erosion of both biological and cultural diversity on a global scale (Redford and Brosius, 2006), a perspective that is defined entirely with regard to crisis ignores the dynamic, creative possibilities that can emerge from human agency and processes of hybridity. However, not all cultural values have positive effects on the environment; for example, prestige associated with ownership of large herds of livestock may result in overgrazing and degradation of forests and grasslands. In addition, an increasing population making more demands on finite resources, increased market opportunities and exposure to outside cultures is eroding both religious sentiment and cultural values, even in rural areas of Nepal, resulting in a gradual breakdown of traditional management systems. An interview taken with the respondents from Rasuwa District, in the study area regarding the cultural and traditional importance of forest and the connection between livelihoods is given in Box 3.

Box 3: An interview with Min Bahadur Gurung

Respected local elder from Rasuwa and Chairman of the region's Conservation and Development Committee

Interviewer

You have been involved for many years in the indigenous management of your region's forests and other natural resources. Has culture or religion influenced your management of these areas?

Min Bahadur Gurung

Of course. In our village we practice Hinduism, Buddhism and Animism. Our ancestors or forefathers managed their forest resources by themselves without the help of outsiders. They set aside a forest area for fuel wood and harvested it on a rotational basis.

Interviewer

Would you think there is a negative impact on the forest when you harvest for fuel wood?

Min Bahadur Gurung

When you harvest the selected old trees of a particular area, and for a certain period of time, there will be no adverse impact on the environment. Our traditional rotational system makes the forest harvesting sustainable in the long run. We also feel very familiar with our forest. We know what species of trees to harvest, when, where and for how long.

Interviewer

It seems that you and your people have a close relationship with the natural environment. How do you link culture, religion, environment and livelihood?

Min Bahadur Gurung

Our culture and religion provide education for nature conservation. In every village we have a forest sanctuary where we worship our forest god. The forest is prohibited from any use and is thus a home for many birds, deer, insects and other living forms. We believe that if we cut such sacred forest we will be sick. The forest's resources, especially traditional medicinal plants, are also important. We use them to treat many common diseases. Our sacred forests are set aside above our village. We feel safe from landslides and our water source is kept in good condition. It also keeps our village green thus providing a high aesthetic value. Our forests shape our lifestyles and behaviors.

Interviewer

The way you protect your forest has high ecological value. Would you believe this system to be sustainable?

Min Bahadur Gurung

The way we protect and conserve our forest is for our benefit. We harvest the fruits of our conservation efforts. Since our forefathers, we have followed this culture and religion. Thus, sustainable management and use of the forest resources is our way of life. We are not relying on outsiders to manage our forest and wildlife and our conservation practices don't rely on money for its success. Everyone in the village looks after their forest. Our communal management system is working. Our children are also growing into this system, so I hope they learn the way we are managing our resources. Additionally, the arrival of the Langtang National Park (LNP) was a blessing for us.

Interviewer

How is Langtang National Park (LNP) working in the village?

Min Bahadur Gurung

We support LNP integrated conservation and development program through people's participation. It has helped us to

strengthen our traditional institution with the formation of the Conservation and Development Committees. LNP emphasizes traditional resource management practices. This has allowed us to continue our traditional systems of fuel wood collection and rotational grazing in our alpine pastures. LNP didn't drive the local people from the villages. Other protected areas such as national parks in the Himalayas have excluded local people totally which has created conflict between parks and people. LNP has also enabled us to implement small-scale community development projects such as drinking water supply, medical facilities, irrigation, bridges and trail construction and repair. Additionally, we also now have a forest nursery.

Interviewer

What do you think about sustainable living and how do you inter-relate your development works?

Min Bahadur Gurung

We believe development should not be an agent for destruction to our environment. It rather should aim to meet the basic needs of the people, for example provide forest products, food, cotton and shelter. Most importantly, we are protecting our environment. If you have fresh air to breathe, fresh food to eat and a safe shelter in which to sleep, then you live in a sustaining society. Our lifestyles will be more sustainable if we learn to live in harmony with our environment. If we neglect the environment that is sustaining our lifestyle, then we will be destroying our future.

Source Field Survey, 2010

7.8 STATUS OF EQUITY WITHIN FOREST USER GROUPS

Fairness of representation, participation, costs and benefits distributions are conceptualized as equity which is also equated with justice by some (Timsina and Ojha 2004; Banjade *et al*., 2007). The link between community forestry and forest conservation is concerned with the distribution of benefits among forest users. Usually it is assumed that the transfer of management rights to communities would increase the price of forest products or the value of the forest stock. This is not necessarily the case, as the executive management board might decree lower prices on timber compared with private market prices for social reasons (Dhakal and Masuda, 2009). Many studies reporting on the benefit sharing among forest users agree that more often the richer families siphon off the economic gains, by questioning whether or not the social objective in community forestry of a more equitable distribution of incomes is attainable (Iversen *et al*., 2006; Oyono *et al*., 2005; Thoms, 2008). By equity results of the forest tenure regimes, I have analyzed equity in participation in decision making process, representation and in sharing costs and benefits under community-managed forests. Diversities observed among several community forestry programs in the study area in relation to the sensitivity on addressing equity issues. Access to the community forests for non-consumptive uses is free for any time. All the user groups also permit free collection of fallen twigs and leaf litter during the time specified by the Forest User's Committee (FUC) but restrict the use of forest products that have cash value (such as timber, firewood and trade non timber forest products). Rich class households collects more timber than the poor class households (see Figure 11), although the timber price is reduced for the poor households. As the poor class households primary needs of timber is less as they are capable of building small huts and which require less quantity of timber. During the focus group discussion with the poor class households, most of them pointed out that they

could harvest more timber if they were allow to sell timber individually. This is, however, restricted by the community forest user group's (CFUGs) rules that users, regardless of their well-being categories, and cannot sell timber. Although, it seems attractive at least in theoretically that CFUGs have made provision to reduce the price of timber or to provide timber free of charge to the poor class households for their domestic use. As timber is neither their subsistence need of the poor households nor they are allowed to sell, therefore it brings that the poor households are not benefiting from this rules. Rather the major concern arises here the question of power: powerful elites dominate the decision making procedures and formulate rules which may not reflect the needs of the poor class households. This is consistent with the insights provided by a theory of access (Ribot and Peluso, 2003; Sikor and Lund, 2009). This suggests that access, the ability of particular actors to benefit from resources depends upon the dynamics within a resource controlling group and decision making process. Procedures often determine the outcomes (Schlosberg, 2007). Looking at the procedures and the practice of the CFUGs, electing committee members and decision making processes seem to account for inequitable outcomes. The operational plan of CFUGs, do not account for the importance of heterogeneity in terms of class (poor, medium and rich), and culture not only for benefit sharing but also in the representation of all users in the executive committee. As Table 18 shows, the rich (49%) dominate executive committee composition in the community forest user groups, In terms of gender, 68% of the committee members are men. The representation of the *Dalit* in the committee is only 3%.

Table 18: Representation in the executive committee of CFUGs by class, caste and gender in the study area (N=266)

Category	Sampled households (%)	Representation in Committee (%)	Representation in key position (%)
By wealth categories			
Rich	20	49	61
Medium	40	37	30
Poor	40	14	9
By Gender			
Male	50	68	80
Female	50	32	20
By Caste			
Non Dalit	88	97	98
Dalit	12	3	2

Source of data: Field Survey, 2010

This lack of representation of Dalit is due to the lack of positive discrimination policies in CFUGs, as the Dalit, historically an oppressed and marginalized community and are less powerful. In addition, in the key positions (namely the Chairperson, the Secretary, and the Treasurer), the representation of the poor, *Dalit* and women is worse. This finding is opposite from the study conducted by Dahal and Chapagain, (2008), who reported that the marginalized women and *Dalits* have taken on major positions in executive

committees of forest user groups. As this study was conducted in the Mid Western and Far Western Region of Nepal, which indicates that the scenario of representation varies from region to region within the Country. While it is stated in the constitutions of CFUGs that an inclusive committee will be formed representing all class, caste, gender and the settlements. Related to this, Maharjan *et al*., (2009) argue that promotion of fair representation of the poor and marginalized people through positive discrimination is needed to ensure their access to decision making forum. As referring to the results above, this leads to a lack of voice in decision making process for the poor and marginalized people, increasing the likelihood that their issues and concerns may not be given adequate attention. The findings indicate that the poor user households are benefiting less and bearing more costs in comparison to better off households. Similarly, due to the lack of recognition and representation of the poor and marginalized people in the committee, interpersonal and public sphere accounted for equity. In other words, community based forest management in the study area needs to engage directly with social change, focusing on how arrangements get taken up, what are the outcomes of the engagement, and where they are taking different social groups. The implication then is that, to address the equity issue, Fox, (2007) reports that, this will require developing institutional contexts that facilitate the collective action that is "critical to providing leverage and voice to underrepresented people".

