Incentives for Community Participation in the Governance and Management of Common Property Resources: The Case of Community Forestry in Nepal

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Abstract

The devolution of resource management access rights, from the state to local communities, has been an important policy tool in Nepal over the last two decades. One of the major goals of this policy is to increase the participation of local users in decision-making and for them to gain benefits from the forests. However, a lack of meaningful participation amongst users, in relation to forest governance and management, has resulted in a failure to include socially marginalised groups in community decision-making and an inability to reflect the needs and aspirations of these groups within these communities. By employing a mixed method approach incorporating quantitative and qualitative methodologies, this research explores the issue of participation in the governance of common property resources; and in particular the role of incentives in increasing participation. The empirical evidence for level of participation as a function of incentives is obtained by using an ordered probit model by constructing an index of participation as a proxy for participation in governance of common property resources, while a partial least square approach is also undertaken to link the participation indicators to the various incentives. Focus group discussions and individual interviews were applied to gain insights into the influence of caste, socio-economic status and the effectiveness of the institutions in Nepal and the overall governance and management performances of community forest user groups.

In this study of community forestry management regimes in the Middle Hills of Nepal, access to resources and benefits, and enforcement of legal property rights are identified as the key influential incentive that determines the effective participation of users in resource governance. The statistical and qualitative findings of this study support the argument that, for common property resource management regimes to be successful in achieving meaningful participation of the poor and disadvantaged groups, in terms of having their strong voice to influence group's decisions in their favour, it is important to strengthen their rights to provide them fair access to resources and benefits. The policy measures may even require a deliberate focus on providing and guaranteeing the inclusion of poor and disadvantaged groups in CFUG governance structures and processes, in addition to building their capacity and bargaining power to influence decision making and to compensate for the cost of this participation through the economic empowerment of poor users. However, in the Middle Hills of Nepal, where discriminatory sociocultural norms prevail, transferring property rights to a specific group does not protect the rights of the poor and disadvantaged members. Thus, this study proposes the proportional allocation of the most productive part of a community forest to a sub-group (formed within a user group) of the poor and disadvantaged members and the transference and enforcement of legal property rights to this sub-group over the allocated forest, in order to protect their access rights to resources and to secure their greater participation in resource governance.

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Abbreviations and Acronyms

AusAID	The Australian Agency for International Development
CBS	Central Bureau of Statistics
CF	Community Forest(ry)
CFD	Community Forestry Division
CFUG	Community Forest User Group
CPR	Common Property Resource/ Regime
DANIDA	Danish
DDC	District Development Committee
DFID	Department for International Development
DFO	District Forest Office/r
DFRS	Department of Forest Research and Survey
DoF	Department of Forest
EC	Executive Committee
FAO	Food and Agricultural Organization of the United Nations
FECOFUN	Federation of Community Forest User Groups, Nepal
FGD	Focus Group Discussion
FRISP	Forest Resource Information System Project
GoN	Government of Nepal
GTZ	German Agency for Technical Cooperation
HMG/N	His Majesty's Government of Nepal
IUCN	International Union for Conservation of Nature
LRMP	Land Resource Mapping Project
MEST	Ministry of Environment, Science and Technology
MFSC	Ministry of Forest and Soil Conservation
MLFA	Maximum Likelihood Factor Analysis
MUHEC	Massey University Human Ethics Committee
I/NGO	International/Non-Governmental Organisation
JMF	Joint Forest Management
NIPALS	Nonlinear Iterative Partial Least Squares
NTFP	Non-timber Forest Product
OLS	Ordinary Least Squares
PCA	Principal Component Analysis
PCFA	Principal Component Factor Analysis
PF	*Panchayat* Forest

PLS	Partial Least Squares
PPF	*Panchayat* Protected Forest
SDC	Swiss Development Corporation
SNV	The Netherlands Development Organisation
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
VDC	Village Development Committee
WECS	Water and Energy Commission Secretariat
WFP	World Food Programme
WWF	World Wildlife Fund

Glossary of Nepali Term

Bali Pratha	A traditional exchange system where a fixed amount of grain is provided after each harvest, in lieu of the labour supplied by the occupational castes
Ban Janch Adda	Forest Inspection Office
Birta	Land grants formerly made by the rulers of the state to individuals, usually on a tax free and heritable basis
Bista system	See *Bali Pratha*
Dalits	Lower caste groups
Gorkhali	Shah dynasty of the Kingdom of Gorkha, who coalesced small kingdoms and numerous fractured monarchical states (based on ethnic principalities) into the Kingdom of Gorkha and who later established Kathmandu as the capital of a unified Nepal in 1769
Jagir	Land grants to a government employee or military, in lieu of salary
Kipat	A form of land tenure, in which land was regarded as the common property of the local ethnic group and it was managed from within the ethnic tribal's organisation
Lauro palo	*Lauro* (the stick) is handed over to the following day's watcher from the previous day's watcher, under the rotational forest protection system arrangement
Mana Pathi	A system of paying grain to the forest guards, as a part of the informal forest management system (1 *pathi* equals to 8 *mana* which is equivalent to 4 kg)
Matwali	Alcohol drinkers
Muluki Ain	First legal code of Nepal promulgated in 1854 by order of the first Rana Prime Minister of Nepal
Panchayat	The lowest level of political-administration unit under the Panchayat System that was established in 1959
Rana	The hereditary dynasty of Rana Prime Ministers who ruled in Nepal from 1846 to 1950
Samiti	Executive committee
Sudra	Lower caste groups based on Hindu caste hierarchy
Tagadhari	Wearer of the holy cord
Talukdari	Position responsible for collecting land tax for the state

Tole	The smallest unit of settlement: a number of toles constitute a village
Verna	Social status groups based on Hindu religion

CHAPTER ONE

INTRODUCTION

1.1 Research Statement

The devolution of resource management and access rights, from the state to local communities and user groups, has been an important policy tool in Nepal over the last two decades. The development of community forest user groups (CFUGs), as participative institutions, is one of the most widespread and rapidly expanding attempts to encourage participatory devolution in Nepal, under the community forestry programme. One of the major goals of this devolution policy, as seen in community forestry in Nepal, is to increase the participation of local users in decision-making and for them to gain benefits from the forests[1]. However, a lack of real participation amongst users in relation to forest governance and management is significant. This situation could be a result of poverty, the pressing need to make a livelihood, or a lack of awareness that their participation is important for community forest management and development. Moreover, community forests in Nepal – the forest resources and ecosystem services – can make a significant contribution to national economic growth, in addition to reducing the poverty of its users. The two main objectives of community forestry, namely, improving the livelihoods of the rural users and sustainable forest management (Warner, 1997), are less likely to be achieved without a greater participation of users in the governance and management of community-based resources. Failure to achieve the effective participation in the programme of all sections of the local user community[2] results in costs, in terms of forest resource degradation and the compromising of medium and long-term sustainable development. Therefore, it is of considerable interest to explore the incentives[3] offered to local communities, as an

1 Both natural and plantations

2 People living in or adjacent to forests and in some way relying on forest resources for their livelihoods

3 Incentives, in this study, are defined as those mechanisms that positively impact on an individual's attitude and behaviour, which then motivates their active participation in collective arrangements for improved governance and management of their forest resources.

attempt to encourage them to participate in common property resource[4] governance and management.

The aim of this study is to systematically examine whether the community forest management regimes in Nepal have actually provided communities with sufficient incentives to make them willing (and economically able) to involve themselves in the governance[5] of common property resources. In particular, this research focuses on assessing the individual incentives offered for the people's participation[6] in community-based approaches to forest management and it investigates whether the economic concerns of local communities are dealt with adequately in the existing forest policies of Nepal. This study will focus on the link between incentives and the level of participation in the governance of common property resources, in order to explore how incentives affect the users' motives to participate in the governance of common property resources, in addition to identifying which incentives best address and ensure the people's willingness and ability to participate, by estimating models of users' discrete choice between participation or refraining from participation.

This research is important in view of the widespread policy shift towards an increasing emphasis on community participation in all forms of development interventions, particularly in natural resource management, in both developed and developing countries. This research contributes to the existing literature on participation in a community-based resource management approach, by examining the relationship between incentives and community participation in the governance and management of common property resources within the context of Nepal in particular: and also in

4 The terms community-based resource and common property resource are used interchangeably in this paper. The United Nations (1997) defines common property resources as natural resources owned and managed collectively by a community or society rather than by individuals: and the term common property regime refers to a particular social arrangement regulating the conservation, management and utilisation of a common property resource. Common property resource is a common pool resource to which access is controlled by a group recognised as owners (FAO, 1992). Cernea & Bromley (1989) defined common property regimes as structured ownership arrangements within which management rules are developed; group size is known and enforced; incentives exist for co-owners to follow the accepted institutional arrangements; and sanctions work to ensure compliance. In this study, therefore, community forestry in Nepal is referred to as an example of a common property regime and community forest is seen as an example of a common property resource, where access is limited to the members of a specific group of users who hold rights in common within the forest boundaries, as defined by the community forest operational plan —although the State still holds rights over the land.

5 Governance for this study's purpose is referred a structure and process of decision-making for setting and enforcing rules for resource use and management.

6 Participation in this study does not simply mean membership, a physical presence at meetings and sharing costs and receiving benefits, it also means involvement of users through having voices in and influence over the group's decisions (to ensure that decisions are in their favour), and a strong influence on the outcomes of these decisions. A household's participation is operationalised to mean the involvement of a household member at each stage of the common property resource governance and management activities, namely, forest management, decision-making and resource utilisation (benefit sharing).

developing countries with similar social settings, in general. Taking CFUG as an illustrative context, the findings of the study can be generalised in other collectivities and governance structures, which are being promoted today as decentralised institutions.

The findings of this study would be useful in assisting the forestry department and community forestry development projects to be more focused on providing the incentives that the users' value highly and with due consideration given to the costs of participation, in order to promote the users' effective participation in the governance and management of the community forest resources during policy/strategy formulation and implementation. The empirical results are expected to aid policy-makers when they formulate / implement pro-poor policies, by providing these policy-makers with appropriate incentives for the users, which are congruent with motives that are valued by these users.

A CFUG is supposedly set up to function on the principles of participation, by the formation and involvement of a user group, which results in benefits for all sections of the group, but it has been reported that significant sections of the community (particularly the poor and marginalised) have been excluded in this participative institution (e.g., Agarwal, 2001; Winrock, 2002). However, the issue of exclusions (before and during the CFUG formation process) will not be explicitly dealt with in this study, because the main scope of the study is to explore the incentives that need to be offered, in order to overcome the prevailing participatory exclusions in the governance of a CFUG, following its establishment/formation.

This introduction section has provided a background to the study; an introduction to the research problem; the research questions and objectives; an overview of theoretical argument and the research approach. A review of the performance of community forestry management regimes in Nepal now provides the background to the research problem.

1.2 Background

Forests play an important role in the livelihoods of rural people in most developing countries and they also contribute significantly to their national economies. However, forest resources are rapidly dwindling, due to the ever-increasing demands of

increasing populations. A number of approaches and strategies, which recognise the importance of local people's participation in forest management and which aim to fulfil the users' basic forest product needs by increasing benefit flows to them, have been implemented, in order to meet this increasing demand and at the same time to address the over-exploitation of forest resources (Arnold, 1992; FAO, 1989). The idea of sustainability, which can ensure long-term, stable and productive systems of management together with the meaningful participation of local users, has also been identified as one of the most important requirements for the effective and efficient management of forest resources (Arnold, 1992; FAO, 1989). Thus, community forestry has evolved as an effective system of forest management through the embodiment of all these characteristics (Warner, 1997).

The care and use of forests are typical rural household activities in Nepal. A rural household derives firewood, construction materials, food and income from the forest, whereas crop farming and livestock activities produce food and income (Figure 1.1). More than 80% of people in Nepal depend on subsistence farming for their livelihoods, which are largely dependent on natural resources (Dougill *et al.*, 2001). A study suggests that 2.8 hectares of forest are required to sustain the productivity of one hectare of farmland in the hills of Nepal (Wyatt-Smith, 1982 cited in Bhatia, 1999). Similarly, more than 78% of the energy for cooking and heating is derived from firewood in most rural households (Ministry of Finance, 2006; Pokharel, 2007). In 2003, the forestry sector contributed to an 8.8% share in gross value addition to the agriculture sector in Nepal (ADB, 2004).

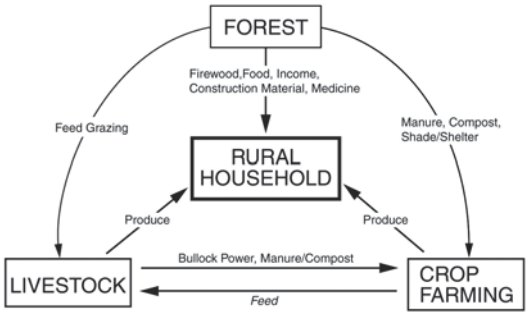


Figure 1.1: Traditional farm forestry linkages in Nepal

Household labour, a key factor of production, is also allocated amongst these three inter-dependent activities. A rural household's total income is the income from all these activities, and when the income from one activity declines, more resources (labour) are

allocated to the others. With a growing rural population and labour force, the subsistence agricultural system cannot produce enough and hence, the pressure on forest resources has increased to meet the income gap of this growing population. Unlike cropland and livestock, forests are not private property. Since forests are an open-access resource, there is always a growing tendency to over-exploit them. This over-dependency has exerted a heavy and unsustainable pressure on all forest resources (Gilmour & Fisher, 1991; Ministry of Finance, 1996). In its 1989 Master Plan for the Forestry Sector, it is estimated that approximately 26,000 hectares of natural forest area were being reduced per year (MFSC, 1989).

Since many people depend on forests for their basic livelihoods, it was not possible to close the forests for use, unless people's dependence on the forest was reduced, by giving them better opportunities. The two objectives to improve the quality of life for rural forest dependant people and to protect and maintain healthy forests prompted the government to look at mechanisms for seeking people's participation in the sustainable management of 'state-owned' forests (MFSC, 1989). Ultimately, a community forestry approach was chosen by the government, as its vehicle to achieve these goals.

Community forestry was promoted legitimately in Nepal, as a mechanism to promote people's participation in the attainment of sustainable forest management in the state-owned forests. The Master Plan for the Forestry Sector, Nepal (MFSC, 1989) specified provisional strategies for the phased handing-over of all accessible forests to local communities, as 'community forests'. The Forest Act, 1993, the Forest Regulations, 1995 and the Forestry Sector Policy, 2000 reaffirmed the government's policy to assign more responsibility to local communities. The major features of the community forestry programme in Nepal is to ensure that the users are the custodians of the forests, and to give user groups common property rights over the forests, thus replacing the previous open-access regime.

The government of Nepal is progressively handing over defined areas of its national forests to local rural communities (as community forests) with the objective of ensuring the sustainable management of the nation's forests, through the increased participation of local communities. Although the initial objective of the community forestry programme was to foster the relationship between the forests and the local communities, by recognising the traditional user-rights of the community (MFSC, 1989), studies have revealed that the handing-over of the forests from the State to CFUGs, as community forests, is the best course of action for achieving sustainable forest

management in Nepal (see for example, Kanel, 2002; Malla, 1997). The community forestry programme is often referred as a successful model for participatory, community-based forest management in Nepal (Kanel, 2004; Mahapatra, 2000; Springate-Baginski *et al.*, 1999) and its policy is considered to be one of the most progressive forest policies in the world (Bhatia, 1999; The World Bank, 2001).

In summary, community forestry in Nepal, which evolved through the restructuring of policy and the reformation of rules and regulations, involves the governance and management of forest resources by local communities. It was specifically formulated to halt forest degradation through sustainable forest management and (at the same time) to address the livelihoods of local communities. Moreover, the community forestry policy and guidelines are based on a sustainability concept, and the state believes that community forestry brings promising results in relation to ecological, economic and social systems, in addition to promoting sustainability within forest management (Department of Forests, 1995). The literature highlights that a community forestry programme increases people's access to the forest and their involvement in decision-making directly affects the distribution of goods and benefits and therefore, their livelihoods (Gautam, 2006). Nepal's community forestry programme is probably the largest sectoral domain of governance, in terms of population size directly engaged as its members. This situation is what makes Nepal such a relevant country for the study of incentives offered for community participation in the governance and management of common property resources.

1.3 Research Problem and Justification

Deforestation is one of the serious problems relating to forest management in most developing countries. The literature suggest two opposite viewpoints as to the causes of deforestation: Firstly, the increased demand for forest products and land for agricultural expansion and residential space, in order to fulfil the needs of increasing populations; and secondly, the failure of forest bureaucracy to achieve people's participation in forest management (Chakraborty, 1994; Yiridoe & Nanang, 2001). In a developing country, such as Nepal, people depend upon forest resources for their daily livelihoods and hence, it is unlikely to manage forest resources without seeking the people's active participation (Lise, 2000). However, the inclusion and full participation of traditional users (and the distribution of benefits to these people) is still a major issue. Community forestry, in practice, fails to involve socially marginalised

people in community decision making and thus, it does not reflect the needs and aspirations of the poorer and marginalised groups within these communities (Gautam, 2006).

Despite progressive legislation and the vast amount of spending on resources — both financial and human — over the past two and a half decades, since its inception in this sector, the experience of implementation of community forestry in Nepal has shown mixed results, and it has raised problems and issues that could hinder the sustainability of the community forestry programme (see for example, Malla *et al.*, 2003; Neupane, 2003; Winrock, 2002). Community forestry is central to Nepal's forest development strategy. However, not all CFUGs are equally successful in managing the forests sustainably and improving the quality of life of its users (Malla, 2000; Malla *et al.*, 2003; Thoms, 2008; Winrock, 2002), which are the major goals of the community forestry programme. Although the Act and the Regulations have brought about a large increase in the rate of handover of these community forests, the programme is still not successful in achieving the people's effective participation in the governance and management of these community-based resources (e.g., see Agarwal, 2001; Agrawal & Gupta, 2005; Buchy & Subba, 2003; Kumar, 2002a; Maskey *et al.*, 2006). The bureaucratic culture and power of those implementing the community forestry programme are also believed to contribute to the poor performance of the community forestry programme in Nepal (Gilmour & Fisher, 1991).

One of the clear challenges for the people's participation in community-based forest governance is to ensure that local communities are provided with sufficient economic incentives for them to become involved in sustainable forest management, and that they also receive greater economic benefits from conserving forests, than from degrading them (Mogaka *et al.*, 2001). However, studies from Nepal reveal that some forest user communities (particularly the poor and marginalised groups[7]) are obtaining an even lower quantity of forest products and other benefits from the forests, than they usually obtained before the handover of the forest as a community forest (Larsen *et al.*, 2000; Malla *et al.*, 2003; Winrock, 2002) — and the process of distribution of forest products favours the wealthier and so-called high caste households (Jones, 2007; Malla, 2000). The literature argues that recent changes in policy have not helped the

7 For this study purpose, people with lower socio-economic-political status, a lower level of education and knowledge about forest conservation/management and having poor access to forest officers? are defined as marginalised groups. These groups are usually comprised of lower caste, indigenous communities (Janajatis) and occupational groups, such as potters, blacksmiths and firewood sellers (Daure).

needy people, but instead they have often worked to their disadvantage. Poorer households are currently facing more restricted access to community forests than relatively better-off households (Adhikari *et al.*, 2004).

There are significant wealth and power disparities between the user households of community forest members (Thoms, 2008). Although community forestry can potentially improve rural livelihoods (Dev *et al.*, 2003), the community forestry intervention has had a limited positive impact on the livelihood of rural households (Adhikari, 2005; Malla, 2000; Neupane, 2003; Thoms, 2008). The evidence suggests that some households (especially the poorer ones) have been negatively affected (Malla, 2000). There are already reports of people who have given up their participation in community forestry activities (Maharjan, 1998). If this situation continues, the final results may be exactly the opposite to the results envisaged by the community forestry programme.

The poor and marginalised groups in most community forest user groups are still deprived of benefits from the community forestry activities (Graner, 1997; Jones, 2007; Winrock, 2002) and restrictions on the use of common property has generated destitution for these poorer households. As highlighted by the literature, the people's representation on executive committees and decision-making positions and an improved information system are amongst the most important determinants for effective participation in community-based forest management (e.g., see Agrawal & Gupta, 2005; Dolisca *et al.*, 2006; Lise, 2000). However, in most cases, the decisions are made regardless of the needs and rights of the users, particularly the poor, women, landless and disadvantaged, who remain "silent spectators of community forestry processes" (Winrock, 2002, p. 19). This situation usually leads to distrust and disinterest in the process — and again it results in poor participation.

The traditional dependence of users on the forests for their livelihoods has also been ignored in several cases. The poor are not able to pay for the products sold to members and the occupational castes (e.g., potters, blacksmiths and firewood sellers) are being deprived of obtaining products to sustain their occupations (Winrock, 2002). Furthermore, except for a few instances, the availability of forest products has not increased at the household level in many community forests (Winrock, 2002). These depravations on the one hand, have largely de-motivated users from participating in forest management, whilst on the other hand it has contributed to further degradation of

nearby open-access national forests, due to the restrictions on community forests (Winrock, 2002).

Community forestry in Nepal is an example of a common property regime, where access is limited to members of a specific group of users, who hold rights in common within the forest boundaries, as defined by the community forest operational plan[8]. The nature of the property rights assigned to CFUGs by the new forest legislation is close to that of proprietors (Agrawal & Ostrom, 2001). However, it is argued that the property rights of the forest users can easily be limited by the state, due to the absence of "influence over constitutional level rights;" and the government can change forest policy without notice or consultation with the stakeholders (Agrawal & Ostrom, 2001, p. 500). This situation might have placed a limitation on the users' willingness to participate, due to uncertainty as to what might happen if the government withdraws the rights, as a result of the forests' potential to generate revenue.

Studies have revealed that supportive institutional arrangements at state level, which are vital for achieving people's participation in common property resource governance (Richards, 1999) and exercising property rights (Agrawal & Ostrom, 2001), are also lacking in Nepal. There is a critical imbalance in the power relationships between the people and government institutions, due to the monopoly of government forestry staff in the provision of services (Gilmour & Fisher, 1991). Bureaucratic inefficiency has resulted in the forging of alliances between forest officials and the local elites (Malla, 2001), thus encouraging rent-seeking and corruption. Such pragmatic alliances give local elites the power they need to maintain good relationships with forest officials and they exercise this power over the general users, thus influencing the major decisions and allowing users to only extract resources at their behest (Malla, 2001; Timsina & Paudel, 2003a; Timsina & Paudel, 2003b). At the CFUG level, institutional arrangements and decision-making processes are such that the poor and marginalised groups hardly speak and they are rarely heard or benefit from community forestry, since they cannot afford to participate (Pokharel, 2008a). The success of community participation is often evaluated in terms of the number of people attending meetings called by development agents, rather than in terms of their understanding and contribution to the programme (Maharjan, 2005).

8 The Community Forest Operational Plan is the main document that guides CFUG in community forest management and it includes information about forest boundaries and management blocks; the objectives of forest management; forest management activities; details of the forest's inventory, including growing stock, annual allowable harvest and harvesting regimes/schedules; access and usage rules and procedures and enforcement mechanisms; forest protection measures and penalties; and forest-based income generation activities.

Although there is extensive literature on community-based resource management in Nepal, there has been insufficient analysis on the economic aspects of community involvement in resource governance. Many researchers have examined various aspects of community forestry in Nepal, most of which are focussed on analysing and describing its concepts, policy provisions and policy implications (e.g., Charnley & Poe, 2007; Gautam *et al.*, 2004b; Gilmour & Fisher, 1991; Gilmour & Fisher, 1997), or its effectiveness on forest protection and conservation (e.g., Branney & Yadav, 1998; FAO, 1999a; Gautam *et al.*, 2004a; Gautam *et al.*, 2002; Gautam *et al.*, 2003; Jackson *et al.*, 1998; Tachibana & Adhikari, 2005, 2009), or recognising community forestry as a potential approach for achieving forest (ecological) sustainability (e.g., Devkota, 2005; Dongol *et al.*, 2002; Little, 1996).

Several other researchers have concentrated on issues such as power relationships and inequality within forest benefit distribution (e.g., Jones, 2007; Kumar, 2002a; Lachapelle *et al.*, 2004; Mahapatra, 2000; Malla *et al.*, 2003; Maskey *et al.*, 2006; Nagendra *et al.*, 2005; Neupane, 2003; Smith, 2004; Winrock, 2002), or its impacts on poverty and livelihood improvement (e.g., Dev *et al.*, 2003; Dongol *et al.*, 2002; Exo, 1990; Gilmour *et al.*, 2004; Maharjan, 1998; Malla, 2000; Malla *et al.*, 2003; Thoms, 2008). A few researchers have looked at institutions, collective action and property rights issues (e.g., Adhikari, 2005; Adhikari & Lovett, 2006a; Agrawal & Ostrom, 2001; Kanel, 2002), but a great deal of the analysis of common property resources in the Himalayas has been concerned on village level institutions, rather than incentives for individuals (Das, 2000). Furthermore, it seems that the government of Nepal has not paid sufficient attention to the 'root causes' of the poor and varied level of user participation observed amongst CFUGs. In addition, it has paid scant attention to the role of incentives, when attempting to understand the users' willingness and/or ability to participate in the governance of common property resources.

Moreover, incentives for local users to participate in common property resource governance are still poorly understood — even internationally (see, e.g., Davies & Richards, 1999; Jentoft & McCay, 1995; Meinzen-Dick, 1997; Ostrom, 1999; Ostrom & Gardner, 1993; Seabright, 1993). Studies conducted to address the issue of people's participation in community-based resource management (e.g., forests, fisheries and irrigation) are generally confined to an assessment of the factors that influence people's participation (e.g., Agrawal & Gupta, 2005; Bruns, 1993; Dolisca *et al.*, 2006; Hanna, 1995b; Jumbe & Angelsen, 2007; Lise, 2000; Maskey *et al.*, 2006; Meinzen-Dick, 1997; Ostrom & Gardner, 1993; Salam *et al.*, 2005) and they have stressed the

need to provide incentives for local communities, in order to promote people's participation. These studies have identified the level of dependence, social heterogeneity, group size, government support, leadership and market or infrastructure, as being the predictors of participation in common property resource management, which cannot be created or altered easily within the framework of common property resource governance. However, additional or increased level of incentives and favourable policies could support effective governance and management of common property resources in less advantageous conditions (Jodha, 1992).

In the case of irrigation management, a research need has already been identified, which could assess the conditions under which farmers would be more willing to participate; and this assessment could help to avoid a potential failure in participation (due to a lack of adequate support for farmers' organisations) which would ultimately result in the deterioration of irrigation systems and their performance (Meinzen-Dick, 1997; Meinzen-Dick & Reidinger, 1995). The need to examine the extent of reforms that promote farmers participation in the improvement of irrigation systems is further supported by an argument that irrigation is still largely managed by government agencies and water users' associations and not by the market, due to political and institutional factors and the practical difficulties of implementing pricing systems for irrigation water (Bruns, 1993). The case of community-based forest management can be generalised with the above case relating to irrigation management — and it deserves similar attention. Moreover, except for a few theoretical speculations, attempts to measure the impact of incentives on users' participation decisions, within the governance and management of common property resources, is lacking. To my knowledge, there are no published studies that specifically analyse the incentives for people's participation under community-based forest management regimes, both internationally and within the Nepalese context.

Nowadays, Nepal is considered a pioneer state involved in the launching of a community forestry programme. In the course of the rapid expansion of this programme, a series of largely unanticipated 'second-generation' issues of governance, equity and productivity within forest resource management has begun to emerge in Nepal. One of the major second-generation cross-cutting themes in the forestry sector in Nepal is the inadequate level of the people's participation, specifically women and the poor and disadvantaged groups within forest resource governance and management, which has contributed to an inequitable access to resources, benefits and revenues. In order to achieve fair and equitable governance within forest resource management, strategies

should be based on the cross-cutting themes that focus on second-generation institutional development. Building governance capacity should focus on increasing participation in general and specifically that of women and the poor and disadvantaged people, in order to improve transparency and accountability and to ensure equitable access to (and distribution of) resources, benefits and revenues. This is especially urgent in view of the fact that Nepal has come to be regarded as a model of successful community forestry development, so that both success and failure in this country may have implications that spread far beyond Nepal's borders. The following section elaborates on the research questions and objectives in line with the research problems described above.

1.4 Research Questions and Objectives

The main scope of this study is to explore the effect of incentives to overcome the prevailing participatory exclusions from the governance of community forest management regimes. This study seeks to understand the extent to which community-based resource management regimes have provided incentives for forest users to become involved in the governance and management of their resources, and the role of those incentives in the achievement of effective participation from all sections of the communities, through having their voices heard and therefore becoming influential in the group's decisions and also becoming a strong influence on the outcomes of those decisions. The incentives to function well at the local level need to be supported by appropriate policies at the national level, and hence this study will also analyse the appropriate policies at national level.

This study specifically addresses the following question:
What incentives are most likely to enhance the effective participation of local users in the governance and management of common property resources?

The following three specific research questions will guide this study. The first question is linked to institutional arrangements, whilst the second and third questions are associated with the users' responses to the incentives provided or offered.

a) What are the incentives provided by the community forest management regimes in Nepal for local user communities, particularly the poor and marginalised groups, in

order to promote their effective participation in the governance and management of common property resources?

b) Which incentives best address and ensure people's willingness and ability to participate in the governance and management of common property resources?

c) How do changes in the incentives affect users' motives to participate in the governance and management of common property resources?

The following four specific research objectives have been identified, in order to address the above research questions:

Objective 1: To describe the types, nature and extent of incentives provided by the community forest management regimes in Nepal that impact on the participation of local users, particularly the poor and marginalised groups.

Objective 2: To determine the relationships between different incentives and the level of participation of user group members.

Objective 3: To explore how households might respond to any changes in the incentives, in terms of their decision to participate in common property resource governance.

Objective 4: To propose/recommend how organisational incentives can be better integrated, in order to induce more effective participation of users in the governance and management of common property resources.

The subsequent section outlines the theoretical arguments, whilst the following section offers an overview of the research approach that has been applied to the research questions and objectives of this study.

1.5 Theoretical Arguments

An individual within a community can have the ability to influence a decision if s/he participates more fully. Increased participation is linked with improved access to information and followed by improved benefits, which are directly linked to a reduction

in poverty or improved livelihoods (e.g., Agrawal & Gupta, 2005). User households, who participate more fully in the governance and management of community-based resources, are more likely to benefit from the forests, because they are able to exercise their voices. Conversely, households that participate less will receive fewer benefits, due to not exercising their voices (Agrawal & Gupta, 2005).

The basic theoretical argument of this study is that the incentive system is regarded as the principal variable that affects an individual's behaviour, in regards to participation in the governance and management of community-based resources. Differences in the type of users' involvement are a function of organisational incentives and individuals have different preferences for (and response to) the incentives offered by an organisation (Knoke, 1988). On the other hand, it is argued in this research that the more diverse the incentives offered to the users, the more willing they will be to participate and contribute. This study assumes that individuals choose to participate in resource governance and management, and that they use strategies in light of the incentives they are offered. Furthermore, these incentives and disincentives, relating to the governance and management of common property resources, are generated by the economic characteristics of the desired goods and services. In order to understand how users respond to incentives, it is necessary to understand the incentive opportunities offered by the community-based resource management regimes. This study postulates that there is a lack of appropriate incentive mechanisms, and that the incentives provided by the community forest management regimes in Nepal are sub-optimal. Forest users are, therefore, unwilling to participate in community forestry governance.

The expected costs of participation is one of the major determinants of community involvement in community-based forest management (Meinzen-Dick, 1997). However, it is important to understand the relative magnitude of the benefits and costs, in order to determine whether a user who is willing to participate is actually able to participate, because participation not only offers benefits to the management process but it also incurs costs, which are mainly opportunity and transaction costs (e.g., Agarwal, 2001; Kumar, 2002b; Meinzen-Dick, 1997). The success of communities' involvement in the governance of common property resources depends on the fact that local communities receive sufficient economic incentives from conserving forests, rather than from degrading them (Mogaka *et al.*, 2001). In order to achieve effective participation of user households in the governance and management of resources, the tangible (or economic) incentives from participation must outweigh (or at least counterbalance) the

economic costs of participation that accrue to an individual user household. The anticipated costs and benefits of a collective, social and material nature determine an individual's willingness to participate (or preference to be involved in) certain types of activities (Klandermans, 1986).

An individual's attitude towards the goals of the group or organisation also determines the degree of willingness to participate in collective goals. Members who are not aware of the goals/objectives will still be willing to participate for the social and/or material benefits of participation, whilst the members who understand the goals/objectives will still not be willing to participate because of pessimistic expectations about the effectiveness of participation and/or costs and benefits of participation (Klandermans, 1986). Moreover, an individual may be less motivated to participate in collective goals because another individual (who did not participate in achieving the collective goals) may also benefit once the goals have been achieved. However, this study assumes that all the cases of non-participation in resource governance and management is due to the absence of appropriate incentive mechanisms that correspond to (or best address) the individual's need or motives. Another institutional problem in common property regimes is the 'free rider' problem, where the benefits from resource management are not just restricted to the participants, but this situation is not considered a significant factor for non-participation in this research, because access to resources and benefits is limited to the members only, as defined by the group's constitution and operational plan.

1.6 Research Approach

A multi-disciplinary research approach will be adopted in this research. The incentive approach is based on theories from several disciplines, such as social exchange theory, rational choice theory, resource mobilisation theory and institutional theory, which provide the theoretical foundation for understanding the role of incentives in users' participation in resource governance. Therefore, an understanding of these theories is critical, when analysing the relationships between incentives and participation.

The social exchange theory suggests participation is a means of maximising economic and psychological benefits and the participants would participate, if benefits exceeded costs (Blau, 1964; El Ansari & Phillips, 2004). According to this theory, the actions of an individual is motivated by the expected returns (Blau, 1964). It stresses that an

individual's decision or willingness to participate (similar to any other behaviour) is motivated by perceived costs and benefits (Klandermans, 1984, 1986). An individual's internal benefit cost ratio is a powerful tool for incentive/cost management to increase her/his level of participation (Prestby *et al.*, 1990). People participate in order to protect natural resources, only if direct economic benefits accrue to them as a result of their care of these resources (OECD, 1996).

The rational choice theory comprises concepts, such as motivation, attitude, choice and decision (Klandermans, 1984). The rational choice theory assumes that any type of social action is purely rational or rationally motivated (Scott, 2000). It states that people act rationally and that they are motivated by the wants or goals that express their preferences. Individuals choose the alternative which is likely to give them the greatest satisfaction (Coleman, 1973; Heath, 1976; Scott, 2000). Similarly, there is a strong link between the institutional theories of collective action and policies, which are used to promote people's participation in natural resource management (Cleaver, 1998; Ostrom, 1990). These theories suggest that the key role of incentives in institutional economics is to motivate and regulate individuals' contributions to collective actions (Cleaver, 1998; North, 1991). Correspondingly, Olson (1971) theorised that a rational individual (in a latent group) will only be stimulated by a separate and selective incentive if s/he is to act in a collective action. He further argues that a person will not be motivated to join and contribute to a group that only provides public goods, therefore the provision of private goods is important.

The resource mobilisation theory reveals that the processes of participation in a social movement are similar to other forms of collective behaviour at the individual level and it assesses the role of resource mobilisation, in regards to fluctuations in decision or willingness to participate (Klandermans, 1984). According to the resource mobilisation theorists, participation in a social movement is the result of a rational decision processes, where people weigh the costs and benefits of participation (see, e.g., Jenkins, 1983; Klandermans, 1984; McCarthy & Zald, 1977; Oberschall, 1973). This theory stresses the importance of the availability of resources to a collective and the position of individuals in social networks, as being a determinant of participation in social actions (Klandermans, 1984; McCarthy & Zald, 1977).

Institutional theory provides a broader concept of institutions, which includes organisational structure, legal rules and enforcement mechanisms, and informal institutions such as norms and behaviours (Brinton & Nee, 1998; Richards, 1999; Scott,

2005). It deals with the relative power and control that determine the incentives and policies, which should be able to enforce property rights and also provide a regulatory basis for markets (Richards, 1999). Therefore, even carefully designed policies and incentives are not sufficient to achieve users' participation in resource governance; the institutional capacity for implementation, monitoring and enforcing these incentives and policies, at local and national level, is essential (Wells, 1998).

The quantitative approaches of analysis are implemented in this research, in the context of incentives to become involved in community forest management in Nepal. It is hypothesised in this study that an individual's decision to participate in the governance of common property resources depends on the incentives provided, which s/he values and which match his/her corresponding motives. This study examines the wider notion of participation and it employs different variables based on the typology of incentives in the governance and management of common property resources. The selection of these incentive variables is based on the extensive literature on organisational incentives in collective action and the preliminary field data to operationalise an empirical econometric model. In order to construct an empirical model, it is envisaged that the participation decision is a function of incentives offered to an individual.

A two-stage model is constructed, to estimate the conditions under which a household participates in the governance of common property resources. Firstly, an index of participation is constructed, as a proxy for participation in the governance and management of common property resources, by using a factor analysis of indicators of participation to identify different choice situations. Secondly, an ordered probit model is used, to identify the relationship between different incentives and the level of participation of user group members. As an alternative (and for comparative purposes) a partial least square approach is also undertaken, to link the participation indicators to the various incentives. Descriptive statistics are used to analyse the characteristics of the survey population, in addition to the sample, such as the socio-economic characteristics of the respondents and the distribution of their household, in terms of existing participation in group activities and other incentive variables. The empirical results of the analysis are then discussed, in order to test the research argument/ hypothesis.

The empirical analysis of the level of participation in the governance and management of common property resources is based on survey data from Nepal. This study

examines empirical evidence from CFUGs in Nepal and it discusses the broader practical significance of the findings. Household surveys were the major tool for collecting the primary quantitative data required for this research. This involved collecting varied information, such as the users' socio-economic information, their level of participation in group activities and their viewpoints on (and attitudes towards) the incentives offered by the group.

The qualitative data was also collected from the field, in order to understand the institutional settings and overall governance and management practices and performance of the selected user groups in the study area, through the use of focus group discussions, informal discussions and key informants surveys. The data collected during the fieldwork was checked carefully and coded before it was transferred to a computer. The data was cleaned, entered and triangulated from various different sources, in order to achieve validation.

1.7 Structure of the Thesis

The thesis is organised into eight chapters. *Chapter One* provides an introduction to the thesis. It contains background, the research problem and justification, research questions and objectives, theoretical arguments and the research approach. A brief contextual description of the community forestry programme in Nepal is described in *Chapter Two*. A general background on the forests of Nepal, a history of community forest management, policy instruments and institutions for the community forestry programme and the community forest handover process are all included in this Chapter. *Chapter Three* contains a review of the literature and a conceptual framework that outlines the theoretical arguments applied to the research questions and objectives. *Chapter Four* presents the methodological overview to be applied to this research. *Chapters Five* and *Six* report the findings of the descriptive data analysis and empirical results on the incentives for community participation in the governance and management of common property resources, respectively. The key findings of this research are discussed in *Chapter Seven*. In *Chapter Eight*, the final chapter, the research conclusions and implications are presented.

CHAPTER TWO

CONTEXTUAL DESCRIPTION OF COMMUNITY FORESTRY IN NEPAL

2.1 Introduction

This chapter offers a contextual description of community forestry in Nepal. Firstly, it presents a general background on Nepal, which covers the geological, demographical and socio-cultural and economic contexts. It then reviews the literature on the general background to the forests of Nepal. It summarises the history of community forest management and it examines the community forest hand-over process, in addition to a discussion on policy instruments and the status of community forests in Nepal. Finally, there is an examination of community forestry as a common property regime and an explanation of the performance of community forestry in Nepal.

2.2 General Background to Nepal

2.2.1 Geography

Nepal is a small landlocked country bordered by China and India. The country is located between 26^0 22' and 30^0 27' North latitude and 80^0 04' and 88^0 12' East longitude (LRPM, 1986). It has a total area of 147, 181 sq. km. The country is a rectangular shape expanding from east to west and stretching from the Himalayas in the north, through rugged terrain in the centre, to the Terai Plains in the south (WECS, 2010). The average east to west length is 885 km and the average north to south width is 193 km (CBS, 2009). Altitude in Nepal ranges from 70 metres above sea level in the South to the 8,848 metre peak of Mount Everest in the north. Rugged terrain (mountains and hills) only covers approximately 83 percent of the total area (WECS, 2010). The country can be broadly divided into five physiographic zones[9] extending

9 The country is also divided into three broad ecological zones based on altitude and climate, in order to facilitate development planning and administration: the Mountains (4,877 to 8,848 metres elevation occupying 32.5 percent land), the Hills (610 to 4,877 metres elevation occupying 41.7 percent of land) and the Terai Plains (less than 610 metres elevation occupying 23.1 percent land) (KC, 2003).

from east to west: the High Himalayas, the High Mountains, the Middle Mountains (or Middle Hills), the Siwaliks and the Terai Plains (LRPM, 1986; MFSC, 1989) (Figure 2.1).

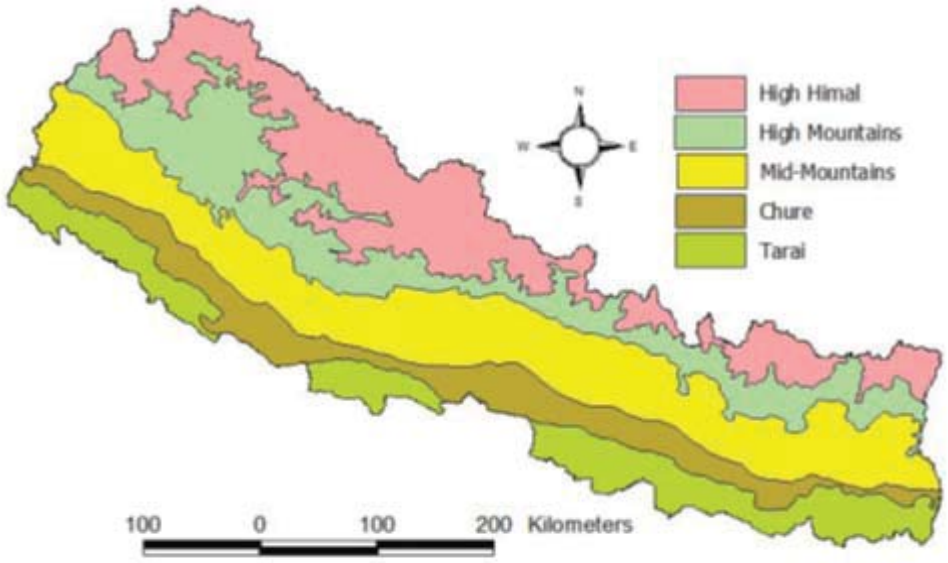


Figure 2.1: Physiographic zones of Nepal (GoN/MEST, 2008)

The High Himalayas, situated above 5000 metres altitude, cover 23 percent of the country's total area, most of which are covered with snow throughout the year. This region contains 13 peaks which are more than 8,000 metres in elevation including Mount Everest, the world's highest mountain. The High Mountain region is located below the High Himalayas and it extends to up to 3000 metres elevation and occupies approximately 20 percent of the total land. The Middle Mountains (or Middle Hills region) lies in the central belt of Nepal below the High Mountains and it extends up to 1000 metres elevation and covers approximately 30 percent of the country's land. It is comprised of mountain ridges, valleys and small flat lands. The Siwalik region is located at the foothills of the Middle Mountains and it is comprised of a series of low hogback ridges in a twisting pattern, which include cultivated valleys and plains. The altitude of the Siwalik region ranges from 500 to 1000 metres and it occupies approximately 13 percent of the total land. The Terai region is the southern lowland plains, which range from 70 to 500 metres with a gentle southward slope occupying approximately 14 percent of the country's land area (LRPM, 1986; MFSC, 1989).

At a global level, Nepal lies within the subtropical monsoon climatic region (WECS, 2010). However, Nepal's climate is greatly affected by its varied topographical situation and elevation. Nepal can be divided into five different climate zones, which correspond

to its physiographic regions (WECS, 2010). A tundra type of climate with perpetual frost and cold desert conditions is found in the High Himalayas above the snowline. An alpine climate with cool summers and frosty winters is found in the High Mountains at approximately 4000 metres elevation. A cool temperate monsoon climate is found in the Middle Mountains at approximately 3000 metres elevation with mild, wet summers and cool, dry winters. A warm temperate monsoon climate with warm, wet summers and mild, dry winters is found in the lower Middle Mountains at approximately 2000 metres elevation. A sub-tropical climate or hot monsoon with hot, wet summers and mild, dry winters is found in the Terai and Siwalik regions (WECS, 2010). The average annual rainfall varies from 250 to 4500 mm, but precipitation varies greatly from one place to another. Most precipitation (nearly 80 percent) occurs during the monsoon season (June to September) (WECS, 2010).