7.9 CHANGING CONTEXT ON FOREST DEPENDENCY IN THE STUDY AREA

It has been notice that in several places the dependency of FUG members or villagers on community forests has been changed over the time. The findings from the most of the sites mainly in the semi-urban areas/sites show that there has been a general decrease in the dependency on community forests over the years.

The indicators involved are mainly due to the improved access to information, knowledge, market and technology, the changes in forest dependency is leading pragmatic. Similarly, this also generated changes in household livelihood security/strategies, farming practices and living conditions of the forest user group households or members. Formal interviews with the community forest user group Chairperson reported that many households entirely used fuel wood for cooking before but now they also use kerosene, liquid propane gas (LPG) as an alternative energy resource, and have limited the use of fuel wood for heating in winter months and cooking feed of pet animals. A regular access and availability of improved/hybrid seeds and technology and agricultural extension services has contributed to more rigorous and commercially-oriented farming system in some sites.

Livestock rearing pattern changed and prevalent milk collection centers established in rural areas due to increased accessibility has motivated the local farmers in most of the sites to replace their traditional breeds of cattle and buffaloes with fewer, more productive hybrid varieties that depend less on forest fodder and more on commercial feeds.

Till now, it is seen that a decade long Maoist movement/insurgency also increased the migration from rural to urban areas mainly for the young generation/individuals in the study sites for study and

employment, which also lead to change in occupation as daily wage labor even migrating abroad. Decreasing interest of young generation on traditional farming is another important factor behind the changing livelihood strategies of the households. Past studies have reported that male members of households from the area are becoming increasingly attracted towards wage laboring in Kathmandu and other places and are becoming less and less involved in farming (Collet *et al*., 2006; Jackson *et al*., 2008). The findings indicate the changing of profession may affect the long term goals of community managed forestry in the coming future.

7.10 COMPARISION BETWEEN DIFFERENT FOREST TENURE REGIMES IN THE STUDY AREA

With the growing emphasis on the devolution of responsibility for management of forest resources to local communities, the importance of an appropriate policy and legal framework is increasingly being realized (Lindsay, 2009). There are considerable differences between community-managed; government-managed and privately managed forest regimes approaches in terms of policy and legal framework. With regards to the forest rules and regulations and overall objectives; Community forestry aims to fulfill basic forest products needs, whereas the main objective of leasehold forestry is poverty alleviation and rehabilitation of degraded forest lands (environment conservation). Community forestry has been marked a tremendous shift from state-centric and top-down to community based participatory approach to forest governance. Community forestry is supported by adaptive decentralized and devolved policy process and widely recognized as an innovative approach to forest management and governance. Based on the traditional use pattern of forest patch, the state devolves forest management rights to local community, commonly known as the community forest user group (CFUG). By granting CFUGs the rights to protect, manage and use the forest products, the community forestry aims to nurture deliberative democratic platform and enhance CFUGs access and influence in decision making process. The District Forest Officer has the authority to hand over management of community forests to CFUGs and to provide technical and other assistance required to user groups and mobilize users to prepare the work plan for the management of the community forest. As self governing institutions, CFUGs are legally allowed to fix prices for the forest products they sell and to apply silvicultural operations and other forestry practices in the management of the forest. The policy has also allowed users to cultivate non-timber forest products as a means of generating income earned on forest based cash crops and to commercialize wood and non-wood products and their processing to fulfill the subsistence needs of local people. In so doing, due consideration must be given to the health and vigor of the forest. Similarly, CFUGs are free to collect and spend income generated from the community forest not only for the development of their forest but also in order to carry out other social and community development activities. CFUG acts as independent network and consult with other CFUGs and their Federation. CFUGs have provided a platform for the discussion of all aspects of forest resource management for local people, politicians, and government officials. In the event that a CFUG fails to perform its function or attempts to carry out any operation not included in the operation plan which may cause adverse environmental effects, the District Forest Officer is empowered

to cancel the registration of the CFUG and rescind the rights to the community forests. The CFUG has the status of an autonomous corporate body and has a separate seal of its own. CFUGs are fully legalized to collect funds and use them to finance activities of public interest having made full disbursement for the development of the community forest. The CFUG collect funds from various sources such as amount received from fines and penalties, membership fee, amount received from the sale and distribution of forest products, grants received from government or other donor's organization or donations from individuals or groups. The CFUGs should deposit their income into a separate bank account. The CFUG is required to submit an annual report of its activities, including descriptions of the condition of the forest and the expenditure and balance of its account, to the District Forest Officer.

The government managed forest covers areas other than community, leasehold, religious and private forest for specific purposes only. Since government-managed forests are national forests, all rights dictating their use are reserved by the government. Government-managed forests may only be used in the capacity prescribed in their work plan: ownership of the land and of the products derived from government-managed forests lies with government. Work plans for the management of government-managed forest may only be prepared, approved and implemented by government. There are specified activities prohibited in government-managed forests. (i) deforestation, cultivation and construction (of housing, roads, paths etc.); (ii) grazing, the setting of fires and the production of charcoal; (iii) removal, sale or distribution of forest products and extraction of resin, bark, timber, firewood, boulder, rocks, sand or soil; (iv) stealing, destruction or damaging any government property; and (v) destruction of biodiversity, the hunting of wildlife and the collection of insects and butterflies. Individuals have no rights of any type in government-managed forests except when a right or facility has been obtained through a lease or in any other way from the government or from an authority empowered by the government. For the purpose of developing or conserving the forest, the government or an authority empowered by the government may close any private or public path or stream situated within the national forest area. A component of national forests, protected forests are considered to be of special environmental, scientific or cultural importance. Such as national parks, wildlife reserves, hunting reserve, conservation areas and botanical gardens comes under the protected forests. The government prepares and implements a work plan for the management of protected forests. No activities other than those defined in the work plan or those granted special prior approval by the government, are conducted in a protected forest.

Similarly religious forest is a patch of national forest allocated and managed by institution or a religious group for the purpose of religion and culture and their uses limited to the religious purposes. Upon receipt of an application, the District Forest Officer can handover a religious forest to the jurisdiction of a religious body, group or community wishing to manage the forest for its religious value. Before handing over the forest, necessary arrangements must be made to ensure the traditional rights of forest users are not adversely affected. The religious body, group or community then only can utilize the forest products from the religious forest for religious activities and not for commercial purpose. Where any significant environmental impact is anticipated, trees may not be removed and any activities which cause soil erosion

or damage to public property-particularly in watershed areas are prohibited. If the groups fail to meet any of the terms and conditions defined for the forest management, the District Forest Officer can reclaim the forest at any time.

Leasehold forests are areas of national forest leased to any corporate body, industry, community or individuals below poverty line. As a condition of the lease, leaseholders are required to utilize the forest in one of the following ways: (i) production of the raw materials required by the forest based industries; (ii) Production, utilization or sale and distribution of forest products with appropriate measures in place of sustaining the resources; (iii) operation of eco-tourism in a way that is compatible with the conservation and development requirements of the forest; and (iv) operation of an insect, butterfly or wildlife farm/park in a way that is compatible with the conservation and development requirements of the forest. In the event that the leaseholder fails to perform it's define tasks in accordance with the forest lease, or otherwise undertakes activities that may cause significant adverse environmental effects, the Regional Forest Director can decide to cancel the forest lease and reclaim the forest. The Regional Forest Director has ultimate authority over the lease as stipulated under the Ministry of Forest and Soil Conservation (MoFSC).

Private forest is all the planted, nurtured or conserved forest in any private land that belongs to an individual as per the prevailing law. The owner of the private forest can develop, conserve or manage the private forest, utilize or sell and distribute the forest products by fixing prices at will. Any person or institution can register a privately owned forest with the government, and is legible to receive any technical assistance from the state if they do so. In the study area, the coverage of community forestry is much larger in terms of both forest area and population (refer to Table 9.). Based on the collected qualitative data from field survey the following Table 19 describes and compares the existing situation of the various forest tenure regimes in the study area.

Table 19: Comparison of Community-managed, Government-managed and Privately-managed Forest

Description	Community forestry	Leasehold forestry	Government-managed forest	Religious forest	Private forest
Objectives	a. meeting the bona fide needs for forest products of the people living near forest areas b. Managing good forest areas with a view to sustaining the supply of forest products.	a. poverty alleviation for the poor households living close to degraded forest areas b. eco-restoration of degraded forest areas	The objective is not explicitly expressed but the general perception is that it is to fulfill the forest product needs of people in general	a. to conserve the religions and cultures along with development of forest and diversity b. to manage and utilize the forests for the religious purposes; to meet the needs of the people involved in the activities	The basic objective is to developed and conserved forest in the land which is under the ownership rights of an individual according to the prevailing laws. Broadly, all the trees planted in the private land.
Target Groups	Includes everyone living near forest areas	Targets poor people living near forest areas, including disadvantaged ethnic groups, private companies or institutions	The target group is not spelled out	Targets institution and religious groups	Private forest land owners
User's Diversity	CFUGs are comparatively large and heterogeneous	Leasehold groups are small and homogeneous	There is no group approach	Religious groups are small-large and homogenous	Individuals
Access to Forest Products	Forest products are available to beneficiaries only at specified times of the year. For e.g. fodder collection may be allowed only during certain periods.	Forest products are available to beneficiaries throughout the year (as determined by them)	Forest products are available for all the citizens of the district; surplus products are sold at auction.	Forest products are available to beneficiaries as per the need basis for religious purpose only	As needed
Forest Operation Scheme	Manages forests on the basis of operational plan; the benefits must be shared with the whole community.	Manages forests on the basis of operational plans; the benefits flow directly to beneficiaries.	Manage forest according to the forest management scheme; mostly consists only of gathering fallen trees.	Manage forests on the basis of operation plan; the benefits flow to the whole community or directly to beneficiary.	Manage as per their traditional system or get support from District Forest Office where registered.

Forest Tenure Period	Most forests are handed over for 5-10 years, extendable indefinitely for periods of 5 to 10 years if they perform satisfactorily. There is no specific time limit for reverting community forests back to the government	Degraded forests are leased out for a maximum of 40 years, which can be renewed for another 40	Forests are directly administered by the District Forest Office, with no people participation	Forests are handed over for 5 years to religious institutions or groups, extendable indefinitely for periods of 5 years.	Registered for life time.
Ownership	Community Forest User Groups members maintain feeling of "our" community forest	There is a strong feeling of "my" forest among the leasehold group members. This sense of ownership is the principal driving force in managing the forest.	As it can be managed as common property, protected forest, and forest is open treated as an open-access resource; hence the "tragedy of the commons" applies. There is no feeling of ownership among the local communities.	Religious Forest User Group members maintain feeling of "our" religious and spiritual forest	Individualistic feeling
Management Practice	Forest is protected, managed and utilization of forest products	Forest is intensively managed, accompanied by intercropping with perennial forage species	Forest is protected by the District Forest Office staff.	Forest is protected, managed and utilize forest products only for religious and spiritual purposes	Forest is protected, managed and use of forest products as per the need of private forest owner.
Types of Forest Products Collection	Fuel wood, fodder and timber are the main products, but NTFPs are also gathered.	Forage and NTFPs are the main products	Timber is the main product, but NTFPs are also collected.	All types of forest products are collected but only for the religious purposes. For e.g. wood for cremation etc.	Depend upon the types of tree species or NTFPs grown for utilization purpose
Stakeholders Involvement	Only the forestry organization is involved	Integrated approach that involved forestry, livestock, cooperatives, private companies sectors.	Only District Forest Office is involved in protection	Only religious institution and groups are involved	Private owners but sometime support are provided from District Forest Office

Source: Field Survey, 2010

In order to analyze the above Table 19, it shows that the community-managed forests works with the group of people committed for the better management of forest resources along with fulfilling their basic needs such as fodder, fuel wood, leaf litter, timber, grass and other minor forest products from the available forest area. Whereas, in case of private forest is only accessible and owned by the individuals and can only fulfill the demand according to individual needs. Although in the broad context private forests also contribute indirectly to the people in terms of fresh air to breath. Similarly, the situation of National Forests in the study is constant in terms of growing stock and tree biomass. Those forest areas are only protected without any other activities are carried out. National forest are managed by the District Forest Office staffs at district level and the major forest products from such forests are timber and non-timber forest products which are also considered as high value forest products. The difference between the community forestry and leasehold forestry program is that the leasehold covers only poor user households, small groups and homogeneous in nature. But the community forestry user groups are heterogeneous in terms of social status, economic status, and ethnic group. Leasehold and community forests are regarded as complementary program for each other, in order to obtain more benefits and secure livelihood for the rural people through community-managed forests. The point here to make is that the contribution of different type of forest tenure regimes on majority of the forest user's livelihood security is clearly seen much complimentary in community-managed forests; private forests than in government-managed forests in the study area. Although, there are some intrinsic issues under community managed forests such as equity in participation and benefit distribution, complex and lengthy process for leasehold forestry approval but beside these, community managed forests are supporting all the user household's livelihoods under different wealth classes in the study area.

CHAPTER 8: CONCLUSION AND RECOMMENDATIONS

8.1 CONCLUSION

The main purpose of this research was to assess and analyze the distribution pattern of forest tenure regimes; implications of forest tenure regimes on forest condition and what are the effects of forest tenure regimes on the social, cultural and economical aspects of different wealth class households.

The study revealed that the multiplicity of ownership rights are shared among the user's households in different forest tenure regimes/systems. The conclusion is presented in the following key points.

1. The positive changes in forest conditions and availability of forest products provide evidences of ecological sustainability of the resources and enrichment of the community's natural capital as well as the sustainable utilization of forest products by the different wealth class households to secure their livelihoods.
2. Community forest provides relatively stronger tenure and livelihood security; the economic, social and environmental outcomes are also encouraging. On the other hand, these outcomes are relatively less visible in the case of leasehold forest and religious forest as little authority is delegated to poor households and religious group in these modalities. For example, small number of poor households is covered under leasehold forestry programme and the use of forest products is limited (religious purpose only) under religious forest regime.
3. The level of forest tenure security alone has little meaning unless the resource in question has a potential to contribute positively to their outcomes. For example, although users in leasehold forest enjoy more autonomy in terms of managing their resources (not the existing timber), they have not benefited in that scale as their resource endowment is very poor. On the opposite, users of community forest have benefited more even heterogeneous group of people are managing their forest resources.
4. The establishment and functioning of the self-governing forest user groups in community forest, leasehold forest and religious forest has enhanced social networking, social and human capital mutually at local, regional and national level.
5. The direct impact on livelihood security of the different wealth class households is relatively higher in the community managed forest regimes and private forests when compared to the government managed forests and protected forests. As the government managed forest and protected forests do not allow people to use any forest products, and restrict the participation of people therefore, community livelihood security and their income are largely ignored.
6. Users are reluctant to register their private forest in district forest office due to the insecure feelings that the government might take away their land for no reason. And even though in some districts Sindhupalchowk and Kavrepalanchowk, individuals are managing private forest without registration of the private forest in legal terms and that hinder the case of forest dependent people

being unsecured in terms of tenure rights and their livelihood security as compared to the community managed forest regimes.