2.2.2 Land Use

According to the Master Plan for the Forestry Sector Nepal, 1989 (MFSC, 1989), forestry is the dominant land use in Nepal and it covers 37 percent of the total land area. However, deforestation has been (and remains) a major problem in Nepal, resulting in a decrease in the country's total forest area. from 37 percent in the late 1970s to 29 percent in the early 1990s (DFRS/FRISP, 1999). Agriculture is the second major land use with 21 percent of the country's total land under cultivation. Grasslands cover 12 percent of the total land, whilst shrub lands/degraded forest lands and no cultivated inclusions occupy five percent and seven percent, respectively. Approximately 18 percent of the total land area is under 'other land uses' including rocky areas, lakes, ponds, waterways or settlements (Table 2.1) (MFSC, 1989).

Table 2.1: Land Use in Nepal ('000 ha)

Physiographic Region	Cultivated lands	No cultivated inclusions	Grasslands	Forested lands	Shrub lands	Other lands	Total
High Himalayas	8	1	885	155	67	2204	3320
High Mountains	244	148	508	1639	176	245	2960
Middle Mountains	1223	667	278	1811	404	59	4442
Siwaliks	269	59	16	1438	29	75	1886
Terai	1309	123	58	475	30	116	2111
Total	3052	998	1745	5518	706	2699	14718
Percent	21	7	12	37	5	18	100

Source: (MFSC, 1989)

Approximately 2.9 million hectares of the country's land area (19.7 percent) is under the protected area system, which includes nine national parks, three wildlife reserves, three conservation areas, one hunting reserve and 11 buffer zones (GoN/MEST, 2008). Similarly, a total of 242 wetlands have been identified in the country, eight of which have been designated as Ramsar sites[10] (IUCN, 1996).

2.2.3 Demography

The population of Nepal reached 23.1 million, as per the census of 2001[11], with an average family size of 5.4 and an average population density of 157.7 per square kilometre (CBS, 2002). From the total population, the share of male/female population was 11.56 million (49.96 percent) and 11.87 million (50.04 percent), respectively. As per the 2001 census, Nepal has a high population growth rate of 2.27 percent per annum (CBS, 2002). The projected population of Nepal for 2011 is 28.6 million (CBS, 2009).

Nepal's population structure is comprised of a high number of children (under 15 years of age) and elderly people (above 60 years of age). Approximately 40 percent of the population is below 15 years of age and seven percent of the population is above 60 years of age (CBS, 2002, 2004). Life expectancy at birth was 60.4 years in 2001. Population distribution, in terms of ecological zones, is very unequal. Approximately 7.3 percent of the population live in the mountain region, which occupies about 35 percent of the country's land and approximately 44.3 percent of Nepalese live in the Hills region, which occupies approximately 42 percent of the total land, whereas the Terai region of Nepal, which occupies approximately 23 percent of the total land supports 48.4 percent of the population. According to the 2001 population census, 85.80 percent of the population live in rural areas (CBS, 2002).

The economic and cultural centres of Nepal have been located in the Middle Hills. The Terai Plains emerged as an agricultural and industrial centre only after the eradication of malaria in the 1960s. Since that time, a significant migration flow from the Middle Hills to the Terai region has taken place. Even with this out-migration, more than 40 percent of Nepal's population still lives in the Hill zone. Both land productivity and access to markets are limited in the Middle Hills, due to the rugged geography, where

10 Ramsar sites are wetlands of international importance designated under the Convention of Wetlands, 1971 (also called as Ramsar Convention)
11 In Nepal, a population census is taken every ten years. The latest national population census was taken in 2001 and the next national population census will be in 2011.

subsistence farming (with limited use of purchased inputs) is the main economic activity. The majority of the people depend on the forests for their main fuel for heating and cooking and agricultural inputs, such as fodder and leaf-litter for animal bedding and composting (CBS, 2002).

The majority of the population in Nepal is Hindu (80.6 percent), followed by Buddhist (10.7 percent). Approximately 4.2 percent and 3.6 percent of the population is Muslim and Kirant, respectively, whilst less than 0.5 percent of the population practices Christianity (CBS, 2002). The high caste groups (Brahmin and Chherti) constitute 28.5 percent of the population. The ethnic groups, Magar, Gurung, Newar, Tamang, Rai, Limbu constitute approximately 22 percent of the population. The number of the Dalit population is estimated at being approximately 12.9 percent, of which 55 percent live in the Hills region. The largest *Dalit* caste is *Kami* (blacksmiths) with 30 percent of the *Dalit* population, followed by *Damai* (tailors) at 13 percent, *Sarki* (cobblers) at 11 percent, and *Chamar* (sweepers) at nine percent (Pradhan & Shrestha, 2005). Although a single caste or ethnic group may solely inhabit some pockets or areas, most of the districts in Nepal have a mixed population that include all castes and ethnic groups. However, Dalits are usually found in the periphery of high caste groups settlements (Pradhan & Shrestha, 2005)

The 2001 population census identified 103 caste and ethnic groups in Nepal: 36 groups representing high Hindu castes; 16 groups representing low Hindu castes; 44 ethnic groups and seven ‘others’, which includes religious groups and unidentified groups (CBS, 2002). The 52 caste groups (nine in the Hills and 43 in the Terai region) and 44 ethnic groups (25 in the Hills and 19 in the Terai region) comprise 58.6 percent and 36.4 percent of the total population, respectively, whilst ‘others’ comprise 6.2 percent of the population (CBS, 2002; Pradhan & Shrestha, 2005). The 2001 census also recorded 106 languages and dialects, of which the Indo-Aryan language family constituted 79.1 percent (Nepali 48.6 percent, Maithili 12.3 percent, Bhojpuri 7.5 percent, and Tharu 5.9) and the Tibeto-Burman language family constituted 18.4 percent (Tamang 5.2 percent, Newari 3.6 percent, Magar 3.4 percent, Rai-Kiranti 2.2 percent, Gurung 1.5 percent, and Limbu 1.4 percent) (Pradhan & Shrestha, 2005). However, many scholars doubt the accuracy of the exact percentages of the different castes, ethnic groups and linguistic groups, as reported in the 2001 census (see, e.g., Gurung, 2003).

The literacy rate[12] in Nepal (found in the 2001 census) was 54.1 percent (CBS, 2002). There is a significant variation in the literacy rate within caste groups or ethnicity. Literacy rates for the higher caste groups (i.e., Brahmin and Chhetri) were 75 percent and 60 percent, respectively. Amongst the ethnic groups, Newar had the highest literacy rate (71 percent), followed by Magar and Tamang (50 percent each). Amongst the lower castes, Sarki had a 50 percent literacy rate, whilst Kami and Damai had only 44 and 38 percent literacy rates (CBS, 2002). Similarly, gender and rural/urban areas are the other variables that affect literacy rates. People living in urban areas have a higher literacy rate (74 percent) compared to people living in rural areas (46 percent). Similarly, there is a wide gap in literacy rates in regards to gender: the male population is more literate (63 percent) than the female population (39 percent) The literacy rate is even lower in rural areas, where only 59 percent of men and 34 percent of women are literate (CBS, 2002). This reflects the differential access to education between men and women in Nepal.

According to the UNDP Human Development Index 2009, approximately half of Nepal's population still lives below the international poverty line of $1.25 per day (WFP, 2010). However, according to the 'Nepal Living Standard Survey 2004', approximately 31 percent of the population is below the national poverty line[13] (CBS, 2004, 2009). Approximately 44 percent of the population in rural areas live below the poverty line (CBS, 2002), which implies that poverty in Nepal is still a rural phenomenon, but it is also associated with a significant disparity across castes and ethnicity (UNDP, 2009) and even across ecological regions. The highest proportion of the population below the poverty line (approximately 35 percent) live in the Hills region, whilst 33 percent and 28 percent live in the mountain areas and the Terai region, respectively (CBS/WorldBank, 2005). The incidence of poverty is highest amongst the lower castes (Dalits) living in the Middle Hills, where nearly 48 percent of them are below the poverty line, whereas approximately 43 percent of the total population of Janajatis in the Hills region is identified as poor. Both these rates are higher than the national average of 32 percent. A comparatively lower proportion (18 percent) of the higher caste population are classified as poor (CBS, 2002, 2009).

12 The population census 2001 defined a person of six years or above as being literate if s/he could read and write (CBS, 2002).

13 The national poverty line has been derived by using the cost of basic need (CBN) method, which is based on the nutrition requirement of 2,124 per capita per day (CBS, 2004).

2.2.4 Sociocultural and Economic Context

The caste system, which denotes both caste and ethnic group, is the major determinant of social relationships in Nepal. A complex interplay of different social, economic and political processes has resulted in the formation of caste and ethnic identities (Bista, 1991). The present caste structure and relationships are deep-rooted in the historical caste system which was initiated prior to 1950. The first legal code of Nepal, the *muliki ain*, was promulgated in Nepal in 1854 by the orders of the first Rana Prime Minister[14] of Nepal. This law, which was the epitome of orthodox Hindu religious norms, introduced hierarchy, differentiation and discrimination between higher and lower castes, and caste status was the main factor that determined an individual's juridical status (Hofer & Sharma, 2004). According to this law, all castes and ethnic groups were grouped into four Vernas, namely, Brahman, Kshatriya, Baisya and Sudra, representing different social statuses. Brahmin represents priests and religious teachers; Kshatriyas is comprised of kings, warriors and aristocrats; traders, peasants and craftsmen belong to Baisya; and the Sudra caste is defined as being the servants of the other three Varnas (Hofer & Sharma, 2004; Sharma, 2004). During the Rana regime, justice was practiced and based on this caste system in a discriminatory way, such that the higher the caste the less severe the punishment and the lower the caste the more severe the punishment. Thus, the law worked to protect the status and interest of the high castes and it promoted their domination in all spheres of society (Hofer & Sharma, 2004; Sharma, 2004).

With the establishment of the *Panchayat* regime in Nepal in 1961, a new Civil Code was introduced in 1963 that replaced the *muluki ain*. The new legal code, which was promulgated by the then King Mahendra, was more progressive, in the sense that it explicitly expressed state disapproval of the caste hierarchy. However, it did not completely eliminate the discrimination that existed within customary society. As a result, the hierarchical caste system and discrimination based on ethnicity, caste and gender continued in practice (Bista, 1991; Sharma, 2004). The higher castes had better access to (and control over) political, economic and administrative resources and structures (Pradhan & Shrestha, 2005). The state declared that Nepal was a mono-cultural Hindu country and it banned ethnic-based organisations (Gurung, 1999).

[14] The hereditary dynasty of Rana Prime Ministers, who ruled in Nepal from 1846 to 1950: Rana was one of the higher castes and it belonged to Kshatriya.

After the restoration of multi-party democracy in Nepal in 1990, a new constitution for Nepal was formulated. This new constitution declared Nepal to be a multi-ethnic and multi-lingual Hindu constitutional monarchial kingdom and it prohibited any form of discrimination based on caste, ethnicity or gender, thus granting equal rights to all its citizens (HMG/N, 1990). However, the structural hierarchy of caste and gender was still practices and it still dominated the attitude of many Hindus in the country (Sharma, 2004). With the overthrow of the monarchy in 2007, the Interim Constitution of Nepal was formulated, which declared the country to be the Democratic Republic of Nepal. However, the present caste system still reflects the customary hierarchical system and a three-tiered hierarchical system still exists in Nepali society. At the top is the *Tagadhari* (the wearer of the holy threads) or higher castes (Brahmin, Chhetri, Thakuri); the second tier is the *Janajatis* or *matwalis* (alcohol drinkers such as Magar, Tamang, Gurung, Rai, Limbu, Newar, etc.); and the third tier, at the bottom, is the lower castes or the *Dalits* (Kami, Damai, Sarki, etc.) (Hofer & Sharma, 2004).

The caste system guides social, economic, cultural and political activities and interactions between different castes. The high castes have historically been superior in economic and socio-religious terms. *Dalits*, on the other hand, have been inferior or discriminated against within socio-economic-religious activities and they are often prohibited from entering public places or mixing with higher castes at social gatherings. *Dalits* are still considered as untouchables and the higher castes do not, generally, accept any cooked food or water from them (Chhetri, 1999).

The caste system is also liked with economic class. *Dalits* and minority ethnic groups still have poor access to economic and political resources and they lack a social dignity (Bhattachan *et al.*, 2007). They have low access to major economic opportunities, social services and physical structures (Acharya *et al.*, 2004). Dalits, who belong to '*sudra' verna,* depend on occupations other than farming for their livelihoods. For example, Damai are tailors and they play musical instruments; Kami work with iron and make agricultural tools; and Sarki work with leather (i.e., making shoes and removing dead carcasses). For generations, these lower caste groups have been bound to work in upper caste households, in return for which they are provided with a fixed amount of grain annually after each harvest or during major festivals. This is called the '*bali pratha'* or '*bista'* system (Bista, 1991).

Land ownership is also linked with the caste system and hence with economic and social status in Nepal (Seddon & Adhikari, 2003). The state granted most of the

agricultural land to a small proportion of landowners and institutions, in exchange for them helping the state to performing various administrative functions, such as *Birta or Jagir* (Regmi, 1978). The majority of the landowners who were granted the lands were from the higher castes. The lower castes did not receive any land grants from the state, due to their low socio-cultural profile and hence, they remain landless (Seddon, 1998). The consequence of this historical biasness in land distribution (still visible today) is that a small number of landlords hold most of the agricultural land, whilst many lower castes are still landless. Although several land reform policies have been formulated since the 1970s and even after the multi-party democratic system in 1990, these policies are largely ineffective in redistributing lands equitably amongst Nepal's citizens (ICIMOD, 2000; Karki & Seddon, 2003; Regmi, 1999). The 2001 population census data shows that over 25 percent of Dalits are landless or near landless and this comprises 15 percent of Hill Dalit and 44 percent of Terai Dalit. Similarly, approximately 42 percent of other disadvantaged groups are also landless (CBS, 2002). A high proportion of Dalit households (80 percent) are unable to sustain their livelihoods from their own land. Such landless households (and households with small land holdings) are most vulnerable from a food self-sufficient point of view, since they generally have no (or very small) incomes from other sources (Seddon & Adhikari, 2003).

Furthermore, there are vast gender inequalities in land and other economic resource ownership. The Hindu caste system is discriminatory towards women's rights and it discourages women's formal ownership of land, houses or large livestock (Acharya *et al.*, 2004). Women are generally not entitled to inherit parental property, if they get married. The 2001 population census data shows approximately 92 percent of women are landless, in the sense that they do not have ownership rights over land (CBS, 2002). This lack of ownership puts women in an inferior position in Nepali society. Moreover, women's social mobility is highly restricted and they are often discouraged to participate in public/social activities, thus depriving them of access to information, goods and services (Acharya, 1994). Other social variables, such as wealth, class, caste and ethnicity are added to gender inequalities, thus making their situation even worse. In addition, women are left to carry out the full burden of undertaking all household chores, taking care of children and even earning an income in many rural areas, which further worsens women's living conditions in Nepal.

2.3 General Background to the Forests of Nepal

In Nepal, forestry is a predominant land use with 4.27 million hectares of the total land area (29%) covered by forests and an additional 1.6 million hectares area (10.6%) covered by shrub land (DFRS/FRISP, 1999). The natural vegetation distribution is greatly influenced by climate, and the effects of altitude, temperature, rainfall and aspect are significant. This large variation in altitude, temperature, rainfall and geology enriches Nepal with a high level of bio-diversity (75 vegetation types and 35 forest types) (FAO, 1999b). The result is broadly parallel zones of vegetation to permanent snow, which gives rise to a great ecological diversity, which ranges from tropical forests to alpine tundra. Jackson (1987) classified Nepal's vegetation into six different types, on the basis of altitude, ranging from the lower altitudinal zone to the higher zone, namely, tropical forest, sub-tropical forest, lower-temperate forest, upper-temperate forest, sub-alpine forest and alpine tundra (Figure 2.2). Similarly, Dobremez et al. (1972) have identified 118 ecosystems and they classify Nepal into four domains and 11 sub-levels, which provide six vegetation categories based on altitudinal classification (bio-climatic zones).

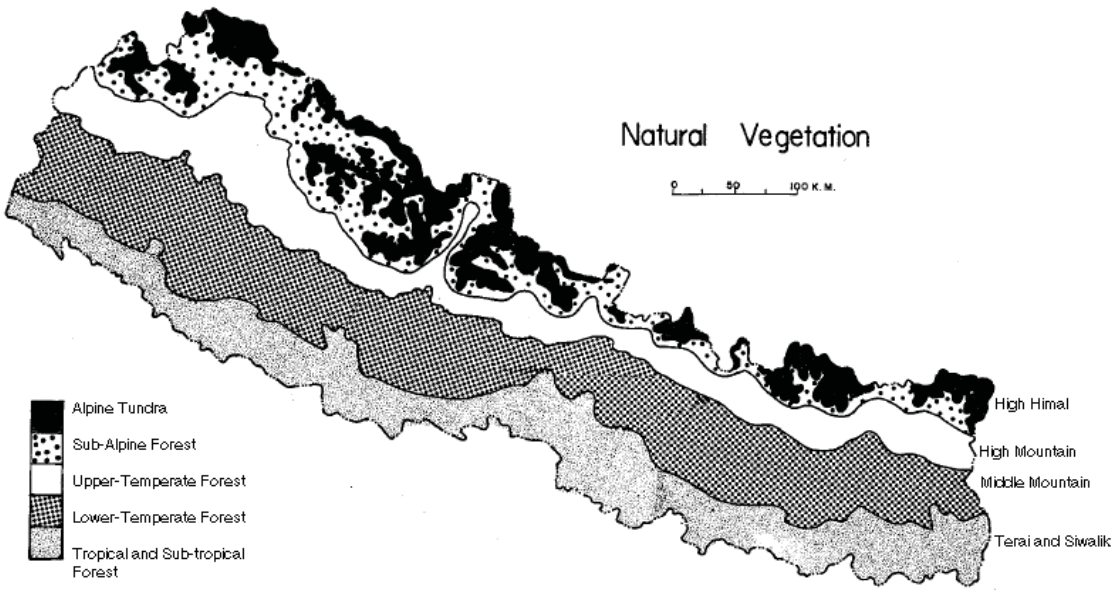


Figure 2.2: Natural vegetation of Nepal (Source: Shrestha, 1988)

The Forest Act 1993 classifies Nepal's forests into two broad categories for management purposes, namely, national forest and private forests (MFSC, 1995). National forests are further classified into five different categories: community forests, government managed forests, leasehold forests, protected forests and religious forests (MFSC, 1995).

Community forestry is the largest component of the country's forestry programme. Although most agricultural land is privately owned, forests and grasslands are owned by the government under the present land tenure system of Nepal (MFSC, 1995).

Deforestation has been (and is still) a major problem in Nepal. The country's forest area decreased at an annual rate of 1.7 percent from 1978/79 to 1994 and together forest and shrub land have decreased at an annual rate of 0.5 percent, over the same period (DFRS/FRISP, 1999). This shows that there has been an increase in the area of shrub land, which indicates the degradation of forests into shrub land.

2.4 History of Community Forest Management in Nepal

The origins of community forestry are strongly linked to the different approaches to forest management throughout the history of Nepal. The community-based forest management (in the form of traditional or indigenous systems) was operational under different types of institutional arrangements at different times and at different locations. Prior to unification in 1769, Nepal was divided into many small kingdoms and the rulers of that period decreed several different systems of forest management (Tiwari, 1990). Although most of the forests were state-owned, people were allowed to collect forest products (to fulfill their basic forest product needs) free of charge under certain rules and regulations (Tiwari, 1990). The *Kipat*[15] system of forest management was the ancient and traditional land holding system of Eastern Nepal, where forest resources were managed collectively within a community and the members of other communities could use the forest products through payment of fees or other commodities to the owners of the forest (Arnold & Campbell, 1986; Tiwari, 1990).

After the unification of Nepal in 1769, these systems of forest management were abolished by the Gorkhali[16] rulers, who encouraged the conversion of forests into agricultural land, in order to raise revenue through land taxes (Gilmour & Fisher, 1991; Mahat *et al.*, 1986). This system of forest management was also maintained by the Rana[17] rulers (who treated forest resources as a source of revenue) and it was known

15 A form of land tenure in which land was regarded as the common property of the local ethnic group and it was managed from within the ethnic tribal's organisation (Fisher, 1989).

16 Shah dynasty of the Kingdom of Gorkha, who coalesced small kingdoms and numerous fractured monarchical states, based on ethnic principalities, into the Kingdom of Gorkha, and later moved their capital to Kathmandu after assaulting the three Malla Kingdoms of the Kathmandu Valley and establishing Kathmandu as the capital of a unified Nepal in 1769 (Talbott & Khadka, 1994).

17 A hereditary dynasty of Rana Prime Ministers who ruled in Nepal from 1846 to 1950.

as the *Talukdari*[18] system. They supplied approximately 200,000 Sal (*Shorea robusta*) sleepers to the British government, free of charge, for the construction of broad gauge railway lines in India during World War I (Tiwari, 1990). Nevertheless, the Rana rulers also preserved some of the national forests on a tax free and hereditary basis under *birta*[19] tenure for their families and as *jagir*[20] for other influential officials, where income from the forests under these tenures generally accrued to the owners, rather than to the state. By 1950, approximately one-third of the total forest and cultivated lands were under *birta* tenure, of which 75 percent was owned by the Rana family (Regmi, 1978). Forest products other than timber were usually left as an open-access resource (Bhatia, 1999).

Most forests were managed under a feudal system, in order to collect revenue from the people who used the forests and they never served the community, either in the form of a common property resource or as an open-access resource (Joshi, 1989). However, in some parts of the Middle Hills, some users were able to manage the local forests as an integral part of their own farming systems, under the indigenous forest management systems. These users developed their own rules and regulations for management, although the ultimate ownership of these forests rested with the government (Fisher, 1989; Jackson, 1990). The most noted in the literature is the *mana pathi* system, in which villagers do not form a user group but instead they hire forest guards and pay them in grain; the due per household being 2 *pathi* (1 *pathi* = 8 *mana* = 4 kg) of grain per year (Tachibana & Adhikari, 2005). Thus, it is evident that community forestry is not a new concept for the rural people of Nepal. Studies reveal that such indigenous forest management systems collapsed in many rural areas after the political changes in 1950, due to the cessation of organisations looking after the management of forests (Arnold & Campbell, 1986; Fisher, 1989).