7. Leasehold forest has been successful; the poor households have been able to gain the asset ownership of land, enhancing skill to manage degraded forest properly and other livelihood aspects such as education and health of family members. But as the lengthy and complex bureaucratic procedures and the need for investment in improving the land have been discouraging the poor households.
8. Poor user households are not getting direct benefits from FUGs fund, as the FUGs prioritize to spend fund for community infrastructural development activities. Poor equity outcomes to a large extent can be attributed to insecure forest tenure at the different wealth class household or individual levels. Although a significant part of the forest have been handed over to the communities, many poor wealth class households, women and low caste members have yet to get a representation in key positions to make decisions over their resources and which ultimately brings less insecurity in their livelihoods when compared to well off households, men and high caste members.
9. The decreasing interest of the forest communities in community managed forests in some forestry areas and changing dependency of households on community managed forests shows the necessity for a more balanced approach to community managed forestry policy, which considers the changing demand for forest products for subsistence as well as for commercial uses.

Along with these points the study concludes that the secure tenure is important for the conservation of forest resources and for encouraging the poor households and marginalized groups for fair equitable representation on decision making process as well as to invest their labor in them. As compare with the government managed forests and protected forests; the community forestry, leasehold forestry, religious forests and private forest management regimes have proved and shows some promising outcomes, getting people involved managing the forest resources, to meet their basic forest products needs for sustaining their livelihood and to preserve their cultural, religious and spiritual beliefs towards forest conservation and its importance. But again separate space for income generating activities is needed for the poor households in community forests and the concept of leasehold forestry need to extend in the remaining districts and some initial support for development of resources in the Leasehold Forests. The capacity of CFUGs, leasehold groups, religious groups and the government agencies directly helping these institutions should be enhanced. Increasing numbers of community-based management regimes have developed innovative means of tenure arrangements to contribute positively to livelihoods and environmental sustainability. It demonstrates that decentralized and democratic governance system strengthens forest land tenure regimes in favor of local people's livelihood. Which forest tenure regimes is suitable at a particular time and place or location is more of a contextual matter, and thus, depending upon people's needs, participation and tenurial modalities need to be determined.

For improving effective implications of forest tenure regimes on different forest user households the following recommendations are made on the basis of this study.

8.2 RECOMMENDATION

[1] In order to address the issue of equity and equitable benefit sharing among community members a serious consideration on the nature of forest stocks, utilization of forest products and representation of poor and marginalized group in key positions should be strictly enforced in the forest operational plan and implementation.

[2] Allowing and promoting private cultivation of medicinal herbs, improved grasses and other Non Timber Forest Products (NTFPs) in allocated areas within the community forest focusing to increase income of poor households as feasible.

[3] Provide special opportunities for income generation for the poorest members, particularly the landless that fully depend on common resources, should be considered within the broader framework community forestry policy.

[4] Government should be sensitive to encourage private owners to bind with legal terms (registration); provide external help and services to the private tree growers for sustainable development of private forests as well as to secure their livelihood.

[5] Decision on mobilization of FUG fund, all categories of users should get chance to take part in decision making. Allocation of FUG fund on various development works should strictly consider the necessities of poor users on priority order. The system of decision making only by some elites should be discouraged and representation of all classes of users should be ensured.

[6] Enterprise and marketing aspects of forest products are a weak component in community forestry. The transformation of forest products into semi- or fully processed materials and goods is also very limited, even though such products have huge potential. The community forestry programme should adopt policy to promote pro-poor enterprises with marketing support.

[7] The Forest Act, 1993 and Regulation, 1995 do not yet authorize District Forest Offices to hand over leasehold forests to groups of poor families; at present, the Regional Director of Forest approves lease certificates and it is a time-consuming bureaucratic process therefore, authority for leasehold forests should be devolved to the District Forest Office, as is already the case for community forests.

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Annex I: Questionnaire for Household Survey, Bagmati Zone, Central Region of Nepal

Name of respondent: Surveyor Name:

Type of Forest: Forest Condition:

District: Date:

Village Development Committee: Ward No:

Demographic data

Sex: Male □ Female □ Caste/Ethnicity

_____

Marital Status: Married □ Unmarried □ Widow □

Wealth rank: 1. Rich □ 2. Medium □ 3. Poor □

Level of Education:

1. College □ 2. Secondary □ 3. Primary □ 4. Illiterate □

1. House hold size and composition

S. No.	Age	Sex	Education Level	Occupation	Remarks
1 2 3 4 5 6 7					

Occupation: 1. Infant 2: Student 3. Agriculture 4. Service 5. Business 6. Pension 7. Others

2. Sources of cash income for the Household (HH)

Sources of Income	Amount (NRs.)	Remarks

2.1 Has any member of the HH ever been paid for work in forestry? Yes ( ) No ( )

If yes, read out types of work and fill in table as applicable:

Type of work	Who in HH	Year employed	Total Paid
Nursery production			
Pitting			
Planting			
Weeding			
Watching			
Other specify (eg transportation of seedlings, land clearing etc)			

3. Do you own the land that you have built your house on? Yes ( )/ No ( )

What quality of houses do you have?

Floor: Earth ( ), brick ( )

Wall: Tin ( ), earthen ( ), thatch ( ), brick ( )

Roof: Tin ( ), concrete ( ), thatch ( )

4. Land Use Information

Types	Own	Leased in	Leased out	Others	Total
Khet					
Bari					
Kharbari					
Total					

5. Cropping Pattern/Crop Production

5.1 What types of crops do you cultivate?

1: Cereal crops 2: Vegetables 3: Others

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---------- ---------- ----------

---------- ---------- ----------

---------- ---------- ----------

5. 2 Information on yield, cost and selling rate of crops production.

Crops	Cultivated area (ha)	Yields (quintal)	Qty. Sold last year (quintal)	Selling Rate (Rs.)	Cost(Labor, fertilizer, seed
Rice					
Maize					
Wheat					
Vegetables					
Others					

5.2.1 Does your HH use compost for crop production? Yes ( ) No ( )

5.2.2 Does your HH use fertilizer for crop production? Yes ( ) No ( )

If yes, how much did the HH buy in the last 12 months? _____Kg/Bags/Dhoko/Bhari

5.3 Does your HH produce sufficient food throughout the year to meet its basic foods requirements?

Or does the HH need to earn some income to purchase some of its staple foods?

Sufficient production ( ) Need to purchase ( )

Can you estimate the number of months (if any) during which HH food production is insufficient to meet HH needs?

_____

5.4 Do you collect poles/ timber to build house and make agriculture tools (spade, plough etc)?

Yes ( ) No ( )

If yes, please specify the source, amount and cost of collection.

Source (Types of Forest)	Quantity (Kg/Dhoko/Bhari)	Cost of collection	Remarks

6. Access to Water

Types	Sources	Distance (to the source)	Cost	Remarks
Drinking water				
External Use				

7. Livestock Information

7.1 Livestock holdings:

S.N.	Types of animals	Numbers	Value (Rs.)	Grazing area	Remarks
1.	Cows and bulls)				
2.	Oxen				
3.	Buffalo				
4.	Goats				
5.	Pigs				
6.	Others				
	Total				

7.1.2 How does your HH manage its livestock?

_____

7.2 Do you use poles/timber for construction of livestock shed?

Yes ( ) No ( )

If yes, Please specify the source, amount and cost of collection of these products.

Source (Types of Forest)	Quantity (Kg/Dhoko/Bhari)	Cost of collection	Remarks

8. Information about Forest Products Distribution & Management Practices

8.1 How far is the forest from your place?

1. Up to 15mins---------□

2. 15 to 30mins----------□

3. More than 30mins----□

8.2 Which of the following forest products does your HH collect from the types of forest?

Are there any other forest products your HH collects? Anything else?

(WRITE YES/NO FOR EACH PRODUCT COLLECTED/NOT COLLECTED- RECORD **OTHER** PRODUCTS AT THE BOTTOM OF FORM)

8.3 Does your HH ever sell any forest products? (GO THROUGH THE LIST OF ALL PRODUCTS BELOW)

Yes ( ) No ( )

IF YES, INDICATE FOR EACH PRODUCT SOLD THE QUANTITY AND PRICE IN THE SPACE PROVIDED- **BE SURE TO SPECIFY UNITS OF MEASURE (BHARI ETC) AND TIME PERIOD (WK,/MTH OR/ YEAR)**

8.4 Does your HH ever buy any forest products? (GO THROUGH THE LIST OF ALL PRODUCTS)

Yes ( ) No ( )

IF YES, INDICATE FOR EACH PRODUCT BOUGHT THE QUANTITY AND PRICE IN THE SPACE PROVIDED- **BE SURE TO SPECIFY UNITS OF MEASURE (BHARI ETC) AND TIME PERIOD (WK,/MTH OR/ YEAR)**

Forest products	**Collect**	**PRODUCTS SOLD**		**PRODUCTS BOUGHT**	
		Quantity/period	**Price/unit**	**Quantity/period**	**Price/unit**
(eg-fuelwood	*yes*	*1bhari/week*	*Rs 30/bhari*	*0*	*na*
Grass fodder					
Fuel wood					
Green tree fodder					
Leaf litter					
Timber/ Poles					
Wood for implements					

Wood for ceremonies					
Thatch					
Bamboo					
Tree seeds					
Tree seedlings					
NTFPs (specify)					

8.5 Source of forest products collection & utilization

Forest products	**Source of forest products collection**	**Utilization of forest products**	**Time spent for collection**	**Supply of forest products (*surplus supplies/just adequate/shortage/critical shortage/don't know*)**
(eg-fuelwood	*private forest*	*cooking, heating*	*1 hour*	*just adequate*
Grass fodder				
Fuel wood				
Green tree fodder				
Leaf litter				
Timber/ Poles				
Wood for implements				
Wood for ceremonies				
Thatch				
Bamboo				
Tree seeds				
Tree seedlings				
NTFPs (specify)				

8.6 Are you aware of any distribution of forest products among user group households?

Yes ( ) No ( ) if yes,

8.46.1 What are your feelings about the distribution among user group households of products coming from the forest? Do you think that the distribution has been fair and equitable?

Fair ( ) Unfair ( ) Don't know ( )

if unfair, why was the distribution unfair?

_____

8.6.2 How do the distributions of forest products takes place?

_____

8.6.3 Who sets the prices for forest products?

_____

8.6.4 Are these prices too high, too low, about right?

Too high ( ) Too low ( ) About right ( ) Not applicable ( ) Don't know ( )

8.7 Are you actively involved in forest management activities?

Yes ( ) No ( )

If yes, what type of forest management activities? Pls. specify

_____

8.8 Are you aware of the formal rules (government's policy) regarding ownership, access & use of forest land?

Yes ( ) No ( )

8.9 Is there any improvement in forest condition under different forest tenure regimes and why?

Yes ( ) No ( )

_____

8.10 Do you think there are any changes in availability of forest products under different forest tenure regimes and why? Yes ( ) No ( )

_____

8.11 Has your HH planted trees (or allowed trees to come up) on its private land within the last 5 years?

Yes ( ) No ( )

If no, why not? _____

If yes, which species? _____

Approximately how many trees has your HH planted on its land over the last 5 years?

fodder trees _____, fuel wood/timber trees_____, fruit trees_____, other (specify)___

9. Infrastructure

What are the different infrastructures in the area?

Infrastructures	Yes	No	Remarks
Transportation			
Communication			
Market			
Electricity			
School			
Forest Offices			
Tourist spots			
Factories			
Health Services/Clinic			

10. Educational

10.1 Does any of your family members go to school/college/institutions? Yes ( ) No ( )

10.2 What do you think about the quality of education perceived?

_____

10.3 How much is the cost of education?

_____10.4

How do you perceive girls education?

_____

10.5 Do you know any program operating in the area to increase access to education (non-formal education, adult education)? Yes ( ) No ( )

If yes, who runs those programs?

_____

11. Health

11.1 Is there any health care/hospital/clinic available in the area? Yes ( ) No ( )

11.2 What are the services available? And access to services?

_____

11.3 What are the severe diseases encountered in the family?

_____

11.4 Where do you go for treatment and how much do you have to pay for the treatment?

_____

12. Social

12.1 Is you HH, or anyone in your HH, a member of a forest User Group formally recognized by the Department of Forests? Yes ( ) No ( )

If yes, what is the name of the UG? _____

12.2 Is anyone from your HH a member of a UG Committee or hold a position as Chairperson, Vice Chairperson, Treasurer or Secretary? (Record who and what position in the space below)

_____

12.3 Do you participate in meetings related to forest activities? Yes ( ) No ( )

12.4 How do you rate your participation in the following activities?

i. Forest Protection	High	Average	Low	None
ii. Resource utilization	High	Average	Low	None
iii. Decision making	High	Average	Low	None
iv. Development activities	High	Average	Low	None
v. Trainings	High	Average	Low	None
vi. FUG activities (Cultural operation, etc.)	High	Average	Low	None

12.5 How do you find the relationship between HH and community in the area of forest management?

_____

12.6 Do you think social network effective in helping overcome any kind of problem? Yes ( ) if yes, how does it help? No ( ) if no, why not?

_____

12.7 What is the level of women participation in Forest activities?

i. High ii. Average iii. Low iv. None

If Low/ None, why?

_____

12.8 Any women empowerment activities held in the community under forestry sector? Yes ( ) if yes, then pls. specify, No ( )

_____

12.9 Do you find any conflicts between forest user groups households in the context of forest access and use? Yes ( ) if yes, what is the reason of conflicts? No ( )

_____

12.10 Do conflicts over forest resource use and management tend to persist or do they get resolved?

_____

12.11 Are informal ways of resolving conflicts over forest resources and management widely used?

_____

13. Physical

13.1 Is there any physical support from government or any type of institutions to the household? Yes ( ) if yes, what are those? No ( )

_____

13.2 Do you know about the community physical asset present in the community or village level? Yes ( ) if yes, what are those? No ( )

_____

14. Natural

14.1 What are the natural resources available in the area?

_____

14.2 What are the constraints and opportunities for natural resource utilization at household level?

_____

14.3 Have you experiences any changing pattern of using natural resources (trends)?

Yes ( ) if yes, then pls. specify the changes No ( )

_____

15. Economic

15.1 Is there any sources of credit (Government, NGOs, Bank, Insurance Company, Micro Credit/Saving & Credit Group, Money lender and Private Sector) available to your family? Yes ( ) if yes, pls specify

No ( )

_____

15.2 What are the market facilities (local, regional, national) for selling forest products?

_____

15.3 Are there any facilities to cope with the economic crisis?

_____

15.4 Do you have any individual and group savings scheme that you are involved in?

_____

15.6 Are there any Income Generating Activities (IGA) existed? Yes ( ) No ( )

If yes, what are the IGAs? _____

How is the condition of IGAs? _____

16. Cultural/Traditional Values of forest resources

16.1 Do you think there are cultural/traditional values of forest & its resources? Yes ( ) No ( )

If yes, why & how? _____

17. Institutions and Organizations

17.1 Is there any types of organizations (forest based) that you know working in the community?

Yes ( ) No ( )

If yes, then pls. specify the types of organizations:_____

17.2 What are the services they are providing? And to whom? (Rich, poor, men-women, children, disable people and age group)? and why?_____

17.3 Do you think the service provided is important for your livelihoods? Yes ( ) No ( )

If yes/no, why?_____

18. Training and Extension Services

18.1 Do you receive any forest based type of training? Yes ( ) No ( )

if yes, then pls specify the training types _____

18.2 Who provided forest based training?

_____

18.3 How are you using your training knowledge?

_____

18.4 Does the training changed or improved your livelihoods? Yes ( ) No ( )

If yes, how?