Some major policy changes and legislation were introduced by the democratic government after the overthrow of the Rana regime in 1950, in order to manage the forests and agricultural lands of the country. One of the important changes was the introduction of the Private Forest Nationalization Act in 1957, under which all private

18 Talukdars were local headmen during the Rana period, who had the responsibility of regulating forest use and collecting land taxes (Gautam et al., 2004b).

19 Land grants formerly made by rulers of the state to individuals, usually on a tax free and heritable basis (Gilmour and Fisher, 1991). Originally birta lands were given by the state to an individual as a reward for bravary, especially in military action (Talbott & Khadka, 1994)

20 A form of land tenure in which land is assigned to government employees and functionaries, usually for their lifetime and for collecting and using a share of produce accruing to the state in lieu of (or in addition to) cash remuneration (Regmi, 1978).

forests larger than 1.25 hectares in the Hills region and 3.25 hectares in the Terai region were nationalised (Joshi, 1993; Maharjan, 1993). Although the stated objectives for the nationalisation of forests were noble, the effects were often opposite to what was intended. Some forests in the Middle Hills were cleared for agriculture, to prevent the forestland from being taken over by the government. Much of the forest and shrub land of the Middle Hills had been over-utilised by the local people to supply their basic subsistence needs. Consequently, most of the Middle Hills' forests could not be protected from encroachment and excessive deforestation (Joshi, 1993).

A large-scale afforestation programme was introduced into Nepal in the 1960s, mainly to support forest-based industries and to protect land from degradation (MFSC, 1989). Fast growing exotic species, such as tropical pines and eucalyptus, were planted under this programme, but with no regard to environmental considerations or the needs of the people. The programme proved to be a complete failure, due to a lack of consideration of the socio-economic aspects of rural people's lives. Consequently, afforestation projects have also failed to attract people's participation or to gain their support (Bajracharya, 1983; Griffin, 1988).

Following the failure of these forest management efforts, increasing attention was drawn to the deteriorating condition of forests in the Middle Hills region. In addition, the new concepts of local community development in the 1970s had recognised the interdependence of forests and farming. The government also acknowledged the importance of local people's needs and the value of their participation in the effective management of forest resources (Shrestha, 1996). As a result, a National Forestry Plan was drafted in 1976, which (for the first time) recognised the role of local communities and specifically emphasised local participation in forest management (Pokharel, 1997). Thus, community forestry officially began in Nepal as a formal national forest management strategy, with the promulgation of a set of specific rules and regulations through an amendment (in 1977) of the *Forest Act, 1961*[21], which defined the new categories of forests to be managed by local communities, religious institutions and individuals (Gilmour & Fisher, 1991).

The formulation of a National Forestry Plan was an important milestone towards mitigating the disincentives of the *Private Forest Nationalization Act of 1957* and to

21 The Forest Act, 1961 was the first comprehensive forestry legislation promulgated after the nationalisation of forests in 1957. The Act divided forests into different categories and strengthened the role of the forest department in forest conservation (Gautam et al., 2004b).

begin managing resources sustainably (Talbott & Khadka, 1994). This plan, together with the enactment of operating rules for Panchayat[22] forests (the Panchayat Forest Rules) and Panchayat protected forests (Panchayat Protected Forest Rules) in 1978 transferred the authority and responsibility for forest management and forest plantations (which were mostly on barren or degraded forest lands) from the government to local users, as Panchayat forests and Panchayat protected forests. Under this system, each village Panchayat was entitled to have approximately 125 hectares of degraded forest areas as Panchayat forest (PF) for reforestation and use, and approximately 500 hectares of forests as Panchayat protected forest (PPF) for protection and proper management under a shareholder arrangement, in regards to the distribution of income from the sale of forest products (Gautam *et al.*, 2004b). The arrangement was that the village Panchayat could retain all the benefits from the Panchayat forest, but it should pass 25 percent of the total benefits from the Panchayat protected forest to the government (Maharjan, 1993). A further provision of leasehold forestry (under the Leasehold Forestry Rules) facilitated the giving of limited degraded forest areas to individuals or agencies for reforestation and the production of forest products (Talbott & Khadka, 1994).

Although these amendments to the Forest Act and Regulations were a major shift in Nepal's forest policy towards the participation of local communities in forest management, the partnership between the forest department and the Panchayat was not successful (Pokharel, 1997). Despite the rhetorical promotion, no forest was actually handed over to any user groups, due to the concept of only handing-over the forests to user committees identified by the Panchayat authorities and headed by elected members of the village Panchayat, who were not required to be users of the forest themselves (Talbott & Khadka, 1994). A lack of delegation by the legal authority to forest users, in order for them to manage the forest by themselves; the increasing cost for forest watchers and nursery foremen; and the under-utilisation of planted forests, due to a lack of effective forest management plans, were major problems for the sustainable management of forests in Nepal (Maharjan, 1993). Although this situation became an excellent opportunity for local leaders to employ their relatives and followers as forest watchers and nursery foremen, the policy did not encourage community participation in the government-imposed community forestry programme (Maharjan, 1993). The paradigm used in forestry was still a top-down development and

22 It literally means council, which is the lowest level of political-administration unit under the Panchayat System that was established in 1959. The Panchayat system is a hierarchical arrangement of non-partisan councils that extends from village to national level (Talbott & Khadka, 1994).

the people's participation was not seen as being important (Gilmour *et al.*, 1989). Government control over resource protection and management, in particularly its control of PPF, was further extended by the enactment of the *Forest Preservation (Special Arrangement) Act, 1967,* which strengthened the Department of Forests enforcement role by delineating offences and punishments (Talbott & Khadka, 1994).

Therefore the conviction grew that this approach did not work, and that it was not a favourable situation for the rural population. As a result, the government acknowledged the importance of ownership of the forest by local users and the focus of the forestry paradigm changed — from the trees to the people — and shifted towards the community forestry approach, in which people's participation was not only important, but also considered to be an absolute requirement (Gautam *et al.*, 2004b). The *Decentralization Act of 1983*, which represented the government's willingness to devolve authority to the local level, specifically promoted the users' group concept as the most effective approach to the development and management of natural resources in local communities, thus making a compulsory provision to implement all local Panchayat and district level activities through user groups (Talbott & Khadka, 1994). The community forestry legislation under the Forest Act 1961 was further amended in 1988, in order to promote the participation of rural people in community forest management, according to which the land ceilings for the PF and PPF were removed and the village Panchayats were authorised to collect all incomes from community forest management (Talbott & Khadka, 1994).

In the meantime, the Master Plan for the Forestry Sector (1988-2010) (prepared during 1986-88 and approved by the government in 1989) recognised community and private forestry as the largest amongst the six primary forestry programmes [23] and it encouraged the transfer of forest access and management rights to local communities (MFSC, 1989). This was a major thrust towards community forestry programmes in Nepal and a turning point in the history of forestry sector policy in Nepal (Gautam *et al.*, 2004b). Several international agencies assisted the government of Nepal to formulate the nation's most comprehensive forestry sector plan. This Plan decreed that all accessible forests in the Middle Hills region were to be handed-over to local

23 Community and private forestry development programmes; national and Leasehold Forestry development programmes; wood based industries programmes; medicinal and aromatic plant and other minor forest product development programmes; soil conversion and watershed management programmes; and ecosystem and genetic resource conservation programmes are the primary programmes, whilst policy and legal reforms; institutional reforms; human resource development; research and extension; forest resource information system and management planning; and monitoring and evaluation are the support programmes (MFSC, 1989).

communities as community forests. Sixty-one per cent of the forest area (amounting to a total of 3.5 million hectares) was officially regarded as being suitable for handing-over to CFUGs (Tamrakar & Nelson, 1991). The plan specifically notes that the objectives of community forests were to meet the people's basic needs for fuel wood, timber, fodder and other forest products on a sustainable basis, and to interlink between forestry and farming practices (MFSC, 1989).

The plan further emphasised the need for establishing CFUGs, as the appropriate local institutions responsible for the protection, development and sustainable utilisation of local forests and developing a community level operational forest management plan, as a prerequisite to the handing-over of the forests to these local user groups (MFSC, 1989). The plan also indicated concern for the basic needs of the people and it highlighted the importance of women in making management decisions, with a provision that one-third of members within a user committee should be women (MFSC, 1989). This Master Plan designated CFUGs as an important means for local collective action and it stipulated that forest officials adopt new roles as advisors and extension agents (MFSC, 1989).

The *Constitution of the Kingdom of Nepal, 1990* replaced the *Panchayat constitution of 1962*. This new constitution required the state to give priority to environmental conservation and to make arrangements for the special protection of rare wildlife, forests and vegetation (HMG/N, 1990). Similarly, the Eighth Five-Year Plan (1992-97) strongly supported user group-based community forestry programmes as outlined by the Master Plan. However, despite the clear directions in the Master Plan, the community forestry programme could not gain momentum until 1995, firstly due to a lack of short and simple procedures for the handing-over of a forest to the local communities (Gautam *et al.*, 2004b), and secondly, because it was not possible to ignore the role of village Panchayat in community forestry management until the official ideology of the Panchayat system collapsed, after the resumption of democracy in 1990 (Fisher, 2000b).

The adoption of new forestry legislations in 1995; namely, the *Forest Act, 1993* and *Forest Regulations 1995,* promulgated and enforced improved implementation of the Master Plan and formalised innovations in community forestry practices. The act acknowledges the importance of the local community in forest management and gives each CFUG a legal status as “an autonomous and corporate body having perpetual succession,” that has the right to acquire and sell all forest products by fixing prices

independently (MFSC, 1995, p. 13). This act and regulations legitimised community-based forest management and it gave community forest user groups their rights as legal entities, in addition to providing mechanisms for user group administration and registration. The community forest hand-over process has also been simplified by the authorisation of a local District Forest Officer (DFO) to hand-over any part of any national forest (within the district) to a local CFUG for management and utilisation as a community forest. Thus, Nepal became the first country in the world to enact such radical forest legislation (Kumar, 2002a).

Several studies link a number of conditions and factors to the evolution of a community forestry programme in Nepal, which include a crisis projection of Himalayan degradation and consequent international assistance (Guthman, 1997); the inability of the DoF to manage forests effectively in the hills and mountains (Subedi, 2006); incentives for the participation in forest management of local people, who have forest-based livelihoods systems in rural Nepal, relating to a range of forest products and livelihoods opportunities (Gilmour & Nurse, 1991); increased research and scholarly interest in community forestry; and the presence of intense social capital and traditional models of indigenous forest management in Nepal (Fisher, 1989).

The *Forest Act, 1993* defines community forest as "…a [n]ational [f]orest handed over to an users' group ... for its development, conservation and utilization for the collective interest" (MFSC, 1995, p. 3). The Community Forestry Manual elaborates a community forest as:

> … a part of national forest that the District Forest Officer hands over to the user groups for development, protection, utilization and management in accordance with the work plan, with authorization to freely fix the prices of the forest products, and to seek and distribute the forest products for the collective benefit and welfare (Department of Forests, 1995, p. 2).

The community forest users are defined as:

> … those individuals or communities who are dependent on a certain forest area to meet their day-to-day requirements of forest products, and those who would be directly affected if they did not have access to the forest products of such forest areas, who are naturally prepared to participate in the protection, growth and consumption activities of such a forest area (Department of Forests, 1995, p. 9).

A user of a particular community forest can also be a user of another community forest: sometimes with full user rights as a primary user, and sometimes with only partial use rights as secondary user or tertiary user[24].

The revised Forestry Sector Policy of 2000 has further stipulated the handing-over of community forests. This policy has clarified the CFUG formation process, which forms user group from amongst the households residing in locations near to forests, and it emphasises the initiation of community development programmes and pro-poor initiatives, such as making fuel wood and fodder easily available to poor and marginalised groups (free of cost) and providing income generation opportunities to such groups (Department of Forests, 2007).

The Ninth (1997–2002) and Tenth (2002-2007) Five-Year Plan of Nepal also emphasises the principles, guidelines and policies formulated under the Master Plan as the long-term concept of the forestry sector. Both Plans highlight the planning period as the next phase of strengthening the users and people's participation in the implementation of local forest working plans. The continuation of community forestry programmes by using the concept of community ownership and by setting up units at village and consumers' level that are based on a participatory approach (Government of Nepal, 1997, 2002).

The recent Three-Year Interim Plan of Nepal (2007/08-2009/10) has also prioritised community forestry programmes with a target of the formation and handing-over of forests to 1500 new CFUGs within the plan period: and providing income generating activities to a total of 200,000 households of the poor and marginalised groups through the community forestry development programme (Government of Nepal, 2007). The Interim Plan has specified the main goal of forestry sector as follows:

> … to contribute to the national objective of poverty reduction by increasing income generating opportunities through decentralized and sustainable management of forests, plants, herbs, soil and watershed, environment, bio-diversity conservation and protected areas, and development of forest

24 The Community Forestry Manual has clearly categorised users as primary, secondary and tertiary users. Primary users are those who have prime responsibility and authority for the management of a designated portion of the forest, including voting rights at general meetings of the user group. Secondary users are those who use the forest for a specified purpose or to obtain a specific product with the permission of the primary user group (e.g., graziers), whilst tertiary users are those living in villages adjacent to the forest, who may not have a direct interest in forest use or management, but they obtain indirect benefits, such as a water supply or products purchased from forest users (Department of Forests, 1995).

> entrepreneurship for the sustainable development of the forest and watershed sectors through people's participation (Government of Nepal, 2007, p. 192).

The forest policy in Nepal is directed towards handing-over all accessible forests to CFUGs, irrespective of political and administrative boundaries, thus ensuring the rights of the real and traditional users of the forest. The current forest policy is also focussed on the equitable sharing of all benefits from the community forests amongst the users and on using CFUG funds in community development work that includes forest development. The income generated by CFUGs can be used in any community development activities the group decides upon, after setting aside 25 percent of the income for forest development (MFSC, 1995). This policy has also changed the role of forestry staff, from custodial to facilitative, which sanctions the reduction of corruption in the forestry sector.

These changes in policy and legislation have had a positive impact on the community forestry programme and community forest hand-over achievements (to date), in statistical terms, have been impressive with a drastic increase in the number of forests handed-over to local communities, in addition to the spatial coverage of the programme. By the end of December 2010, a total of 1,350,655 hectares of community forests had been handed over to 15,256 CFUGs, thus benefiting more than 1,782,550 households (Department of Forests, 2011). The figures show that approximately 40% of the total potential community forest area[25] of the country has already been handed over to local communities, and approximately 42% of the total households[26] in the country have access to community forests (Department of Forests, 2011). The trend of CF hand-over in Nepal is shown in Figures 2.3 and 2.4 below.

25 See, Tamrakar & Nelson (1991)

26 Total number of households in Nepal is 4,253,220 (CBS, 2002)

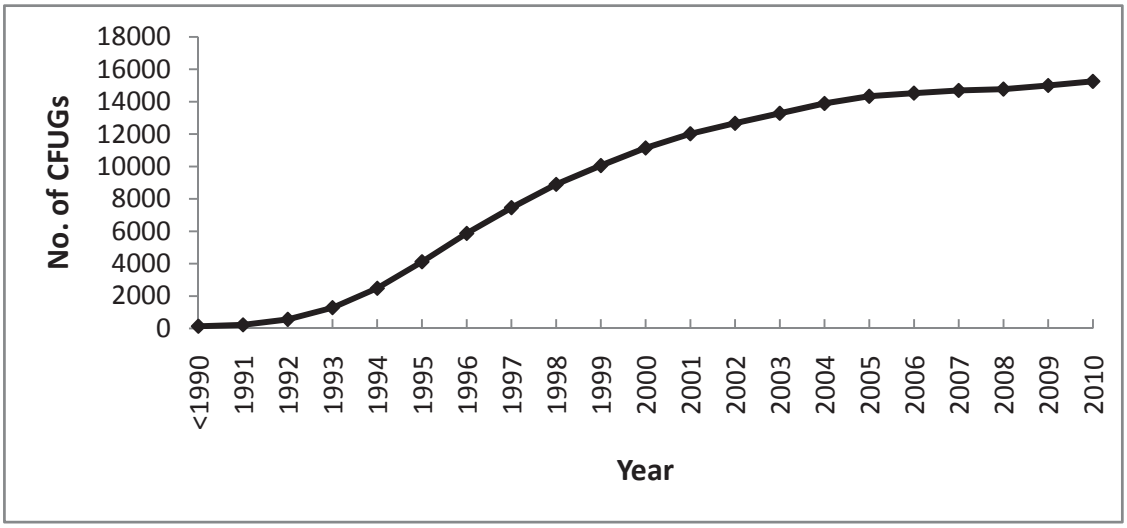


Figure 2.3: Trend of community forest hand-over in Nepal

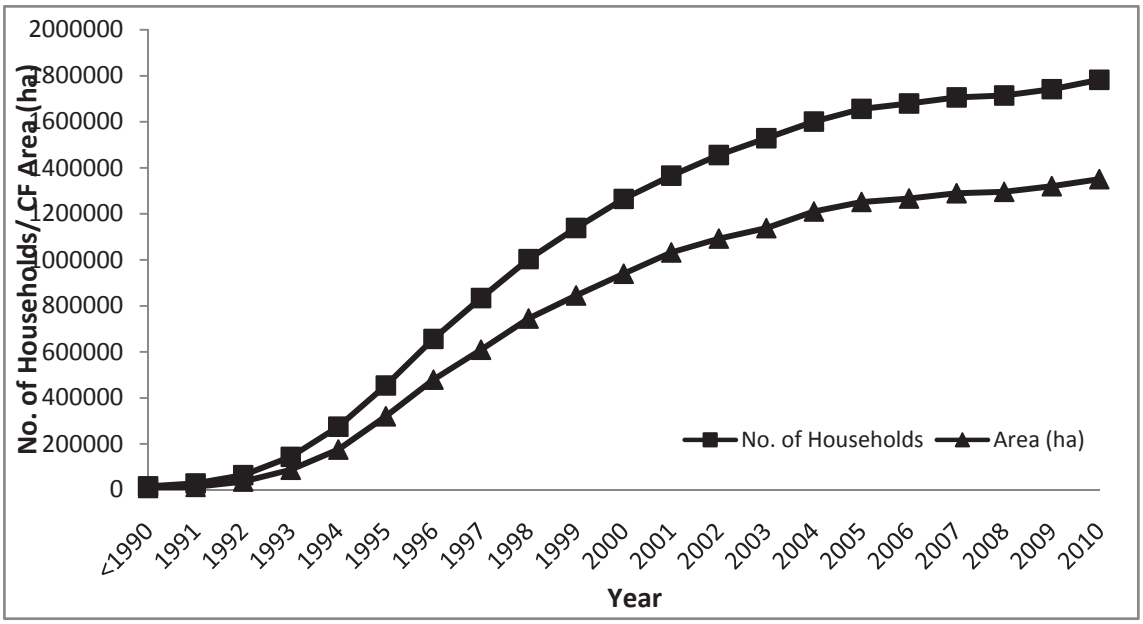


Figure 2.4: Trend of community forest hand-over in Nepal (number of households and CF area)

2.5 Policy Instruments and Institutions for Community Forestry Programmes

Several factors and actors have influenced the changes in government forestry policy in Nepal. Political changes, the prevailing socio-economic situation and donor's influence, In addition to the government's changing priorities and perceptions are the

major factors which have guided forest policy changes (Gautam *et al.*, 2004b; Talbott & Khadka, 1994). Although such policy changes have shown trends of improvement towards a pro-poor focus (Malla, 2001), the policy process is still top-down and the ruling classes and higher castes still exert a great influence over the policy development process, in terms of representing their own interests and priorities within the policies (Gautam *et al.*, 2004b; Gilmour & Fisher, 1991).

Hobley (1996) has classified Nepal's history of forest policy into three broad periods: privatisation (1768-1951), nationalisation (1951-87) and populism (1987 to date). In terms of forest management policies, two broad categories, nationalisation and community-based management, have existed over time in Nepal (Bhatia, 1999; Graner, 1997). The timeline of forestry policies and their focus, in terms of community participation in forest management, is presented in Table 2.2.

Table 2.2: Development of forest policies and their focus in terms of people's participation

Year	Forest Policy	Policy Focus
1957	The Private Forest Nationalization Act	Abolished the private ownership of forests with the intention of preventing forest destruction. Ignored people's participation in forest resource protection. Provided disincentives for local users to participate in resource conservation and management
1961	The Forest Act	Defined the duties and authority of the forest department, listed offences and prescribed penalties. People's participation in forest protection was not recognised.
1967	The Forest Protection (Special Provision) Act	Attempted to further strengthen the role of the forest department in controlling deforestation, and made provisions for stronger penalties for damaging or removing forest products from national forests without official permission. People's participation in forest protection was still not recognised.
1976	The National Forestry Plan	Recognised the important role of local communities in managing forest resources and specifically emphasised their participation in forest management.
1977	Amendments, The Forest Act 1961	Government realised that forests cannot be managed without the cooperation of local communities and hence, it defined new categories of forests to be managed by local communities, religious institutions and individuals, in order to facilitate users' participation in forest protection and management.

Year	Forest Policy	Policy Focus
1978	The Panchayat Forest Rules The Panchayat Protected Forest Rules	Enacted provisions to allow Village Panchayats to manage barren or degraded forest lands for forest production, but local political leaders were still given the power to exert control over forests.
1989	Master Plan for the Forestry Sector (prepared during 1986-88 and approved by the government in 1989)	Designated the highest priority to community forestry amongst other forest-management strategies and encouraged the transfer of access and management rights to local communities. Decreed that all accessible forests in the Middle Hills were to be handed over to local communities as community forests. Emphasised the sustainable management of forests and livelihoods of local people, through people's participation in forest management.
1995	The Forest Act, 1993 and The Forest Regulations, 1995	Provided a legal basis for improved implementation of the Master Plan. Identified CFUGs as self-governing autonomous entities with authority to manage and use forests independently, as per an agreed operational plan. Emphasis on people's participation in resource governance and management.
2000	The Forestry Sector Policy	Further stipulated the handing-over of community forests as a priority to promote people's participation in sustainable forest management. Simplified the CFUG formation process and emphasised the initiation of community development programmes and pro-poor initiatives.
2007	The Three Year Interim Plan (2007/08 – 2009/10)	Prioritised pro-poor income generating programmes in community-based forest management, with a focus on social inclusion and participation. Stressed the need for effective participation of all sections of a community in the decision making process.