_____

18.5 How do you perceive the role of forest tenure regimes (CF/PF/NF/LF/PF) on your livelihood security? _____

19. Any other comments that you would like to mention related to effects of forest management regimes on livelihood security?_____

20. Other relevant information if any._____

Thank you for your support!!!

Annex II: Questionnaire for Key Informants Interview (Village Leader/Chairperson)

1. Name: _____ Age: _____ Sex: _____

2. Name of the village: _____

3. Position: _____

4. Number of HHs: _____

5. Do you know in which year the forest tenure regimes (CF/PF/NF/LF/PF) took place? _____

6. Can you tell what are the types and distribution of forest ownership in the area? and why?

_____

7. What are the forest management regimes in particular forest tenure type?

_____

8. Name the species (timber/non-timber forest products) available in the forest:

_____

9. Types and quantity of forest products collected/harvested from the different forests (CF/PF/NF/LF/PF):

Types of Forest	Types of Forest Products	Quantity	Price/Unit

10. How often forest products are collected/ harvested from the different forests (CF/PF/NF/LF/PF)?

_____

11. Who decides the quantity and price of forest products?

_____

12. Do you think the benefit sharing is fair and equitable among the forest dependent people? and How?

_____

13. Any formal forest user committee/groups exist in the area? Yes ( ) No ( )

_____

14. Who formed the Forest User Committee/Groups? And how?

_____

15. What is the composition of forest user committee/groups?

On the basis of Gender Female ( ) Male ( )

On the basis of Caste/Ethnicity: _____

On the basis of Wealth Class: Representation of each wealth class

Members from Wealth Class 1:_____

Members from Wealth Class 2:_____

Members from Wealth Class 3:_____

On the basis of education: _____

16. Name of Forest User Group:_____

17. Number of Forest User Households:_____

18. How often meeting is conducted among user committee/group?

Once in a week ( ) Once in a month ( ) Twice in a year ( ) Annually ( )

19. What type of issues is discussed in the meeting? _____

20. Do women participate in the decision making process? Yes ( ) No ( ) if no, Why?

_____

21. Are there any formal/legal documents for forest operation and management activities?

_____

22. Who are the stakeholders involved to prepare formal/legal forest operation & management documents?

_____

23. Does forest user groups/HHs participate in forest management activities?

On the basis of Gender: Male ( ) Female ( )

On the basis of Caste/Ethnicity:

On the basis of Wealth Class: Rich _____ Medium_____ Poor _____

24. Do all forest users strictly follow the rules and regulation of forest operation?

_____

25. Are there serious conflicts among users between different communities and user groups in the context of forest access and use?

_____

26. How do the conflicts over forest resource use and management tend to resolve?

_____

27. What is the condition of forest?

_____

28. Do you perceive the improvement in forest condition under different forest tenure regimes (CF/PF/NF/LF/PF)? and why?

_____

29. What management activities are you doing within the types of forest tenure regimes (CF/PF/NF/LF/PF)?

Plantation (e.g. Cost sharing, Labor) _____

Protection (e.g. Fencing, Forest guard)_____

Silviculture practices (e.g. thinning, pruning)

Utilization (e.g. Harvesting, Distribution pattern)_____

30. Outside support/Linkage: _____

31. What specific practices have been undertaken to facilitate livelihoods security from different types of forest regimes (CF/PF/NF/LF/PF) in the area? and how?

Specify:_____

32. Are you aware of the amount of money the User Group holds? Yes ( ) / No ( ) if yes, how do you think the User Group should spend/use its income or funds?

_____

33. How many times have you met with forest staff (ie the Ranger, AFO or DFO etc) in the last 12 months? *Record the number of times (including 0 = not met)* _____

if yes, do you recall why s/he (they) came to your area? (Why?)

_____

34. Do you think forest tenure regimes (CF/PF/NF/LF/PF) provides strong social integration among the users/HHs and other relevant stakeholders? how and why ?

_____

35. In your opinion, what are the cultural/traditional values of forests perceived by the users? How and why?_____

36.Does the forest management regimes include the cultural/traditional values in the context of forest products management and utilization? and how?

_____

37. What are the economical benefits gained by the users from the different forest tenure regimes (CF/PF/NF/LF/PF)? and how?

_____

38. Any comments you would like to mention in the context of forest tenure regimes (CF/PF/NF/LF/PF) and its implications on livelihood security of the forest dependent households?

_____

39. Do you think any improvement or revision required on the forest tenure regimes (CF/PF/NF/LF/PF) in order to improve the livelihoods of forest dependent households? and how?

_____

"Thank you for your support"

Annex III: Questionnaire for Forest Staffs

Name:

Position:

Date of Interview:

Venue: District Forest Office,.....

1. Why forest tenure regimes are important/matters? In your opinion?

2. Do you think the forest tenure regimes are community/people oriented? How and why?

3. What are the roles and responsibilities of District Forest Offices for different forest management regimes in the district?

4. What is the major forest management activities implemented in the national forest? Does the community/forest dependent people can benefit from the national forest? And how?

5. Major species found and the condition of the national forest?

6. How the harvested/collected forest products from national forest is being managed and utilized?

7. How is the revenue generated from the forest products collected from national forest is being invested?

8. What are the importance and forest management activities implemented in the protected forest? And how?

9. Major species found and the condition of protected forest?

10. In your opinion, do you think community forest management regimes contribute towards economical benefit of the community? And how?

11. What are role of community forestry on livelihoods (social, cultural, economical) of forest dependent people/forest users? And how?

12. Does community forest management regimes provides fair and equitable benefit sharing of forest products/resources among the users?

13. Major species found and the condition of community forest?

14. What is the forest management activities implemented in religious forest? And how?

15. How do the religious forest management regimes contribute to the livelihoods (social, cultural, economical) of the forest users?

16. How is the benefit from religious forest management regimes being shared among the users?

17. Major species found and the condition of religious forest?

18. Any forest management activities implemented in leasehold forest? and how?

19. Is leasehold forest contributing to the livelihoods (social, cultural, economical) of individuals or institutions? And how?

20. How the forest products/resources of leasehold are forest being managed and utilize?

21. Major species found and the condition of leasehold forest?

22. What is the forest management activities implemented in the private forest? And how?

23. Do private forest management regimes contribute to the livelihoods (social, cultural, economical) of individuals? And how?

24. Major species found and the condition of private forest?
25. What are the major activities for NTFPs promotion in the district level? And how?

26. Any NTFPs based enterprises in different forest tenure regimes (community forest, national forest, protected forest, leasehold forest, religious forest, private forest)? And how?

27. How does the marketing of timber forest products being done? And where?

28. How does the marketing of NTFPs being done? And where?

29. Any income generating activities being implemented? And how?

30. Are the forest users are aware of formal rules and regulations of forest? And how?

31. Do you think the forest users feel secure about the ownership, access and rights for the use of forest resources under different forest tenure regimes?

32. Do you think the forest policies ensure the livelihoods (social, cultural, economical) security of the forest dependent people (direct and indirect users)? And how?

33. Is the different forest tenure regimes (national forest, protected forest, community forest, leasehold forest, religious forest, private forest) improved the condition of forest? And how?

34. Is the different forest tenure regimes (national forest, protected forest, community forest, leasehold forest, religious forest, private forest) increased the availability of forest products (timber/NTFPs)? And how?

35. Are there any other NGOs, Donors, Private Sector or different stakeholders involved in the forest sector/management programs?