Source: Gautam et al., (2004b) ; MFSC (1995); Talbott & Khadka (1994)

Forestry institutions involved in community forestry programmes in Nepal can be divided broadly into three categories: government organisations, donor communities and community-based institutions. The forestry administration in Nepal has experienced a series of fundamental changes. The first forestry administration was established in 1934 as *Ban Janch Adda* (Forests Inspection Office), with a mandate to protect and use the forests of the Terai region and it has been substantially expanded over the years (Department of Forests, 1994). The government claims that these changes in forest administration reflect the priorities of the government's programmes, through placing more emphasis on the people's need and environmental considerations (Department of Forests, 1994). The history of changes in forestry administration in Nepal is summarised in Table 2.3.

Table 2.3: Changes in the government forest administration in Nepal

Year	Forest Administration	Change Process/ Purpose
1934	Ban Janch Adda (Forest Inspection Office)	First official forest administration mandated to protect and use forests in Terai. Functioned until the office of the Chief Conservator of the Forests was established in 1956
1956	Office of Chief Conservator of the Forests - With 3 regional circles (east, west and central) and 13 forest divisions	Carrying out forest exploitation under a series of working plans
1959	Establishment of Ministry of Forestry	Formulating forest policies and administrating the country's forest resources
1976	Department of Forest - With 9 regional circles covering the whole country and 40 divisional forest offices	The Office of Chief Conservator of the Forests converted into the Department of Forests
1974	Department of Soil Conservation and Watershed Management	With a focus on soil conservation
1979	Department of National Parks and Wildlife Conservation	To administer wildlife protection
1983	Department of Forest - 5 Regional Forestry Directorates - 75 District Forest Offices -	The Department of Forest was reformed as a response to the decentralization policy of the Government.
1993	- 74 District Forest Offices - 92 Ilaka Forest Offices - 698 Range Posts -	More changes in the organizational structure of the Department of Forest to facilitate people's easy access to forest administration
1999	The Department of Forest Research and Survey (only government agency to carry out forestry research and providing forestry information)	Initially established in 1963 as Forest Research Survey Project changed to Forest Research and Survey Centre in 1993 and to Department in 1999

Source: Department of Forests (1994)

The Ministry of Forests and Soil Conservation (MFSC), in coordination with the National Planning Commission, is responsible for formulating forest policies and administering the country's forest resources. The main function of the Department of Forests is to manage the country's forest resources for the conservation of the natural environment and to supply forest products to the people — at the same time to improve the livelihoods of the community through the implementation of effective forestry programmes and increasing people's participation in forest management (Department of Forests, 1994). The Community Forestry Division, under the Department of Forests, is responsible for policy guidance, implementation and support and monitoring. The Regional Forestry Directorates are responsible for the coordination, planning and monitoring of district forestry activities within the region. The field level forest management activities are implemented through the DFO (and Ilaka Forest Offices and

Range Posts under the DFO) (Department of Forests, 1994). The organisations involved in the community forestry programme are shown in Figure 2.5.

Together with these structural changes, there has been a substantial increase in the number of employees and their roles in forest administration. The number of staff was approximately 2,000 in 1961 and this increased to over 7,000 in 1995 (Pokharel, 1997). Similarly, the main role of district forestry staff (in the past) was to protect forests through policing. However, their role has also been gradually changed to that of facilitators and extension officers in recent years, particularly after the adoption of a community-based forest management approach, as the government's main forestry strategy (Gautam *et al.*, 2004b). However, regardless of these changes in the organisational structure and a substantial increase in the number of employees, the government's forest administration is still unstable and counterproductive and the performance and success of government forestry agencies (in fulfilling the mandate of conserving the natural environment and improving the livelihoods of local users through effective forestry programmes) has still been debated over the years (Gautam *et al.*, 2004b; Joshi, 1993). Frequent changes in legislation and contradictory forest policies have been reported as being the main factors for such an ineffective performance (Joshi, 1993).

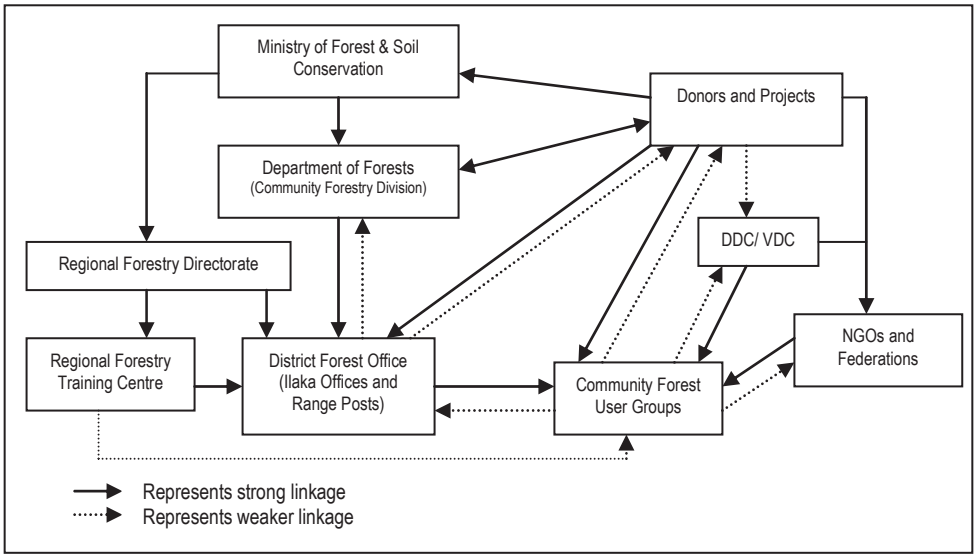


Figure 2.5: Organisations involved in the community forestry programme in Nepal and their linkages (Source: Kanel *et al.*, 2006)

The donor agencies and projects are another important stakeholder within the community forestry programme in Nepal. Several bilateral and multilateral donor

agencies have contributed to the development of the forestry sector in Nepal since the early 1970s. They have primarily provided financial and technical assistance for the implementation of the community forestry programme in Nepal. The major donor agencies that support the implementation of community forestry programmes in Nepal are as follows: the World Bank; the United Nations Development Program (UNDP); the Danish International Development Agency (DANIDA); the United States Agency for International Development (USAID); the Australian Agency for International Development (AusAID); the Swiss Development Cooperation (SDC); the German Agency for Technical Cooperation (GTZ); the UK Department for International Development (DFID); and the Dutch Government (SNV Netherlands). CARE Nepal and the World Wide Fund for Nature (WWF) are the major international non-governmental organisations involved in the implementation of the programmes (Department of Forests, 2011).

The community-based institutions for forest management are mainly comprised of informal groups that practise indigenous forest management systems and they have been operational under different types of institutional arrangements, at different times and at different locations (see e.g., Arnold & Campbell, 1986; Fisher, 1989; Gilmour, 1989). At present, the CFUGs, local non-governmental organisations (NGOs), District Development Committees (DDC), Village Development Committees (VDC)[27] and federations/networks, such as Federation of Community Forest User Groups in Nepal (FECOFUN), are the major community-based institutions involved in community forest management.

CFUGs are the fundamental community-based forestry organisation existing under the community forestry regime in Nepal and they have authority to make their own rules related to the governance of community forests and group mobilisation (MFSC, 1995). The FECOFUN, which is the National Federation of Forest Users across Nepal, is another important community-based organisation, which is dedicated to promoting and protecting forest users' rights. More than 75% of the total CFUGs in Nepal are already affiliated with FECOFUN and it has become an effective mechanism for developing a dialogue between policy-makers and forest users (FECOFUN, 2006).

27 A VDC is the lowest political and administrative unit with a geographical boundary consisting of several villages.

2.6 Community Forest Hand-over Process

The handing-over of a community forest to a CFUG involves five steps: (1) user identification; (2) CFUG formation; (3) CFUG registration; (4) community forest operational plan preparation; and (5) approval of the operational plan and hand-over of the forest as a community forest, as illustrated in Figure 2.6 (Department of Forests, 2002). Implementation, review and revision are the phases that follow the handing-over of a community forest.

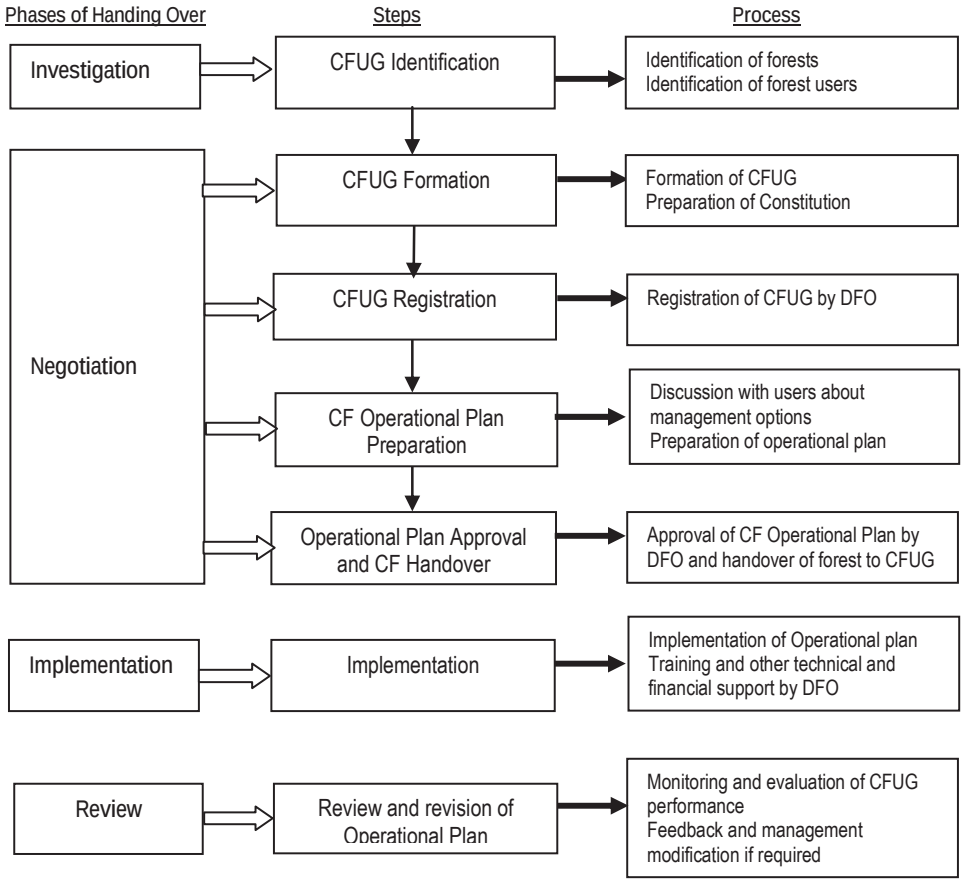


Figure 2.6: Community forest development steps and process

(Source: Department of Forests, 2002)

Users who desire to manage a forest as a community forest are required to submit an application in writing to the DFO. The DFO then deputises a technical staff member to provide technical support and other cooperation for the local community , in order to identify the forest users, form a CFUG and an executive committee and prepare the CFUG's constitution (MFSC, 1995). The constitution of the CFUG should include in its contents the provisions mentioned in the Forest Regulations, 1995 (see Box 1 below). The executive committee, on behalf of the user group, then submits an application and

a prepared constitution to the DFO, in order to register their CFUG. After a necessary investigation, the DFO registers the CFUG and issues a certificate of registration, as per the Forest Act, 1993 and the Forest Regulations, 1995 (MFSC, 1995). However, the DFO takes into account the distance between the forest and the village, in addition to the management capacity of the local users (who will manage the forest), before it hands-over any part of a national forest to a user group, as a community forest. Thus, the constitution is the bond that complies with the act and regulations and the conditions prescribed by the state for community forestry provisions.

Box 1: Contents of a CFUG constitution

a) Name and address of the CFUG
b) Objectives of the CFUG
c) Stamp of CFUG
d) Name and address of users
e) Number of households within the CFUG
f) Estimated population within the CFUG
g) Roles, responsibilities and rights of the CFUG
h) Formulation of executive committee
i) List of executive committee members
j) Roles, responsibilities and rights of executive committee members
k) Working procedures of the executive committee
l) Methods to control forest violations
m) Provisions for the punishment of user group members who violate the operational plan
n) Working procedures to be followed whilst punishing user group members for violation of operational plan
o) Fund mobilisation procedures
p) Auditing procedures
q) Miscellaneous

Source: Adapted from MFSC (1995)

An executive committee is an executive body nominated by the user group assembly from within the group members. It represents the CFUG and it is responsible for carrying out the CFUG's day-to-day activities, including the implementation of forest management plans and the mobilisation of the group. The committee is generally comprised of 9 – 15 members. Usually, a consensus of all users (obtained during a

user group's general assembly) is the most common process for nominating the executive committee. In general, an executive committee will be nominated for a period of two years. However, the same committee could be extended for another further period or it can be suspended at any time during its tenure, depending on its performance. Most records, such as financial records, meeting/assembly minutes and the record of correspondence with the DFO, are kept by the committee. It is advocated in the community forestry operational guidelines that at least 33% of the total committee members should be women and there should also be representation from all ethnicities, in addition to wealth groups, in order to raise the poor and marginalised users' voice in the decision-making process (Department of Forests, 2002). However, such representation is still lacking in the majority of CFUGs and their committees are usually dominated by the elite members of the group (e.g., Neupane, 2003; Thoms, 2008; Winrock, 2002).

If a registered CFUG desires to take over a part of a national forest (which they traditionally depend upon for their forest product needs) as a community forest, the group should submit an application to the DFO, together with the community's forest operational plan (see Box 2 below). Upon this request by a CFUG, DFO staff should support the CFUG to prepare their operational plan. The DFO then conducts necessary investigations into the application and makes any alterations to the operational plan that is deemed to be necessary, with the consent of the CFUG — and usually approval is then given for the plan. The DFO then hands-over the identified forest area to the CFUG as a community forest, after a contract has been signed (by both parties) that complies with the conditions prescribed by the government. Finally, the DFO issues a certificate of hand-over to the CFUG (MFSC, 1995).

Thus, at field level, the CFUG constitution and operational plan serve as the basic contract between the state and the forest user communities, for the management of community forests. The implementation of the operational plan is the major responsibility of the CFUG. However, the DFO should provide technical support to the CFUG for the sustainable management of the community forest. The DFO also has the responsibility for institutional strengthening, monitoring and evaluation of the CFUG's performance. Based on this monitoring and evaluation, the DFO provides feedback to the CFUG, in order to improve the management of the forest and forest management modification, as required in the review and revision phases. In general, the operational plan is prepared/ approved for a period of five years and the CFUG should revise their operational plan

and secure approval from the DFO, after that period. Again, the DFO should provide technical support to the CFUG when it revises its operational plan.

Box 2: Contents of a Community Forest Operational Plan

a) Details of the forest: name, boundaries, areas, condition of the forest and types of forest;
b) Map of the forest;
c) Block division and block details: name, boundaries, areas, aspects, slope, soil, type of forest, main species, useful species, age and situation in respect to natural regeneration;
d) Objectives of forest management;
e) Methods of forest protection;
f) Forest promotion activities: thinning, pruning, cleaning and other forest promotional activities;
g) Nursery: tree plantation, income generating programme and time schedule;
h) Details of areas suitable for cultivation of herbs: types and species of such herbs, cultivation programmes and time schedule;
i) Provisions relating to use of income accruing from the sale of forest products and other sources;
j) Provisions made for penalties which may be imposed on users, pursuant to Section 29 of the Act;
k) Provisions relating to the protection of the wildlife; and
l) Other matters prescribed by the Department of Forests.

- If a user group wishes to plant any cash crops (other than food crops) in the community forest without adversely affecting the crown cover and production of the main forest product, it should be mentioned in detail in the operational plan.
- The District Forest Officer should provide technical assistance and other co-operation required by a particular CFUG, in order for it to prepare an operational plan.

Source: Adapted from MFSC (1995)

2.7 Institutional Arrangements and Property Rights of Community Forests in Nepal

Precise institutional arrangements are required for the promotion of the effective participation of users in the governance of a common property resource. Institutional arrangements deal with the relative power and control that determine the incentives and policies, and these arrangements should enable the enforcement of property rights (Ostrom, 1990; Richards, 1999). They also provide administration and enforcement support to the users, in relation to the effective exercise of their rights (Agrawal & Ostrom, 2001).

However, the institutional arrangements for the governance and management of common property resources (both at the state and community level) are inefficient in Nepal (Agrawal & Ostrom, 2001; Gilmour & Fisher, 1991) and furthermore, they support elite-dominated decision-making and inequitable benefit sharing practices (e.g., Jones, 2007; Winrock, 2002). The institutional arrangements for community forestry in Nepal (at state level) has been criticised as being caught up in a vicious circle of a lack of political will and commitment, bureaucratic inefficiency and rent-seeking behaviour (Timsina & Paudel, 2003a). Gilmour and Fisher (1991) argued that there is a critical imbalance in power relationships between the people and government institutions, due to the monopoly of government forestry staff in the provision of services. Therefore, even carefully designed policies and incentives are not sufficient to achieve the effective participation of users' in resource governance, the institutional capacity for implementing , monitoring and enforcing these incentives and policies (at local and national level) is essential (Wells, 1998). The need to increase the levels of efficiency in public administration (and also the active participation of users in decision-making) emphasises the need for precise and correct institutional arrangements (Tohá & Barros, 1997). Although community forestry has a strong potential to serve as the basis for improving the quality of life and status of livelihoods in rural Nepal, whilst still conserving forest resources, there is huge wealth and power disparities within the CFUGs and this situation is also reinforced by current community forestry policy and practice. Therefore, a change in policy is required, which can command more inclusive local decision-making (Thoms, 2008).

Community forestry in Nepal is an example of a common property regime, where access is limited to the members of a specific group of users, who hold rights in common within the forest boundaries defined by the operational plan. According to Agrawal and Ostrom

(2001), the nature of property rights (which CFUGs have received) is close to that of proprietors. Users have the right to enter the forest; to acquire and use all forest products from their forests; to sell and distribute these forest products independently; to manage the forest as per their management objectives/needs; to make their own collective operational rules; and to determine who else may be as user within the group and therefore use the resources. However, they do not have full control and rights over the forest resources, due to their lack of legal rights to sell or lease withdrawal, management or exclusion rights.

Agrawal and Ostrom (2001) further argue that although the rights are granted to local groups, there are some limits in each type of rights and the future is uncertain. The State also retains certain rights including the right to accept or reject handing over of a particular forest. Thus, the property rights are divided between the state and the CFUG, and both parties exercise some rights to manage the community forests as per the operational plan (Agrawal & Ostrom, 2001). The state holds overall control over the forest resources. The state holds rights over the land and has the authority to revoke the users' rights and to withdraw a community forest if the users are found not to be following the operational plan. On the other hand, the Forest Act, 1993 and the Forest Regulations, 1995 have granted CFUGs various rights such as the rights to income from forests and the rights to manage/use these forests, under certain restrictions (Agrawal & Ostrom, 2001). The restrictions include sharing of income from the forests by imposing a tax and prohibiting the sale of forest products individually by any member of a user group.

Property rights are also associated with the sustainable management of a community forest, since defined property rights regimes are essential for the management of forests sustainably by promoting sustainable use of resources and responding to a changing environment (Agrawal & Ostrom, 2001; Heltberg, 2002). Khan (1998) and Tachibana et al.(2001) claimed that secure property rights provide incentives to groups for managing their forest resources successfully. However, assigning property rights does not always guarantee sustainable management, since individuals always find some incentive to break the rules in common property rights regimes. Moreover, a common property regime works well, if the group is homogeneous (Agrawal & Ostrom, 2001). A CFUG in Nepal is generally heterogeneous, in terms of caste, ethnicity and wealth. However, they act as a homogenous group, because they are co-located and they have common roots,

due to the patriarchal[28] system prevailing in the country; and the majority of users follow patri-local residence traditions[29].

Nevertheless, there are evidences that these rights are not fully exercised by the poor and lower caste users, since they do not have adequate access to the resources and in addition they have limited ability to make their own rules concerning resource management and utilisation, due to the socio-cultural norms and wealth differences that prevail in local communities (Bajracharya, 2008; Winrock, 2002). Users from higher economic classes and higher castes are very often involved in key decision making structures, rather than the poor and lower castes and these higher classes influence decision-making, in regards to resource management and utilisation, in their favour. Similarly, representation on the executive committee of a CFUG means power and authority, which has a significant influence on the rules regarding resource management and utilisation. Most operational rules are decided upon at executive committee meetings and hence user representatives on an executive committee have a greater level of authority to influence decisions, than the general users. Therefore, it is important *who* is represented on the executive committee and *how* they can influence decisions (Bajracharya, 2008). Again, well-off high caste members dominate executive committees and they influence decisions in their favour. Even when poor or lower caste users are represented on an executive committee, they are not able to exert a great deal of influence over decisions, due to the discriminatory socio-cultural norms present in Nepalese society. Either their presence is totally ignored or their concerns are seldom understood and addressed by the committee. For example, rich members, who have sufficient tree resources on their own farmland and who are in decision-making positions, influence decisions about how to manage resources (e.g., prohibiting grazing inside the forest or collecting grass/fodder from the forest). The users most affected by such restrictions are the poor users whose livelihoods depend on the forest. The poor and lower caste users, who have limited power or the confidence to bargain with the well-off high castes, are often unable to claim their rights to use and benefit from forest products for their needs.

Furthermore, degradation of forests may occur if the community heavily discounts the future and resorts to heavy present-use of resources (Contreras-Hermosilla, 2000). In the case of community forestry in Nepal, factors other than property rights, such as the

28 The sociological condition where male members of a society tend to predominate in positions of power.

29 A man remains in his father's house after reaching maturity and brings his wife to live with his family after marriage, whereas daughters move out of their natal household when they marry (Schwimmer, 1995).

physical attributes of the forest and also social attributes, will also have a great influence on the governance and management of the resources. Similarly, property rights over water, biodiversity, tourism and environmental health need to be defined and assigned, in relation to the growing market scenario in forest management, for the sustainability of community forest management in the country (Agrawal & Ostrom, 2001; Heltberg, 2002).

2.8 Governance Structure of a Community Forest User Group

A community forest user group is an independent and self-governing entity formed by a number of households living near a particular forest area and it is a legally recognised institution. It has unrestricted administrative boundaries and the group is recognised as the optimum functional and appropriate local level institution for the management of the local forest resource (Hobley *et al.*, 1996). This collective institutional arrangement is a legally supported approach in community forestry (Acharya, 2005). Local people make decisions regarding forest management and the utilisation and distribution of benefits from a forest, under a community forestry structure which has prepared a user group constitution and a forest management operational plan. This constitution controls the democratic functioning of the user group, whilst users' rights decreed by legislation are mentioned in the forest management operational plan (Kanel *et al.*, 2006).