36. What are the vital role and major activities implemented by the different stakeholders in forest sector? And how?

Thank you for your support

Annex IV: Checklist for Focus Group Discussions

1. Map of the forest showing the major forest species
2. Type and condition of forest/Area
3. Major forest management activities done to improve the condition of forest and availability of forest products through Forest User Groups/Forest dependent community
4. Preferences for the species (timber & NTFPs) by the forest group members/forest users
5. Perception of the groups towards the benefit sharing mechanism among the forest users or forest dependent community
6. Perception on the forest tenure regimes implications on economical condition of the forest dependent people
7. Perception on the role of forest tenure regimes on social aspects/integration among the various stakeholders
8. Perception on the cultural/traditional values of the forest and forest tenure regimes
9. Do the forest rules and regulations ensures the livelihood security of the forest dependent people?
10. How are forest products used by the rural households to support their livelihood?
11. Awareness level of the forest users about the forest management regimes (rules and regulations)
12. What are the major constraints of forest tenure regimes? (Problems faced by forest user groups/communities and the forest users committee members)

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Rabina G. Rasaily
COHD, CAU, November 2012

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PROFESSIONAL EXPERIENCES

1. **PhD Candidate in Development Studies,** College of Humanities and Development, China Agricultural University (CAU), Beijing, China (September 2009- till date).

   PhD Dissertation Title: "Forest Tenure Regimes and Livelihood Security"-A Case Study from Bagmati Zone, Central Region of Nepal

2. Research/Programme Associate

Action Area: High Value Products and Value Chains (HVP/VC),

Sustainable Livelihoods and Poverty Reduction (SLPR), International Centre for Integrated Mountain Development (ICIMOD)

Duty Station: Head Quarter, Khumaltar, Nepal with field visits

(June 2008- August 2009)

Responsibilities

Under the direct supervision of the Action Area Team leader HVP &VC and in close cooperation with Programme Manager & will perform the following **main responsibilities**.

- Prepare the overview of plan vs. progress (technical & financial) achievements and ensure the timely and proper documentation and permanent follow-up of all programme activities in the High Value Products (HVPs) Action Area.
- Support implementation of annual work and budget plans of the Action Area and ensures the proper documentation/dissemination of achievements within the team & partner (PIAs).
- This includes the timely communication, coordination & collaboration with partners, setting up of timesheets for reports; deliverables, financial reports and payments, and keeps/maintain a technical & financial overview.
- Play vital role as Knowledge Management Focal Point for SLPR Programme & overall management of ICIMOD-Digital Networking Application (i-DNA) / SLPR Programme.
- To ensure the content programmatic and administrative follow-up of projects and share updates the programme team
- To develop and maintain Project Status Sheets (PSS)/Milestones & Dissemination Report for all ongoing projects and monitor project activities & financial payments and reports accordingly.
- To support the compilation of intermediate and final technical and financial reports to donors and for ICIMOD's annual reports to provide the basis for the internal Monitoring and Evaluation unit.

- To compile and submit completed project documents to the respective team for review & comments
- To prepare project legal documents (using established templates) for review, finalization and signature (Agreement Letters, MoUs, Small Research Grant Agreements, consulting contracts grant letters), as required.
- To support organizing and conducting national and international workshops, meetings and coordinating with the programmatic & administrative sections at ICIMOD.
- To participate in programme implementation activities and undertake field visits to support partners for project implementation.
- To prepare & update electronic data base for surveys /studies/publications/reports from web sites, ICIMOD library and other sources.
- Support & facilitate SLPR programme unit team/other unit as being a Focal Point, to implement ICIMOD-Digital Networking Applications (i-DNA), for & to promote Knowledge Management (internal/external), ICIMOD
- To work as a team member/player within ICIMOD and to support other activities and promote institutional goals.

3. Monitoring, Evaluation, Documentation & Communication Officer

Nepal SIMI Project / Winrock Agriculture Program, Nepal

Duty Station: Kathmandu with field visits

(September 2007 – March 2008)

Responsibilities

- Provide inputs in designing and developing M&E system and documentation as per the requirements of Nepal SIMI Project document and guidelines of the Project
- Develop log frames, revise project indicators and prepare M&E reports as needed to project requirement
- Support in preparation of project reports covering the contents provided by USAID
- Prepare progress vs. target reports (quarterly, annual and other occasional reports)
- Support in preparation of the annual work plan for Nepal the Income Generation Component including annual targets and budgets
- Participate in the field visits to facilitate monitor M&E system's implementation to verify its effectiveness
- Liaise with Nepal SIMI partners such as Government/INGOs/NGOs/Private services to establish and maintain effective working relationship through partnership approach

4. Monitoring, Evaluation & Documentation Officer

Ujyalo Project / Winrock Agriculture Program, Nepal

Duty Station: Kathmandu with field visits

(September 2006 – August 2007)

Responsibilities

- Assist in designing and developing M&E system based on approaches like business development services (BDS) model (input-production- processing- marketing), sub sector analysis (SSA) and market development/ value chain to undertake income generation activities and as per the requirements of Ujyalo Project document and guidelines of the Project
- Develop log frames, project indicators and income tracking formats for various enterprises such as vegetable, goat, NTFPs, apiculture etc. and M&E reports as needed to project requirement
- Compile information/analyze data collected from the project working areas (far-west, mid-west & west regions) to prepare all types reports as per project performance indicators and targets
- Prepare reports (quarterly, annual and other occasional reports) for the income generation program
- Assist in preparation of the annual work plan for the Income Generation Component including annual targets and budgets
- Liaise with Ujyalo/IGP implementing partners (IPs) including with Government/INGOs/NGOs/Private services to establish and maintain effective working relationship through partnership approach
- Participate in the field visits to facilitate monitor M&E system's implementation to verify its effectiveness
- Over all responsible on monitoring/evaluation, analyzing data and results reporting, as required by the project

5. Consultant/Researcher

Department for International Development (DFID)/Livelihoods and Forestry
Programme (LFP), Nepal.
Pre Mid-Term Review study of Quick Impact Activities
(15th August- October 2006)

Responsibilities

- Assess the effectiveness and impact of LFP's Quick Impact Activities (QIAs) in reaching and benefiting the poor, excluded and remote rural communities.
- Identify and document QIA best practices, challenges and suggest strategic recommendations for more effective implementation approaches.
- Meet/discuss with all key relevant stakeholders including the FUGs, Communities, and DDCs, partner NGOs, LFP teams and DFOs/DSCOs.

6. Intern/Reviewer

WI's Forestry and Natural Resources Management Program

Duty Station: Kathmandu

(August – 15th September 2006)

Responsibilities

- To collect and synthesize information to be used to the World Bank's Nepal Environment Analysis on land degradation and impacts on economy and poverty in Nepal
- Ecotourism and poverty reduction in Nepal

7. Project coordinator

Dalit Empowerment Program (DEP), funded by European Union in ten districts of mid western region and implemented by Jana Utthan Pratisthan Nepal (JUP-N)

Duty Station: Kathmandu with field visits

(November 2003 - June 2004)

Responsibilities

- Facilitate Regional Program Officer and DEP team and provide the expertise services as required.
- Coordinate with development partners and dalit organizations at national and district level.
- Report and coordinate between JUP-Nepal and European Union and represent JUP-Nepal in relation to European Union.

8. Field Officer

Strengthened Actions for Good Governance in Utilization of Natural Resources SAGUN, CARE Nepal,

Duty Station: Bardiya

(November 2002- October 2003)

Responsibilities

- Conduct field level studies on effects of Community Forest/ Community Forest User Groups Formation and post formation outcomes in project area.
- Capacity Assessment and Well Being Ranking of CFUGs/BZUCs to identify target audiences and support areas/ system.
- Mobilize Local Resource Persons (LRPs)/ Community Groups as part of the developing institutional capacity of Community
- Coordinate and conduct Management Trainings (Leadership and Institutional development) for Community User Groups

9. Community Forestry Extensionist

Forestry Partnership Project, CARE Nepal,

Duty Station: Kailali.