The CFUG governance, under the community forestry programme in Nepal, is defined by the group's constitution [30] and forest management operational plan [31]. The governance structure, in the case of a CFUG in Nepal, can be broadly divided into two-tiers[32]: (a) a general assembly of all member households is the apex body of user groups and it makes all decisions about forest governance and management, including the rights and obligations of its members and (b) an executive committee (EC) is normally selected by the general assembly of the users (or by an election) and it is assigned certain responsibilities in accordance with the CFUG constitution, for the effective implementation of day-to-day activities of the user group and to coordinate with the users and other stakeholders. The EC is generally comprised of approximately 9 – 15 representatives (Government of Nepal, 1995) and it implements decisions made

30 Each CFUG prepares its own constitution following certain standards, guidelines and norms set by the government that define social arrangements and rights and responsibilities of the group. The constitution should be registered at the local District Forest Office.

31 The operational plan, which serves as an agreement between the Department of Forests and the CFUG, specifies how the forest will be managed and utilised.

32 A three-tier structure can also be found in a few donor-supported and/or self-mobilised CFUGs. The middle-tier, the Tole level committee (which can be formal or information) is formed in principal to facilitate effective participation/representation of all Toles at decision-making level, i.e., EC. A Tole is the smallest unit of settlement; a number of Toles constitute a village; and one or more villages constitute a user group.

by the CFUG assembly (Figure 2.7). An office bearer, usually the EC Secretary, keeps the meeting minutes and other records. Typically, in the case of an active CFUG, the EC meets once a month, whilst the general body meets once or twice a year.

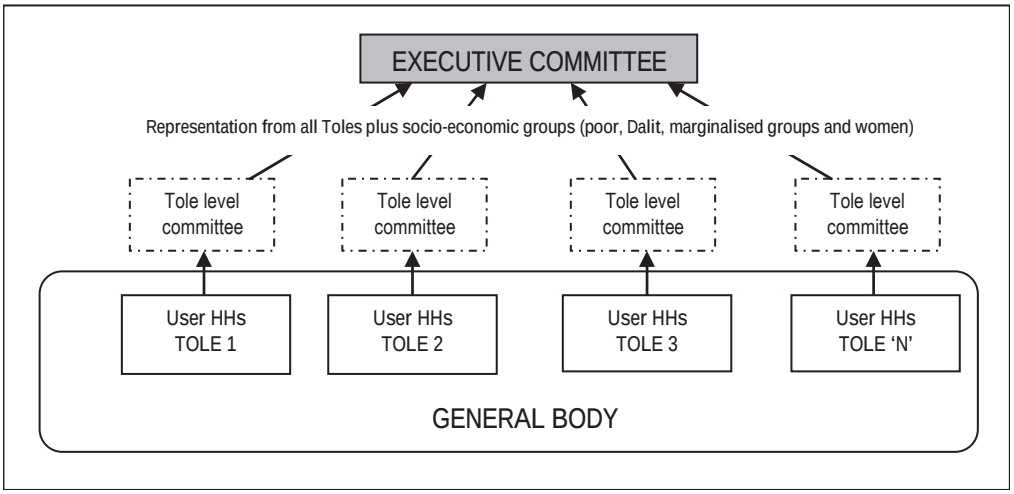


Figure 2.7: Typical governance structure of a CFUG in Nepal

The executive committee has no particular rights, however, they exercise rights as authorised by the user groups and as mentioned in the constitution and operational plan. It has been reported that the majority of executive members in user groups in Nepal are elites or wealthy, and they do not necessarily represent the interests of the poor, women and socially disadvantaged members of the group (Kanel *et al.*, 2006). Although, each CFUG has a written constitution and operational plan, which serves as a regulation mechanism for the group, the institutional efficiency and distributional equity, both largely depend on the people who have a voice on both the general body and the EC (Agarwal, 2001).

2.9 Community Forestry as a Transaction

The Nepalese government has adopted a number of approaches, strategies and practices to ensure the sustainable management of its forests and to improve the livelihoods of its users. A key strategy implemented in the country is the community forestry programme. Community forestry, which encompasses both socio-economic and ecological aspects, can be regarded as an important achievement towards sustainable forest management. The sustainable management of community forests in Nepal, therefore, involves the sustainable management of forest resources and the

sustainable livelihoods of people living in and around forests. This concept encompasses both institutional and ecological aspects.

Community forest management is based on an agreement between the state and the users. Each CFUG must prepare and follow a comprehensive forest management plan (called an operational plan) which should clearly and precisely define and document the management's objectives. The CFUG must also prepare and follow its constitution, as a prerequisite for a forest hand-over. Thus, the relationship between the government and any one of the many user groups, in terms of community forestry, can be seen as a transaction, where the service traded is sustainable management of the state forests (Adhikari, 2006). The provider of this service to the state is the user group and the payment or reward for offering that service is the entitlement to keep all the proceeds from harvests derived from the forest (Figure 2.8). This payment or reward for the user group occurs in the form of an incentive payment[33]. Under an incentive payment, if the user groups do not manage the forest sustainably, then they get little or nothing from the forest. Therefore, the liability is with the user groups, that is, the better the management of the forest, the more rewards for the user groups. In this arrangement, the DFO acts as the 'agent' of the state or government, which is the 'principal', being the ultimate owner of the forests. The relationship between the state and the DFO is a 'principal/agent' relationship (Adhikari, 2006).

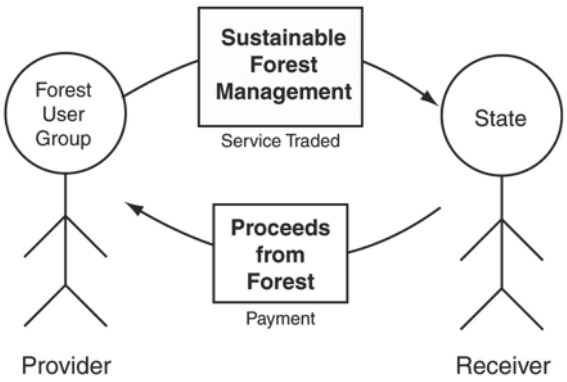


Figure 2.8: Transaction between the state and a CFUG

(source: Adhikari, 2006)

33 The distinction between an incentive payment and an advanced payment is that the advance payment is practised in the trading of other forest services, such as carbon offsets, where the service provider is paid the total price in advance, before the delivery of the service.

Community forestry, in general, is considered to be a win-win strategy in the long-run, due to the nature of its management by locals and its vision for poverty alleviation. It acknowledges the rights and access to the resources, even for future generations. Moreover, equitable management and distribution of resources, including economic benefits, are part of this important strategy. Identification and inclusion of both primary users (regular users of the forests with full rights) and secondary users (occasional users with limited rights for a specified forest product), in each user group, is an excellent example of the principal of equitable distribution of forest products, in order to protect the occasional users' needs and rights over specified forest products — although this strategy does present some challenges in practice, especially for the poor and other marginalised groups who are deprived of such benefits.

2.10 Summary

This chapter has provided a contextual description of the community forestry programme in Nepal. Forests are the dominant land use in Nepal, where more than one-third of the total area is covered by forests. However, more than 85 percent of the population live in rural areas, where people's livelihoods are heavily dependent on forests. Deforestation has been (and is still) a major problem in Nepal. In order to ensure the sustainable management of the forests for improving the livelihoods of its users, the government has promoted a community forestry programme which encompasses both institutional and ecological aspects - and which also has a vision for poverty alleviation.

Poverty in Nepal is still a rural phenomenon and it is associated with extensive disparities across ecological zones and caste. The incidences of poverty are the highest amongst the lower castes, followed by the Janajatis in the Hills region. The caste system in Nepal also determines that social relationships provide an important basis for economic class formation. The higher castes have better access to (and control over) education, politics and economic and administrative resources and structures, whilst the lower castes have poor access to education, economic and political resources and structures and they lack social dignity, since they are still considered as untouchables. After the 1990 restoration of a multi-party democracy in Nepal, a new constitution prohibited any form of discrimination based on caste, ethnicity or gender and it granted equal rights to all Nepalese citizens. However, the

structural hierarchy of caste and gender is still practiced and it dominates the attitudes of many high castes in the country.

The origins of community forestry in Nepal are strongly linked to the different approaches of forest management adopted throughout the history of Nepal. The current forest policy is directed towards handing-over all accessible forests to local users, for their protection, management and utilisation. Community forestry in Nepal is an example of a common property regime, where access is limited to members of a specific group of users, who hold rights in common, as defined by the community forest operational plan. Although the nature of the property rights assigned to the CFUGs is close to that of proprietors, there are some limits on each type of rights and the state also retains certain rights. There are evidences that these rights are not fully exercised by the poor and lower castes and furthermore, they do not have adequate access to the resources.

Thus the community forestry programme in Nepal has evolved, in order to provide incentives for local people to participate in forest management. These people have forest based livelihood systems within rural Nepal, in relation to a range of forest products and livelihood opportunities. However, the institutional arrangements for the governance and management of community forests (both at state and community level) are inefficient in Nepal and they support elite-dominated decision-making and inequitable benefit sharing practices. In the following chapter, a review of relevant theories and concepts, in regards to participatory approaches to common property resource governance, is presented and the linkages of participation, incentives and resource governance are explored.

CHAPTER THREE

PARTICIPATION IN COMMON PROPERTY RESOURCE GOVERNANCE

3.1 Introduction

Participatory approaches to development have emerged as a reaction to the shortcomings of top-down development approaches. People's participation is now a part of the common language of many development organisations - both governmental and non-governmental organisations (Pretty, 1995; The World Bank, 1994). According to Chambers (2004), one of the main objectives of the participatory paradigm to development is to reverse unequal power relationships between the powerful and the powerless, by empowering the poor to enable them to be capable of taking their livelihoods into their own hands. Pretty (1995) argued that participation is one of the essential components of success for any system of learning, since it involves increased ownership; greater efficiency; cost-effectiveness; greater transparency and accountability; and increased empowerment for the poor and disadvantaged people (Narayan, 1995; The World Bank, 1994; Uphoff, 1991). Participation in common property resources is regarded as a means of strengthening governance and improving the livelihoods of forest users, through improved access to information, resources/benefits and decision-making; improved social and political gains; improved accountability of decision-makers towards general users; and improved conditions of resources (e.g., Agarwal, 2001; Agrawal & Gupta, 2005; FAO, 2003) (Figure 3.1).

The literature on the successful implementation of common property resource regimes is largely focussed on sustainable resource management. However, there is less information about why common property resource regimes have not been successful in achieving the effective participation of its users, particularly the participation of poor and marginalised users in resource governance and management. Therefore, this chapter attempts to review the literature, in relation to understanding the theoretical underpinning of users' participation in the governance of common property resources in developing countries — and in particular the role of incentives offered by common

property resource regimes, in order to increase users' effective participation in the governance of their resources.

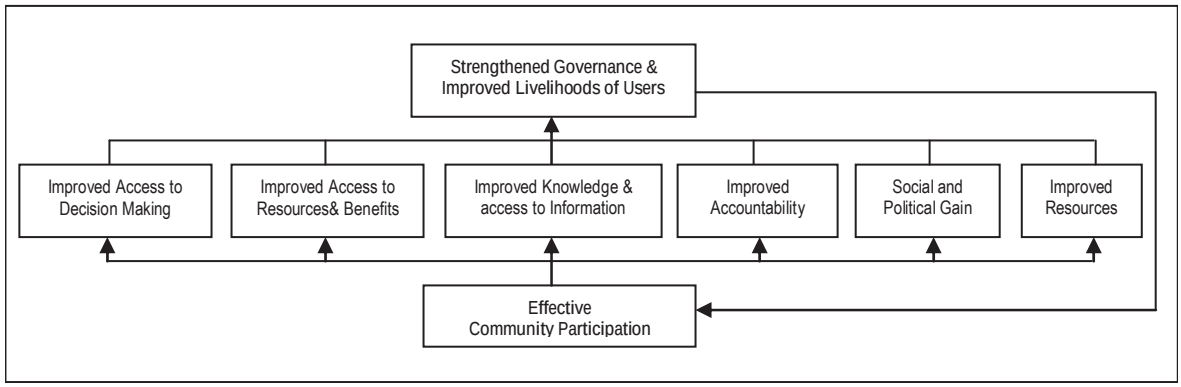


Figure 3.1: Participation as a means of strengthening governance and improving livelihoods

A review of relevant theories and concepts associated with participatory approaches to common property resource governance is presented in the theoretical framework. Linkages of participation, incentives and resource governance are explored, in order to define the meaning of the terms, in the way in which they are used in this research. The factors influencing participation decisions in common property resource governance are reviewed, which are useful for understanding the key determinants of users' participation decisions in resource governance. The conceptual framework that guides this research is presented in the final section of this chapter.

3.2 Theoretical Framework

The incentive approach is based on theories from several disciplines, such as social exchange theory, rational choice theory, resource mobilisation theory and institutional theory, which provide the theoretical foundation for understanding the role of incentives on users' participation in resource governance. Understanding these theories is very important, in order to gain an understanding of the role that incentives play in users' participation in common property resource governance.

Social exchange theory evolved as the intersection of economics, psychology and sociology, from the work of sociologist such as Homans (1958), Blau (1964) and Emerson (1962). Social exchange theory is a general theory, which was developed to

understand the exchange relationship of material and social resources between individuals or groups in an interaction (Blau, 1964; Homans, 1958). Individuals will enter a group and participate, so long as they can satisfy their self-interests, thus ensuring that the benefits outweigh the cost. The social exchange theory suggests participation as a means of maximising economic and psychological benefits, and participants would participate if benefits exceeded costs (Blau, 1964; El Ansari & Phillips, 2004). Social exchange theory also analyses power relationships. The resources that people bring to their social relationships are rarely equal. The relative power of the participants, therefore, determines the outcome of any particular exchange. This bargaining power differs amongst the participants, in accordance with their dependence on the exchange relationship, and this dependence depends on the extent to which there are alternatives available to them (Emerson, 1962; Heath, 1976).

According to this theory, the actions of an individual are motivated by the expected returns (Blau, 1964). The theory stresses that an individual's decision (or willingness to participate), similar to any other behaviour, is motivated by perceived costs and benefits (Klandermans, 1984, 1986). According to this theory, a person will choose not to participate when his/her perceived costs outweigh the perceived benefits. An individual's internal benefit cost ratio is a powerful tool for incentive/cost management to increase the individual's level of participation (Prestby *et al.*, 1990). The basic assumption of social exchange theory is that people establish and participate in social groups with an expectation of being rewarded (Zafirovski, 2003):

> The task of social exchange theory is then to investigate the reciprocal (mainly material) advantages that individuals draw from their exchange transactions on the premise that they engage in and sustain most social, including noneconomic, relations in the rational expectations of such advantages independently of normative or group considerations (Zafirovski, 2003, p. 2).

The contemporary exchange theory suggests that resource users seek the best value to participate in a programme and they participate and contribute to programmes that have positive net benefits (Napier & Napier, 1991). For example, people participate in protecting natural resources only if direct economic benefits accrue to them for the care of these resources (OECD, 1996). Sabatelli and Shehan (1993) described this social relationship as 'markets', where individuals act with the goal of maximising their profits. Social exchange theory has four basic properties (Searle, 1990): (1) *reciprocity* – every transfer from one person to another involves the expectation of a return; (2) *justice principle* – each exchange should have distributive justice; (3) *maximising benefits and*

minimising costs – all human relationships are determined by the use of a subjective cost-benefit analysis and comparison of alternatives; and (4) *voluntary join* – individuals participate in a relationship voluntarily. If they are forced to participate in a programme, then their motivation is extrinsic and they will be more likely to stop participating. A recent study undertaken to analyse people's participation in a watershed management programme in Iran suggests that the social exchange theory needs to be considered as a main theory in participation studies (Reza *et al.*, 2009).

A rational choice theory comprises concepts such as motivation, attitude, choice and decision (Klandermans, 1984). The rational choice theory assumes that any type of social actions are purely rational or rationally motivated (Scott, 2000). This theory argues that all social actions are rationally motivated. People act rationally and they are motivated by the wants or goals that express their preferences. Individuals choose the alternative which is likely to give them the greatest satisfaction (Coleman, 1973; Heath, 1976; Scott, 2000). Green and Shapiro (1994, p. 16) described the task of rational choice theory as a way to explain collective outcomes, by reference to the maximising of actions by individuals. Rational choice theory perceives social interaction as social exchange (Scott, 2000). Since individuals cannot achieve all the various aspirations that they desire, they must make choices on the basis of their goals — and the means available for achieving those goals. The choice of alternatives that rational individuals make is the one which will probably give them the greatest satisfaction (Coleman, 1973; Heath, 1976). This theory also recognises that the threat of punishment or the promise of a reward may motivate people to participate in a collective action. When rational actors do not have an individual incentive to support collective action, they will calculate that the cost of participation is too high and that their participation cannot bring a significant effect on their bargaining power, so they will decide not to participate in that collective action. Hence, providing individual incentives to the rational actors is important, in order to enhance their effective participation in collective action (Scott, 2000).

Similarly, the resource mobilisation theory reveals that the processes of participation in a social movement are similar to other forms of collective behaviour (on an individual level) and it assesses the role of resource mobilisation in fluctuations within a decision, or willingness to participate (see, e.g., Jenkins, 1983; Klandermans, 1984; McCarthy & Zald, 1977; Oberschall, 1973). This theory stresses the importance of the availability of resources to a collective and the position of individuals within social networks, as a determinant of participation in social actions (Klandermans, 1984; McCarthy & Zald,

1977). It offers a relationship between power and material resources, where power distribution amongst actors is a function of resource availability (Yamaguchi, 1996).

According to resource mobilisation theorists, participation in a social movement is the result of rational decisions, where people weigh the costs and benefits of participation (Klandermans, 1984). This theory suggests that the willingness to participate in a social movement is a function of the perceived benefits of the expected consequences of participation and that participation will help to produce the collective good. Thus, a person's willingness to participate depends on three conditions: (1) whether s/he is aware of the opportunities to participate; (2) whether s/he is capable of utilising one or more of these opportunities; and (3) whether s/he is willing to do so. Gamson (1975; Schwartz, 1976) and Schwartz (1976) argued that people participate in activities, in order to produce a collective good; otherwise the good would never be produced, if everyone refrained from participation. They suggest that a collective good can motivate people to participate in a social movement, if they value the collective good highly and also if they expect that others will also participate (Jenkins, 1983; Klandermans, 1984; McCarthy & Zald, 1977). However, Olson (1971), when commenting on his 'logic of collective action', has theorised that a rational individual in a latent group will only be stimulated by a separate and selective incentive, in order to act in a collective action. He further argues that an individual will not be motivated to join and contribute to a group that only provides public goods. The provision of private goods is, therefore, important.

Similarly, institutional theory provides a broader concept of institutions, including organisational structure, legal rules and enforcement mechanisms and informal institutions, such as norms and behaviours (Brinton & Nee, 1998; Richards, 1999; Scott, 2005). It deals with the relative power and control that determine incentives and policies, which should be able to enforce property rights and provide a regulatory basis for markets (Richards, 1999). Therefore, even carefully designed policies and incentives are not sufficient for achieving users' participation in resource governance. In addition, an institutional capacity for implementation, monitoring and enforcing these incentives and policies at local and national level is essential (Wells, 1998).

North (1991, p. 1) defined institutions as the human-devised constraints that structure political, economic and social interaction and they consist of both informal constraints (sanctions, taboos, customs, traditions and codes of conduct) and formal rules (constitutions, laws, property rights). Institutions were developed to create order and

reduce uncertainty in exchange. This situation defines the choice set and therefore it determines transaction and production costs and hence, it provides the incentive structure of an economy activity (North, 1991). Similarly, Cleaver (1998) defined institutions as the structures of rules, roles and authority, through which individual participation is translated into collective action. Institutions are increasingly considered as being important, since participation is mediated through these structures. Cleaver (1998) argued that institutional approaches to collective action provide a useful framework for participation analysis. Institutional theories suggest that incentives encourage people to cooperate. Concerns about the maximisation (or defence of) production give rise to strong incentives (Wade, 1987). If the incentives are insufficient to secure collective action, Cleaver (Cleaver, 1998) suggests that institutions (in the form of property rights, rules and regulations and norms and expectations) can supplement or be a substitute for these incentives.

Jentoft (2004) and McCay (1998) argued that institutions guided by rational choice are not sufficient to understand the operation of common property resource management regimes. It requires an understanding of a broader concept of institutions, because common property resource management systems involve interactions between human and natural resources, which are created by institutions embedded in the social context (Steins & Edwards, 1999). According to Klooster (2000), in order to understand the long-term operations of common property resource management, an understanding of institutions, which includes the socio-cultural underpinning of the system that considers social processes and governance mechanisms, is essential.

Early institutional economists defined institutions as social norms, culture and behaviour, which follows a regular pattern or a set of rules (Hayek, 1945; Veblen, 1898). However, the new institutional economists argue that people are not only influenced by culture or other factors, they are also considered to be rational in their choices and their action is guided by utility-maximising choices (North, 1991; Williamson, 2000). Williamson (2000), in his new institutional economics, has elaborated institutional arrangements on four levels of social analysis. The social embeddedness is at the top level, where the norms, customs, traditions and culture/religion are located. Institution changes very slow at this level. The institutional environment, where formal rules (constitutions, laws, property rights) are introduced is the second level. The institutional environment defines and enforces property rights, and determines the bureaucratic function of government and distribution of power across different levels of governance. Similarly, the institutions of governance are located at the third level, where a

governance structure and transactions are aligned, which reshapes incentives. The fourth level includes resource allocation and employment, which emphasises on price, quantities, incentive alignment and efficient risk bearing governance (Williamson, 2000). Similarly, Scott (2008) argued that institutions are transferred through culture, structures and social relationships, and hence these need to be considered, in order to gain an understanding of institutions. He focuses on three perspectives to define institutions: *regulation, normative and cognitive*. The regulative perspective of institutions focuses on the legal or formal rules and the mechanisms needed to enforce those rules (Ostrom, 1990). The normative aspect of institutions highlights the ways in which the norms or informal structures influence the decisions (Ostrom, 1990; Putnam, 1993). The cognitive view of institutions emphasises the importance of the value given to the actions of actors, and their subjective interpretation of their actions (Scott, 2008).