(November 2001-October 2002)

Responsibilities

- Implement Community/ Private Forest (CF/PF) activities to achieve the set goals and objectives so as to address identified needs of the communities.
- Facilitate assessment of development needs, design and implementing modules of local communities in the area of community forestry.

- Plan, Implement, Monitor and Evaluation of Non Formal Education, Income Generating Activities, Saving/ Credit Programs focusing Women and Disadvantaged Groups.
- Conduct site level training for community members to improve the management of their local resources by providing management skills, technical knowledge in the field of CF/PF.
- Conduct researches and evaluation studies to assess the effectiveness of project interventions.

10. Consultant

Department for International Development (DFID), Nepal

August-October 2001

- Assessment and Review of Ministry Organizational Component and Preparation of organizational charts of NGOs, INGOs, GOs and Stakeholder Groups.

11. Volunteer

Student Partnership Worldwide (SPW), Nepal

Joint Initiative for Environmental Action (JIFEA) Program

(January- June. 1998)

12. Researcher

Institute of Forestry Campus, Pokhara, Nepal

(August- October 1997)

- Base Line Study of Community Forest/ Community Forest User Groups Formation impacts in Lamjung and Tanahu District.

13. MSc Degree (2004 – 2006) **Thesis Title: Contribution of Community Forest on Agriculture Farming in Mid-Hills of Nepal (published)**

www.umb.no/noragric/publications/msctheses/2006/2006-mnrsa-Rabina-G-Rasaily.pdf

Paper I: *Contribution of Community Forest on Crop Production in Lalitpur & Dhading district of Nepal*

Paper II: *Contribution of Community Forest on Livestock Rearing in Lalitpur & Dhading district of Nepal*

ACADEMIC QUALIFICATION

MSc in Management of Natural Resources and Sustainable Agriculture

University of Life Sciences (UMB), Norway

May 2006

Courses: Environment and Development Seminar, Basic ecology, Ecology & Tropical biology, Statistical Analysis, Social Anthropology, Economics for Environment, Development and Natural Resources Agricultural Production Systems in Developing Countries, Research Methods, Management of Natural Resources and the Environment, Rural Development and Project Management, Scientific Communication Seminar, Political Ecology & Master thesis

- Participated and completed an integrated masters course in Rural Development & Project Management at Faculty of Forestry and Nature Conservation, Makerere University, -Kampala, Uganda. **Exchange Programme in Developing Country (Africa)-2005**

Bachelor of Science in Forestry

D.S.B Campus, Kumaun University, Nainital, India

June 2001

Courses: Forestry, Botany & Zoology

Intermediate of Science in Forestry

Institute of Forestry, Pokhara Campus, Tribhuwan University Nepal

July 1997

Courses: Wildlife Protected Area Management, Silviculture, Forest Mensuration, Chemistry, Biology, Physics, Nepali, Math, English, Social & Community Forestry, Forestry Policy & Procedures, Forest Law, Accounts, Surveying & Mapping, Soil Science, Agro-forestry, Soil Conservation & Watershed Management, Forest Protection/Management/Utilization/Extension/Harvesting & Logging/Engineering & Fields Works.

High School

Los Banos Science School, Republic of the Philippines, Ministry of Education, Culture and Sports, National Educational Testing Center, Manila, Philippines.

November-1992

Courses: Social Studies, Filipino, Values Education, English, Science & Technology, Mathematics & Homeroom.

Publication Lists

1. The impact of Terai community forestry in reducing pressure and dependency on government managed natural forests in Kailali & Bardia districts, Nepal, 2001, funded by USAID, www.carenepal.org/CARE **Newsletter**
2. Sushasan Shrot Sangalo (Governance Resource Book); A Brief Report on Participatory Biodiversity Monitoring of Buffer Zone Community Forests in the Bardia National Park ,SAGUN CARE, Nepal 2007, funded by USAID, www.carenepal.org/CARE **Newsletter**
3. Assessment and Review of Ministry Organizational Component and Preparation of organizational charts of NGOs, INGOs, GOs and Stakeholder Groups Nepal, 2001 funded by Department for International Development(DFID), www.dfid.gov.uk/countries/asia/Nepal/**publications**
4. Synthesized report on Environment Analysis on land degradation and impacts on economy and poverty World Bank's in Nepal, 2006, funded by USAID, www.winrock.org.np/ **publications**
5. Prospects on ecotourism and poverty reduction in Nepal- case study – 2006 funded by Winrock International Nepal, Forestry and Natural Resources Management Program, www.winrock.org.np/ **publications**

6. Report on Base Line Study of Community Forest/ Community Forest User Groups Formation & its impacts in Lamjung & Tanahu District, Mid West Region, Nepal, 1997, funded by Institute of Forestry Campus, Pokhara, Tribhuwan University, Nepal
7. Innovative Farmers and Their Innovations-Case Study on Innovative Farmers in Northwest of China by **CHEN Li, ZUO Ting, RABINA G. Rasaily, GOU Tianlai, CHAI Haofang, LI Fengyang and RONNIE Vernooy**, 2010. This paper is a part of an action research project called "Action Research on Promoting Farmers' Innovation in Yanchi County" financially supported by Oxfam Hong Kong. www.oxfam.org.hk/en/publications.aspx
8. International Conference on Agricultural Risk and Food Security 2010, Farmer's Adaptation to Climate Risk in the Context of China -: A research on Jianghan Plain of Yangtze River Basin **Chen Li[a], Zuo Ting , [a] and Rabina G. Rasaily[a]** http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6PHT-516WWBS-G&_user=10&_coverDate=12%2F31%2F2010&_rdoc=14&_fmt=high&_orig=browse&_origin=browse&_zone=rslt_list_item&_srch=doc-info(%23toc%232939%232010%23999989999%232488734%23FLP%23display%23Volume)&_cdi=2939&_sort=d&_docanchor=&_ct=62&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=2edcd156746cca64ae23e819502eedf9&searchtype=a#cor0005.
9. Synthesis Technical Report on Assessment of Forestry Farmers Cooperatives in Hunan Province, China. Edited by **Rabina G. Rasaily**. www.fao.org/docs/eims/.../COPAC2010ReportFINAL21.1.2010.doc
10. Effect of managing methods of the community forests on the expression of forest products extracted from them in Lalitpur and Dhadhing districts of Nepal. Rasaily Rabina G. and Zuo Ting http://www.academicjournals.org/ajar/PDF/pdf2012/14%20Aug/Rasaily%20and%20Zuo.pdf
11. Role of community forest in crop production: A case study of farm-forest linkages in Lalitpur and Dhading Districts, Bagmati Zone, Central Nepal. Rabina G. Rasaily and Ting Zuo http://www.universalacademicservices.org/journals/jabe/journal-of-agriculture-biotechnology-and-ecology-vol-5-no-2

REFEREES

1. **Madhav Karki, PhD**

   Deputy Director General, mkarki@icimod.org , International Centre for Integrated Mountain Development, ICIMOD

   Dr Madhav B. Karki, a Nepalese national, is the Deputy Director General of the Centre. Dr Karki holds a PhD in Forestry from Michigan State University, and a Master's degree in Range Management from Colorado State University, USA. Dr Karki brings to ICIMOD over 28 years of professional experience in programme development, management, and regional networking. He has held various positions in different national and International organizations, including

universities, and donor agencies. He has served as Campus Chief and Assistant Dean of the Institute of Forestry, Pokhara; and was Asia Programme Officer at Appropriate Technology International, USA.

2. **Professor Zuo Ting**

   Associate Dean, zuoting@cau.edu.cn , Department of Development Studies (COHD), China Agricultural University (CAU), Beijing, China

   Discipline: Rural Development & Management

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PERSONAL

Date of Birth: September 18th 1977

Permanent Address: Nakhu-13, Lalitpur Municipality, Bagmati

Mother Tongue: Nepali

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Language proficiency: Competent in written and spoken English and Nepali; well with Filipino, Hindi and local languages of Nepal's *Terai* versed region.

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