Another important aspect to understanding institutions is the source of power which is differentially distributed within the society and power relationships and which influences resource users' participation decisions (Bourdieu, 1985). The extent of power amongst the resource users determines their participation level in resource governance (Agrawal & Gibson, 1999; Agrawal & Ostrom, 2001; Larson, 2005). Similarly, there is a strong link between the institutional theories of collective action and policies which promote people's participation in natural resource management (Cleaver, 1998; Ostrom, 1990). These theories suggest that the key role of incentives (within institutional economics) is to motivate and regulate individuals' contributions to collective actions (Cleaver, 1998; North, 1991).

After reviewing the relevant theories for this research, the following sections provide the definitions and linkages of participation, incentives and resource governance, followed by factors that influence participation decisions in common property resource governance.

3.3 Definition and Linkage of Participation, Incentives and Resource Governance

3.3.1 Participation

Participation simply means 'to take part in an activity or programme' or 'to have a share in it (FAO, 2003). Various authors have perceived and defined participation in different

ways. The World Bank (1996, p. 3) has defined participation as “a process through which stakeholders influence and share control over development initiatives and the decisions and resources which affect them.” Drawing upon the definitions of various authors (e.g., Agarwal, 2001; Narayan, 1995; Uphoff, 1991; White, 1996), participation in a group can be defined as a dynamic interactive process, where disadvantaged people have a voice and influence on decision-making, resulting in enhanced equity, efficiency, empowerment and sustainability. Coverage, efficiency, effectiveness, the adoption of innovations, production, successful results and self-reliance are some of the major arguments for participatory approaches (FAO, 2003). Knox and Meinzen-Dick (2001) defined participation as a means for widening and redistributing the opportunities to take part in societal decision-making, whilst Fagence (1977) saw participation as a means of reducing power differences. Participation is also referred as an effective means to challenge patterns of governance, because it helps to understand how existing power relationships are established and reproduced (White, 1996). Agarwal (2001) highlighted that effective participation in common property resources requires people’s involvement as a collective — and not just as individuals.

One of the earliest and most cited typology of participation was proposed by Arnstein (1969, p. 217). On her ‘ladder of citizen participation’ Arnstein ranked eight levels of participation into three general groups: non-participation, degrees of tokenism and degrees of citizen power (Table 3.1). She has described the two bottom layers of the ladder, ‘manipulation’ and ‘therapy’, as levels of “non-participation”, where people are not able to participate and most of the decisions are made by the power holders. The next three levels are described as “degrees of tokenism”, where participation is restricted. People are informed, consulted or heard, but there is no guarantee that their views are considered by the power holders when making decisions. The highest level of participation, “degrees of citizen power” is the level where all the resource users have decision-making power and they participate in decision-making and negotiate with power holders. Fisher (2000b) argues that this stage of devolution rarely occurs and most of the participation in forest management is still confined within the lower levels of Arnstein’s ladder of citizen participation.

Table 3.1: Arnstein's (1969) ladder of citizen participation

8	Citizen control	Degree of citizen power
7	Delegated power	
6	Partnership	
5	Placation	Degrees of tokenism
4	Consultation	
3	Informing	
2	Therapy	Non-participation
1	Manipulation	

Source: Arnstein (1969, p. 217)

Understanding participation requires an understanding of the basic dimensions of participation, such as types of participation, who participates and how participation is occurring (Cohen & Uphoff, 1980). They suggest that the amount, distribution and trends of participation can be assessed basically by assessing who participates and what are the ways in which participation is occurring (Table 3.2). Types of participation include participation in planning/decision making, implementation, benefits (material, social and personal), or evaluation. Similarly, the actors who participate (i.e., local people, local leaders, government staff or foreign personnel) can influence the process and outcomes of participation. The impact of participation greatly depends on the initiative for participation; the inducements for participation; the structure and channels of participation; the duration and scope of participation; and people's level of empowerment to obtain results from their participation (Cohen & Uphoff, 1980).

Table 3.2: Cohen & Uphoff's (1980) basic framework of participation

Types of participation	Decision-making	Initial decisions On-going decisions Operational decisions
	Implementation	Resource contributions Administration and coordination Enlistment
	Benefits	Material Social Personal
	Evaluation	
Who participates	Local residents Local leaders Government personnel Foreign personnel	Characteristics Age, Sex, Family status, Education, Social divisions, Income level, Length of residence, Land tenure status
How participation is occurring	Basis of participation	Impetus Incentives
	Form of participation	Organization Direct/ indirect
	Extent of participation	Time involved Range of activities
	Effect of participation	Empowerment Interactions

Source: Cohen and Uphoff (1980, p. 219)

In the context of a heterogeneous group, such as a CFUG in Nepal, special mechanisms are needed to bring poor and marginalised groups into the governance system — and one of those mechanisms is participation. Hence, it is crucial to understand the various levels of participation in an institutional set-up. A typology of various levels of participation is presented in Table 3.3, which draws on the typologies of Agarwal (2001), White (1996) and Pretty (1995). Regarding the level of participation, the users need to move from the implementation level (i.e., passive participation) to the management and decision making levels (i.e., self-mobilisation) or at least to interactive (empowered) participation. Studies show that participating only in information sharing and consultations results in a poor performance, but moving towards the interactive/self-mobilisation end of the typology scale ensures that a group/project is highly effective (Narayan, 1995).

Table 3.3: Typology of participation

Level of Participation	Characteristic Features
Nominal participation	People have access to group membership, and legal access/ rights similar to other members
Passive participation	People participate by being informed with unilateral communication by decision-makers. They are informed of decisions ex-post facto; or they attend meetings and listen in on decision-making without speaking up
Consultative participation	People participate by being consulted or by answering questions. The process does not offer any share in decision making, and there is no obligation to take people's views onboard
Activity-specific participation for material incentives	People participate, by forming groups and contributing resources, e.g., labour, to undertake specific tasks, achieve project goals, or in return for material incentives such as food, cash or other. Participation may be interactive, in the sense of sharing decisions that have already made by external agents, and (in the worst case scenario) local people may still only be co-opted to serve external goals
Active participation	People participate by expressing their opinions or taking initiatives, whether or not they are asked for or heard. Local people state their dissatisfaction and propose alternatives
Interactive (empowered) participation	People participate by having their voices heard and they influence the group's decisions. They take part in strengthening the governance of local institutions. The process seeks multiple perspectives and uses systemic and structured learning processes. All users will have a stake in managing resources and maintaining structures or practices
Self-mobilisation	People participate by taking initiatives independently of external institutions, in order to change systems. They develop contacts with external institutions for resources and technical advice they need, but they retain control over how resources are used. An enabling framework from the government and/or the non-governmental sector is essential for promoting self-mobilisation. Even so, the distribution of wealth and power can be a major challenge.

Source: Adapted from Agarwal (2001, p. 1624), White (1996, pp. 7-8) and Pretty (1995, p. 1252).

Participation can occur during any (or all) stages and levels of decision-making. Some management processes assign limited participation rights, whilst other processes share power between state and local resource users in the co-management of the resources (Hanna, 1995a). However, people's motivation to participate is generally influenced by the cost of participation, the direct benefits to be gained and the likelihood of influencing or improving the quality of decisions for improved outputs (see Coffey, 2005; Dube & Swatuk, 2002; The World Bank, 1996). Agarwal (2001, p. 1624) suggests effective participation as a measure of citizenship and a means for empowerment to improve "equity, efficiency and sustainability". However, participation is not a solution

for all problems. Given the pre-existing socio-economic inequalities and power relationships, there are limits to what participation alone can achieve. Whilst participating, there is always a possibility for one person to win and another person to lose. Thus, participation of user groups in the management process, in order to create a win-win situation, is a challenge for an institutional design (Jentoft & McCay, 1995).

Participation, therefore, does not simply mean membership, physical presence in meetings and sharing costs and receiving benefits; it means involvement of users and that people have a voice and (as a result) they can influence the group's decisions (to ensure that decisions are in their favour), in addition to having a strong influence on the outcomes of those decisions. Participation in this study, specifically focuses on the three components of participation, namely, *contribution to*, *benefiting from* and *involvement in decision-making* (Lise, 2000). Household participation is operationalised to mean the involvement of a household member at each stage of community forest governance and management activities, namely, forest protection, forest management and resource utilisation (benefits sharing), in addition to decision-making (e.g., attending meetings, community development activities, group mobilisation).

3.3.2 Incentives

Incentives have been defined as "formal or informal mechanisms that may induce members of a common property resource to undertake collectively beneficial but individually costly actions" (Seabright, 1993, p. 117). Incentives may arise from the pressures of scarcity (Wade, 1987) and the desire to maximise the use of a resource (Ostrom & Gardner, 1993). They may also be related to transaction costs. Thus, incentives encourage people to participate in collective actions, because participation in an institutional context implies less transaction costs, but insufficient incentives need to be supplemented by institutions, in order to secure collective actions (Cleaver, 1998). User participation can design an incentives structure and also distribute management costs and benefits during implementation, thus making the problem of resource governance and management effectiveness equitable and efficient (Hanna, 1995a). Incentives serve as a type of social mechanism that prompts users to contribute to collective actions. Appropriate incentives have a positive impact on attitude and behaviour and thus, incentives are used as a mechanism for shaping individual's attitudes and performance, in order to conform to the organisation's values (Puffer & Meindl, 1992). An organisational incentive is a reward offered for participation in organisations and for compliance with organisational norms and behavioural

expectations (Zald & Jacobs, 1978). Therefore, incentives are defined as those mechanisms that positively impact on an individual's attitudes and behaviours, in order to motivate them to offer their active participation in collective arrangements for improved governance and management of their forest resources.

A typology of incentives and motives for participation in an organisation, drawing upon the typology of Clark & Wilson (1961), is presented in Table 3.4. The literature suggests that participation in organisations is determined by three generic types of incentives: *material incentives* (also called rational or utilitarian incentives) that provide private goods in the form of direct services, or tangible rewards that have a monetary value to members for individual consumption; *social incentives* (also called *affiliative* or *solidarity incentives*) that provide the opportunity to socialise, gain social prestige and access to recreational activities only available to members; and *normative incentives* (also called *purposive incentives*) that provide public goods, as a result of collective efforts that take the form of ritualistic symbols.

Table 3.4: Typology of incentives

Types of Incentives	Motives	Basis for Motivation	Inducement Offered
Material incentives	Rational choice motives	Self-interest and analysis of costs and benefits of participation to maximise an individual's expected utility	Private goods in the form of direct services or material rewards for individual consumption
Social incentives	Affective (or social) motives	Emotional attachments to other people and/or the groups	Social and recreational activities available only to members
Normative incentives	Normative motives	Feeling of altruism	Public goods in the form of ritualistic symbols

Source: Adapted from Clark & Wilson (1961)

Three corresponding motives, viz., rational, affiliative and normative, affect an individual's incentives to participate or not participate, and how much to participate in the collective actions (also see, Knoke, 1988; Puffer & Meindl, 1992). The rational choice motives are based on self-interest and an analysis of associated costs and benefits of participation, in order to maximise the individual's expected utility. The affective or social motives are based on emotional attachments to other people and groups and reflects the desire to identify with a group and form effective bonds with others, whilst the normative motives are based on a feeling of altruism, without regard to any personal benefits to be gained (Knoke, 1988; Puffer & Meindl, 1992). However,

not all institutions provide all three types of incentives, since incentive provisions are significantly related to the organisation's goals, structural features and environmental complexity (Knoke, 1988).

The participation of different interest groups is important in common property resource governance, to minimise the risk of excluding certain poor groups from accessing resources (Hanna, 1995a). In order for disadvantaged groups to receive benefits, all members of the community group need to have equal participation in governance and management for collective decision-making (Knox & Meinzen-Dick, 2001). However, Jeffery and Vera (2001) argued that participation in natural resource management is now 'de rigueur' in donor and recipient state policies, and the thrust of participation usually comes from the top (i.e., from the government and/or donors) not from the poor and marginalised people. Participation is usually passive, where people are told to participate. Although motivation for participation varies considerably amongst people, they are sometimes asked or 'dragged into' participating in activities that are of no interest to them, in the name of altruism, cooperation or devolution (Dube & Swatuk, 2002; Rahnema, 1992). Such participation usually results in a failure to achieve the intended outcomes of a project, in contrast to the liberal theorists' argument that people are more likely to participate when they see direct benefits (Dube & Swatuk, 2002). Oliver (2001, p. 266) argued that people are more likely to participate in resource management when they "see some aspects of their way-of-life threatened".

The literature highlights that the role of community participation is not only to provide and access information about the preference to influence the optimal choice, but it is also "exerting influence or bargaining power" (Khwaja, 2004, p. 429). Institutions form incentives, which in turn motivate and incentivise the intentions, and the actions of users to participate, as they respond to rules and regulations (Jentoft & McCay, 1995). Since incentives encourage people to participate in collective actions, user participation can also solve the problems of management effectiveness, when operationalising institutional governance and distributional equities and institutional inefficiencies, through incentive provisions (Hanna, 1995a).

Literature also suggests a strong link between incentives and policies to promote people's participation in natural resource management (Cleaver, 1998). The key role of incentives within institutional economics is to motivate and regulate individuals' contributions to collective actions (Cleaver, 1998). However, in common property regimes, the problem of participation persists, because the groups are generally large

and heterogeneous, and each member has a lower share of benefits, which are even lower than the costs of participation (Olson, 1971). Since common property resources are non-excludable, free-riding is easy. Hence, the group needs to provide individual, selective incentives, in order to enhance the members' participation (Olson, 1971).

Olson (1971) argued that organisations that provide only collective goods generate suboptimal participation, because people are interested in maximising their private economic benefits, by joining and contributing to an organisation (Chinman & Wandersman, 1999). The nature of collective or public goods is that members have the opportunity to benefit even without participating, and it is in a member's economic self-interest not to participate, which then creates a free-rider problem (Olson, 1971). Therefore, public goods (on their own) do not provide adequate incentives for motivating individuals' involvement in collective action (Knoke, 1988; Olson, 1971). Olson, therefore, proposes the provision of selective incentives as a solution to the problem, which would motivate members to participate.

Hanna (1995a) argued that user participation contributes positively to the cost-effectiveness of management. It lowers transaction costs through lowering the cost of information, coordination, monitoring and enforcement. However, it is necessary to incorporate the users' participation into the management process, before degradation of resource conditions occurs, because user participation becomes difficult as resource scarcity increases (Hanna, 1995a). However, the contradiction between the short-term interests of users (to promote their own well-being) and the long-term objectives of resource sustainability (that ignores individual needs) makes effective management difficult. In such a situation, if the management process is equitable and involves appropriate incentives for users to participate, the resources are sustained; otherwise, resources are overused and degraded (Hanna, 1995a). Moreover, active participation also depends on the size of the group and the nature of the social and psychological inducement, to augment economic incentives for behaviour change (Olson, 1971); and also mutual dependence on the goods and services the resource provides (Hanna, 1995a).

The awareness (or the feeling) that participation is necessary and expectations relating to the effectiveness of participation are important determinants of the willingness to participate in collective actions (Klandermans, 1984, 1986). Common property resources are subject to rivalry in consumption within the group; that is, consumption by one person reduces the amount of consumption available for others (Seabright,

1993). Access to the resources, in the case of common property resource regimes, is limited to the members of a specified group of users, who hold rights in common that are recognised and practically enforceable, including the right of control over resources (i.e., which member is entitled to what resource and how much), and these right are clearly defined (Seabright, 1993). In the absence of incentives, users are not obliged to participate as a result of being concerned about the possibility of exploitation of the resources, if that resource is open-access. As a result, collective goals are often at risk. Although collective goals have important consequences for the motivation of members to participate, an individual may be less motivated to participate because an individual, who did not participate in achieving the collective goals, can also benefit — once the goals have been achieved (Klandermans, 1986).

A study on interactive relationship between motives and incentives on volunteers' attitudes and performance reveals that, when motives and incentives are both low and both high, it results in the most positive effect on attitude in relation to all types of motives and incentives. However, when motives are high and incentives are low (and vice versa), the effects are least positive (Puffer & Meindl, 1992). Moreover, in terms of performance, it is not necessary that an individual has high motives, if receiving high incentives always results in a positive impact on performance. The study highlights that a high rational (or social) incentive usually results in a negative impact on performance, when rational (or social) motives are high, but there is no significant impact on performance if the motives are low (Puffer & Meindl, 1992). Nevertheless, a high normative incentive will have no impact on performance when normative motives are high, but it will have a positive effect if the motives are low (Puffer & Meindl, 1992). Therefore, it is important to provide incentives, when taking an individual's motives into account.

The primary motive for an individual household to participate in community forestry is the individual's rational choice to maximise his/her personal benefits and expected utility (Hanna, 1995a). Usually, the importance of these incentives is higher for the poor and marginalised people, who have few alternative income and employment opportunities or lower financial assets. Community forestry produces tangible selective incentives (in addition to collective goods) and each member household has access rights to resources by simply being a member of the group. It can be argued that this legal coercion of membership automatically serves as a selective incentive, since access to resources is limited only to members. However, not all groups produce tangible selective incentives and the supply of tangible material incentives is not

necessarily guaranteed to its poor and marginalised users, because of the prevailing distributional inequities and institutional inefficiencies (Agarwal, 2001). In the community forestry context in Nepal, user rights are granted through membership, which is gained by paying membership fees. Participation in forest-tending operations, such as weeding, thinning and pruning, gives users the right to acquire forest products (Maskey *et al.*, 2006).

A number of scholars have proposed a payment for environmental services (PES), as an economic incentive for stakeholder participation in the protection of natural resources and the recuperation of degraded land (e.g., Miranda *et al.*, 2003; Morse, 2007; Pagiola *et al.*, 2005). Frequently, environmental goods and services are taken for granted and they are largely perceived to be free of charge, which has resulted in irresponsible management of these goods and services. Such poor management or 'no management' exerts negative economic consequences for the society, and particularly for the poor and marginalised groups in society who bear most of the associated costs (WWF, 2006). In this context, PES is a market mechanism for conservation that creates incentives for participation when managing natural resources, by rewarding the provider of such goods and services for doing so (WWF, 2006). The basic principle of this approach is to manage resources in a manner that ensures a sustainable flow of the desired environmental services into the future, and it incorporates the economic values of the environmental services into the financial decision-making, in order to resolve market failures (Rojas & Aylward, 2003). Thus, the PES is an approach that integrates the three goals of economic growth, in addition to ecological integrity and poverty reduction, to mitigate environmental and human development challenges, particularly in developing regions (Hope *et al.*, 2005).

The literatures suggest that resource users typically face three types of incentives related to (1) *the characteristics of the resources;* (2) *the characteristics of the community or user group;* and (3*) the characteristics of the rules* (Oakerson, 1986; Ostrom, 1990; Thomson & Freudenberger, 1997). The characteristics of the resources, the community and the rules are vital in determining incentives for people's involvement in resource governance and management and hence, an understanding of these key characteristics is important, in order to identify and analyse incentives for desirable resource governance in common property resource management. This study also uses these attributes to identify the incentives provided by the community forestry regimes in Nepal.

3.3.3 Resource Governance

Governance denotes organisational structures, in their capacity as participants in shaping and influencing public policy that affects people's lives (Bromley, 1991). Governance is considered important because it ensures that the voices of the poor and marginalised, in relation to the allocation of development resources, are heard in the decision-making (UNDP, 1997a). The literature suggests that governance is the process of deciding "what a collective will do and how it will do it" (Swallow & Bromley, 1995, pp. 109-110).

Governance is about utilising power and resources in a way that maximises the welfare of the people, through encouragement of participatory democracy, local leadership, civil society and the decentralisation of power to the grassroots (UNDP, 1997a, 1997b). Participation, transparency, accountability, equity and inclusiveness and the rule of law are the basic principles of good governance (Hyden & Court, 2002; UNDP, 1997a). Improving governance in managing common property resources is also important, because common property resource management involves the interests of multiple groups at different levels, and there is a direct influence on how a society organises itself in developing and managing forests and producing goods and services and using them (Brown, 2002; James *et al.*, 2002). Hence, the governance of common property resources can be referred to as a structure and process of decision-making for setting up and enforcing rules for resource use and management.

The people's participation is a key element of resource governance and in the presence of deep social inequities (as seen in Nepal) it is even more difficult to initiate change without the inclusion and participation of excluded or marginalised groups in local governance (Agarwal, 2001). The impacts of participation largely depend on the governance structure (Agarwal, 2001; James *et al.*, 2002) and the effectiveness of a governance structure depends on the incentives for the individuals who enforce the rules, and others who are expected to comply with the rules (Swallow & Bromley, 1995). Swallow & Bromley (1995) argued that the structure of governance, under which a common property regime operates, determines the types of institutions and the relationships amongst the members.

Institutions are necessary, in order to create incentives for people in resource governance (Gerrard, 1998). Earlier definitions of an institution are more focussed on the rules. Riker (1980) defined institutions as interpersonal rules that affect personal

values as well as social outcomes, whilst Plott (1979) defined institutions as rules for individual expression, information transfer and social choice. Swallow and Bromley (1995, p. 109) have defined institutions as the "authority systems that sanction rights and enforce rules and define the contexts in which conventions and contracts are negotiated", and that they are linked with governance. They argue that institutions are defined by governance processes and an understanding of the nature of the authority system and the process of governance (including the implications of those processes during implementation) is crucial to understanding institutions. Hence, institutions determine the resource access and ensure that a management system works (Jentoft, 2004). Scholars have also considered institutions as a form of capital and they have been referred to as 'cultural capital' (Berkes & Folke, 1993) or 'social capital' (Serageldin, 1995).

Institutions can either be formal or informal. Formal institutions have an organisational structure, resource governance policies and legal rules and enforcement mechanisms, whilst informal institutions have socio-cultural norms, values and networks (Nee & Ingram, 1998; Richards, 1999). The type of institution is determined by the structure of governance under which a common property regime operates and governs, in regards to its rules and rights (Swallow & Bromley, 1995). Bull (2002, p. 54) suggested eight conditions for the effectiveness of a rule or right, that is, the rules and rights must be formulated and promulgated as rules; administered in cases where acts must be carried out; communicated to the concerned; interpreted; enforced; legitimised in the eyes of the person or groups to which they apply; be capable of adaptation to changing needs and circumstances; and protected against developments within a society, which might undermine the effective operation of the rules.

Supporting an institutional framework is necessary for designing effective sets of incentives, to enable the resource users to participate in resource governance (Wells, 1998). An institutional framework is a set of rules and constraints that govern human behaviour and it determines the member's costs and benefits of involvement in various activities of the organisation (North, 1990; Wells, 1998). Therefore, where institutions do not exist, or they are poorly designed without any effective coordination with other institutions, such institutional failure contributes to the poor governance and management of common property resources (Barbier *et al.*, 1994). For the successful implementation of institutions, in regards to common property regimes, the governance structure should be compatible with the institution. The successful implementation of an institution requires consideration of the incentives and expectations of the individuals

who are involved in defining and enforcing the rights and rules of common property regimes, because different individuals have different expectations and they respond differently to the same incentive. Therefore, in order to understand the operations of a particular common property regime, an understanding of the structure of governance and the types of institutions that govern individual behaviour, in addition to the compatibility between institutions, governance and individual incentives, is important (Swallow & Bromley, 1995).

Ostrom (1990) has clearly illustrated the linkage of governance with institutions for common property resource management, in her 'design principles' for the success of common property resource institutions when managing common property resources (Table 3.5). She describes these design principles as essential elements for the institutions in sustaining the common property resources. Presence of these elements can affect incentives in such as a way that group members will be willing to commit themselves to obey the operational rules and replicate the common property resource institutions across generational boundaries (Ostrom, 1990). She argues that an institution fails, if it does not comply with most of the design principles. Thus, these design principles are useful for analysing the institutions associated with common property regimes, in relation to the users' participation in resource governance. However, Ostrom does not claim these design principles as necessary conditions for achieving institutional robustness in common property resource settings. She stresses the need for further theoretical and empirical work in order to confirm that these are the necessary conditions.

Cox et al. (2010) evaluated the Ostrom's (1990) design principles empirically and reformulated the principles in order to make them more effective in resolving different types of common property resource institution related problems. They extended the principles 1, 2 and 4 by dividing them into two parts, and kept the remaining principals unchanged. Principle 1A stipulates the presence of well-defined boundaries around between legitimate users and non-users, whereas principle 1B stipulates the presence of boundaries around the resource system. Principle 2 is also divided into two components - congruence between rules and local conditions (principle 2A) and congruence between appropriation and provision rules (2B). Similarly, principle 4A stipulates the presence of monitoring the appropriation and provision levels of the users (social monitoring), whereas principle 4B stipulates presence of monitors to monitor the condition of resource (environmental monitoring) (Cox, et al., 2010).

Table 3.5: Eight design principles for self-governance of a CPR institution

	Principles	Explanation
1	Clearly defined boundaries	Clearly defined boundaries of the resource and users with rights to withdraw products from the resource
2	Congruence	Fair, legitimate and easily enforceable rules for all participants, and proportionate allocation of benefits and costs taking into account the local conditions
3	Collective-choice arrangements	Individuals affected by a resource regime can participate in making and modifying the operational rules
4	Monitoring	Monitoring of resource conditions and users behaviour is conducted by the monitors selected by the users who are accountable to the users and/or are the users themselves
5	Graduated sanctions	Users who violate operational rules receive graduated sanctions from other users or authorities accountable to these users
6	Conflict-resolution mechanisms	Rapid, low cost, local arenas conflict resolution mechanisms are in place and users have access to them
7	Minimal recognition of rights to organise	Any government authorities do not challenge the rights of uses to develop their own institutions
8	For larger common property resources: Nested enterprises	Resource governance are organized in multiple layers of nested enterprises

Source: Ostrom (1990, p. 90)

Pierre and Peters (2000) have categorised governance into two perspectives: *governance structures* and *governance processes*. The governance structures are comprised of organisations, actors and decision-making structures, whereas the governance processes describe how the resource decisions are made, who is involved in the decision making and how the rules and policies are enforced and implemented (PROFOR, 2011; Rival, 2003; Stoker, 1998). Different actors at different levels have different influences on governance processes, due to the differences in power, resources, expertise and access to information they possess, which also affects the participation decision of different actors. At community level, for example, people of different castes and economic conditions have different powers and different livelihoods needs and interests and hence, different levels of participation in resource governance. Therefore, it is also important to understand these heterogeneities and complexities, in order to design appropriate incentives to improve effective participation of all resource users in common property resource governance.

Resource governance associated with government initiated common property regimes in developing countries is characterised by the power relationships between the state-centric (national level) and society-centric (local level) approaches of governance

(Pierre, 2000). Resource governance, at local level, is linked with local decision-making structures and processes, where resource users act collectively to govern the resource themselves, whereas resource governance, at national level, focuses on enforcement and implementation of policies (Nygren, 2005; Ribot *et al.*, 2006). Understanding the power relationships between these two levels, when governing common resources, is important for the successful governance of common property regimes (Agrawal, 2003; Blaikie, 2006; Ribot, 2003; Ribot *et al.*, 2006). Meinzen-Dick and Knox (2001) described natural resource governance from a broad institutional perspective. They argue that a government-initiated common property regime does not function independently, as claimed by Ostrom's self-governance (Ostrom, 1990), if the state retains a larger role in the resource management and (in most cases) it involves some form of interaction between the state and the user groups.

The linkages of participation, incentives and resource governance have been described above. The following section provides a review of factors influencing participation in common property resource governance and management.

3.4 Factors Influencing Participation Decision in Common Property Resource Governance

An increasing number of empirical studies have indicated that effective participation of all categories of users and different interest groups is important in common property resource governance, to ensure that the poor and lower caste and other disadvantaged groups are not excluded from accessing resources and receiving benefits (Hanna, 1995a; Knox & Meinzen-Dick, 2001; Shackleton *et al.*, 2002). Whilst few studies have reported the positive outcomes of common property resource management regimes, in terms of improving people's effective participation in resource governance, an increasing number of empirical studies conducted in different parts of the world have shown the limited success of such regimes in achieving people's effective participation, particularly in the case of the poor and disadvantaged groups, in resource governance and hence, resource benefits (e.g., Agrawal & Gupta, 2005; Baland & Platteau, 1996; Lise, 2000). This section explores the factors influencing people's effective participation in common property resource governance.

An increasing number of empirical studies, on the factors that influence people's participation in the governance and management of common property resources, have

indicated that users' decisions to participate are significantly influenced by a number of internal and external attributes, such as the costs and benefits of participation (Chinman & Wandersman, 1999; El Ansari & Phillips, 2004; Klandermans, 1986; Maskey *et al.*, 2006); household and personal endowments and attributes (such as wealth status, caste, family size and number of dependents, gender, education, dependency over forests, benefits from resources, access to government officials) (e.g., Agarwal, 2001; Agrawal & Gupta, 2005; Baland & Platteau, 1996; Khanal Chhetri, 2005; Lise, 2000); governance structures and decision-making processes (Gibson *et al.*, 2005; Sinha, 2003); institutional arrangements and property rights (Agrawal, 2001; Baland & Platteau, 1996; Knox & Meinzen-Dick, 2001; Ostrom, 1990, 1999); and the size and heterogeneity of the group (Adhikari & Lovett, 2006a; Dolisca *et al.*, 2006; Varughese & Ostrom, 2001). The identification and operationalisation of the most appropriate form of participation in community-based forest management is a challenge, because of the diverse nature of benefits that the forests provide, in addition to the complex and dynamic interests of the forest users (ODI, 1999). However, analysing and developing a framework for incentives, to ensure that people living in lower socio-economic conditions with lower levels of education and exposure, and lower access to government forest offices, are willing and economically able to participate in the governance of common property resources, helps to overcome the existing issues relating to people's participation in forest management.

3.4.1 Costs and Benefits of Participation

Although individual characteristics are one of the basis for an individual to participate in an organisation, the social psychological perspective (or an individual's perceptions and attitudes towards the costs and benefits of participation) are also important determinants of participation (Naik, 1997; Wandersman *et al.*, 1987). Naik (1997) in his study on factors that influence household participation in joint forest management (JFM) in India, argues that the consequences of participating in JFM could lead to additional costs for households, generally in terms of additional labour and the financial burden to procure forest products, due to limited permission for the extraction of timber and firewood, to allow for sustained growth. However, this situation could also generate a direct benefit by producing valuable forest products. Similarly, another study on a social cost-benefit analysis of joint forest management in India reports on the success of the regimes in halting forest degradation in India, but it also highlights the need to include suitable compensatory mechanisms in its future plans, in order to reduce the poverty of the poorest (Kumar, 2002b). Furthermore, it concludes that participation in common

pool resources helps the rich more than the poor, but at a cost to the poor. Similarly, the marginal costs of additional units of collective goods must be shared in exactly the same proportion as the additional benefits, in order to achieve the optimal provision of collective goods, so that an individual's marginal costs and benefits are equal (Olson, 1971). Otherwise, in a group where participation is voluntary, a member stops participating and contributing to the production of collected goods, when his/her share of the marginal cost exceeds the additional benefits (Olson, 1971).

The high opportunity costs of participation often yield low interest in participation for the poor and marginalised groups. Studies have revealed that poor households are not interested in community participation, because they do not benefit so much as the well-off households (Agrawal, 2000). In addition, poor households cannot afford to participate because of their higher opportunity costs of participation, due to the reliance on their labour and time, to produce the household income for food (Maskey *et al.*, 2006). A study carried out by Weinberger and Jutting (2001), in India, found that poor women did not participate in project-initiated local groups, due to the very high opportunity costs of time, especially for income earning women. This situation, in turn, leaves the poor and marginalised groups unable to participate and hence, derive benefits. Similarly, studies have revealed that participation in groups is known to be highly correlated with political participation (Kerapeletswe & Lovett, 2002). Therefore, if wealthy or high caste people participate more in the groups, then public policies may be tilted in their favour and lead to a vicious cycle in which the poor and disadvantaged people participate less, have less voice and become even more disadvantaged (Kerapeletswe & Lovett, 2002). Conversely, wealthy households, who can invest their time, money and labour, hold authority amongst the community and (as a result) they consume most of the benefits and services (Maskey *et al.*, 2006).

Figure 3.2 shows the relationship between the marginal return and opportunity costs of wages, in terms of a participation decision in a labour market situation (Grogger, 1998; Jumbe & Angelsen, 2007; Wirth, 2003). In figure (a), a user's wage for their labour is higher than the marginal return (MR) from participation in a group's activities, and hence s/he decides not to participate because s/he faces a greater opportunity cost from participation. In figure (b), since the wage is smaller than the MR, an individual decides to participate because of the lower opportunity cost from participation. Similarly, figure (c) demonstrates the case of a user who chooses to participate in the group activities up to time T*, however s/he allocates T – T* time for wage labour and hence s/he will not participate in the group activities. However, a richer household that has a lower opportunity cost from participation may not follow these relationships.

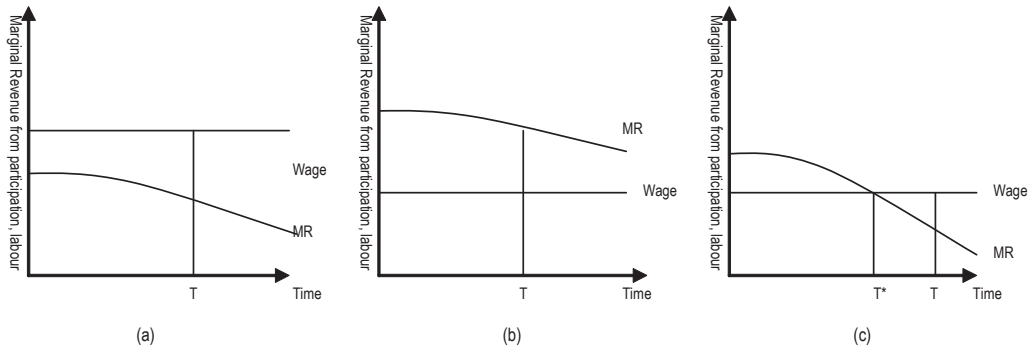


Figure 3.2: Marginal return from participation and opportunity costs of wage in a labour market

Studies have revealed that a willingness to participate in collective actions is a function of the expected consequences (or costs and benefits of participation) and the degree of participation is significantly related to a willingness to participate (Klandermans, 1986). If the perceived costs are higher than the benefits, an individual will have a low willingness to participate, whilst the individual will have a higher willingness to participate, if the perceived benefits are large and the costs are small (El Ansari & Phillips, 2004; Klandermans, 1986). Although studies have revealed that high benefits have resulted in greater participation, minimising a group member's costs for participation would be a more effective way to enhance the member's participation, than providing more benefits, because costs are usually viewed as negative (Chinman *et al.*, 1996).

A study to examine the transaction costs incurred by forest users in community forestry in the Middle Hills of Nepal suggests that, although richer households bear a higher proportion of such costs, the transaction cost of managing community forests (in terms of percentage of resource appropriation costs) are borne more by poorer groups than the richer and middle income groups (Adhikari & Lovett, 2006b). This study reveals that transaction costs differ across households, due to the household's characteristics and incentives, in addition to the disincentives created by management institutions. The socio-economic status of an individual member may limit the opportunity to participate in decision-making activities that determine the extent of transaction costs (Adhikari & Lovett, 2006b).Therefore, a thorough understanding of the levels of transaction costs in community-based resource management has important implications to participation, since the participants should not be made worse off from participating in resource management and governance.

Apart from the forestry sector, community participation within the irrigation sector in some countries (e.g. the Philippines) has been seen as a strategy to reduce government subsidies (Bruns, 1993). However, recent development approaches have recognised the importance of participation, by giving a greater role to local people and therefore recognising their knowledge and experience, in making decisions about resource development and management (Bruns, 1993; Cernea, 1991). The literature on irrigation management suggests that participation increases the farmer's costs, in terms of cash fees payments, in addition to non-quantified time and transaction costs, by reducing the state's burden for financing irrigation (Meinzen-Dick, 1997; Meinzen-Dick & Reidinger, 1995). These costs, when compared to service improvements and the resulting income increase for farmers, offer a performance outcome for the farmer's participation. However, as argued by Meinzen-Dick (1997), the initial success and long-run sustainability of participatory management depends on sufficient long-term incentives for farmers. This highlights the need for a more careful examination of benefits and costs, in order to assess overall incentives for farmer's participation.

3.4.2 Household and Personal Endowments and Attributes

Participation in community forest management is influenced by the socio-economic status of an individual household and the level of participation is determined by the benefits obtained from the common forest resources (Maskey *et al.*, 2006). The study highlights that lower caste and poor people are involved in low levels of participation. A lack of participation, in turn, excludes the members with lower socio-economic status from the decision-making processes (Maskey *et al.*, 2006). Economically and socially better-off users have a greater propensity to participate more in state-initiated local groups. Household income and land-holding are two important economic characteristics that significantly influence users' participation. This implies that wealthy members are more likely to participate in resource governance (Agrawal & Gupta, 2005; Khanal Chhetri, 2005; Lise, 2000; Maskey *et al.*, 2006). Similarly, caste has a strong influence on participation, showing that lower caste members participate relatively less than the higher caste members (Agrawal & Gupta, 2005; Khanal Chhetri, 2005; Maskey *et al.*, 2006). However, Lise (2000), in his study on India, suggests that lower caste members participate more. The economically and socially better-off households also have greater access to government officials and hence, they have a greater likelihood of participation (Agrawal & Gupta, 2005).

A study on perceptions of the ability to exercise power in forest management in Nepal has identified inferiority, vulnerability and a lack of transparency, as factors that stop forest users from exercising power — and the study concluded that community forestry offers a tremendous potential to practice self-governance, but the behaviour of individuals (based on complex informal institutional arrangements, such as caste and gender) must be accounted for within such formalised policy initiatives (Lachapelle *et al.*, 2004). Women, the poor and marginalised people generally feel powerless, inferior and incompetent and in addition they are illiterate, as an outcome of discriminatory social structures and norms, which further depresses them from participating in the decision-making processes (Cooke, 2001; Lachapelle *et al.*, 2004; Sinha, 2003). As a result, women, the poor and marginalised people, who do attend group meetings, often sit and keep quiet and do not participate (Nightingale, 2002; Winrock, 2002).

The practical implication of these studies is that the poor and low-caste users are still excluded from the decision-making level and there is no equal distribution of benefits amongst the caste and wealth groups. Hence, a careful design and implementation of community orientated decentralisation programmes is needed, to result in a biased participation in favour of the poor and disadvantaged groups. in order to achieve effective participation of lower socio-economic profile users and to promote equity in relation to benefits (Agrawal & Gupta, 2005). Building institutional mechanisms that encourage the poor and disadvantaged groups to improve their access to decision-making processes is important for decentralisation policies to be successful. Equally important is the creation of incentives to promote more interactions between the less powerful rural poor and government officials, in order to facilitate pro-poor livelihood initiatives (Agrawal & Gupta, 2005).

Other household and personal attributes, such as age, gender, family size and education, also influence users' level of participation in resource management. Many studies have found age to be negatively related to participation (Khanal Chhetri, 2005; Lise, 2000; Ngugi *et al.*, 2003), thus suggesting that older people are less likely to participate in resource governance. Age could also have a positive effect, as suggested by Maskey et al., (2006), who suggest that older people are influential and retired and they have free time to participate in collective actions. In general, gender has resulted in a strong negative relationship with the level of participation, which suggests that women participate less than men across different levels of participation, particularly in decision-making and benefits (Khanal Chhetri, 2005; Lise, 2000; Maskey *et al.*, 2006). Similarly, a larger family size (with more mature members) shows a strong positive

relationship with the level of participation, since a larger family size means surplus labour to participate in resource management (Agrawal & Gupta, 2005; Aryal & Angelsen, 2006; Khanal Chhetri, 2005; Ngugi *et al.*, 2003).

The education of household members has shown both a positive and negative influences on participation. Several authors (Dolisca *et al.*, 2006; Dolisca *et al.*, 2009; Heinen, 1996; Khanal Chhetri, 2005; Lise, 2000; Napier & Napier, 1991) have suggested the positive influence of education on participation. They argue that a higher level of education makes people more aware of the potential benefits to be derived from the forest, and having an understanding of the benefits and costs of participation (and education and knowledge about forest conservation) helps to exhibit positive attitudes toward forests. However, Agrawal and Gupta (2005), in their study on Nepal, suggest that education has a negative relationship with participation, thus indicating that the higher the educational level of household members, the lower the likelihood of that household's participation in common property resource management. Higher education opens up opportunities outside the village, which makes members of a household less available and less interested in participation.

Dependency on (and benefits from) forests: Empirical studies on factors that influence people's participation in forest management have concluded that a high dependence on the forest and improvement in forest quality increases people's participation in common property resource governance (Aryal & Angelsen, 2006; Lise, 2000; Salam *et al.*, 2005). However, a study conducted in Malawi, on forest dependence and participation in common property resource management, reported a site specific result: high forest dependency could probably encourage participation in forest management in a region where there is a scarcity of forest products, whereas the incentives to participation are reduced, where the availability of forest products is not a problem (Jumbe & Angelsen, 2007).

A study on local benefits from community forests in the Hills of Nepal reveals that people will continue to adapt and support a forest management system, if it does not have an adverse effect on their livelihoods, due to changes in forest accessibility and forest product availability (Adhikari *et al.*, 2007). They would be more willing to actively participate in managing the forest, thus leading to a forest that produces what the community needs, not just at the present time but also in the future. Similarly, households that derive higher benefits from the forests are more likely to participate in common property governance. Agrawal and Gupta (2005) have suggested that the

amount of firewood extracted from a forest significantly influences users' participation: the higher the amount of firewood from the forest, the higher the likelihood of participation and influence in decision-making. However, they found a non-significant influence in relation to the amounts of fodder that households harvest from the forest. One reason may be their open grazing practices that reduce the demand for fodder.

3.4.3 Governance Structures and Decision-Making Processes

Different literature has defined governance differently and with a variety of meanings. Several literatures have defined governance as the structures and processes of deciding resource use and management rules (Agrawal, 2003; Blaikie, 2006; Mearns, 1996; Ostrom, 1999; Pierre, 2000). Two key governance factors, viz., policy enforcement and implementation and local decision making structures and processes (and their interrelationships), can have a significant influence on the participation of local users in resource governance and management (Edmunds & Wollenberg, 2003; Fisher, 2000a; Fisher, 2000b; Meinzen-Dick *et al.*, 2002; Thanh & Sikor, 2006). The literature suggests that the level of authority that a user group holds and the capacity of the group to govern the resources are the two basic aspects of policy enforcement and implementation, which influence participation of users in resource governance (Agrawal & Gupta, 2005).

Decentralisation or devolution[34] of resource management transfers some level of authority and responsibility to local communities and user groups (Edmunds & Wollenberg, 2003; Ferguson & Chandrasekharan, 2005). The majority of the community forestry programmes in developing countries generally involve devolution of power (in regards to resource management and access rights) from the government to local communities (Edmunds & Wollenberg, 2003; Fisher, 2000a; Fisher, 2000b; Thanh & Sikor, 2006). However, the devolution of power can be categorised as 'complete' or 'restrictive', based on the local communities' participation and power to influence decisions (Meinzen-Dick *et al.*, 2002). The restrictive devolution of power gives resource users authority to implement only the operational rules set by the government. They do not have any influence on the setting-up of operational rules and they have only restricted access to resources. The complete devolution gives resource users

34 Although the words 'decentralisation' and 'devolution' are used more or less interchangeably, there are some differences between these two terms. Fisher (2000b) defines decentralisation as the relocation of administrative functions from centre to lower level of government, but this relocation does not necessarily transfer the decision-making authority. Devolution, on the other hand, is a transfer of power which includes rights and assets, governance responsibility and specific decision-making powers, away from centre (Fisher, 2000a; Fisher, 2000b; Yuliani, 2004)

significant influence at the collective level, in regards to how operational rules are set, and they have greater access to resources and participation in resource governance. The authors explain that the level of authority that a user group holds can govern the success of the regime's implementation: the higher the influence when setting all types of rules (that is, operational, collective and constitutional rules) the more extensive is the participation of local users in resource governance and management.

However, the state exerts a strong influence at the constitutional level, in most cases of government-initiated regimes (Agrawal & Ostrom, 2001; Meinzen-Dick *et al.*, 2002). The state sets the legal framework within which the resource users should operate, an example of which is the provision of a compulsory registration for a user group to take over resource management responsibilities. Although user groups are more efficient and cost-effective in managing local common property resources and also monitoring and enforcing the rules, they may not achieve the effective participation of users from all categories in resource governance and management, if the state-imposed rules fail to recognise the customary rights of the users and their role in setting operational rules (Agrawal, 1996; Banana & Gombya-Ssembajjwe, 2000; Karmacharya *et al.*, 2003).

Another important aspect of policy enforcement and implementation is the capacity of the group to govern the resources. The success of achieving the users' participation in resource governance and management depends significantly on the capacity of user groups to govern the resources. The capacity to govern the resources, to a greater extent, depends on the group's leadership and whether the leaders have ensured the participation of all categories of users, including women, the poor and other disadvantaged groups, when setting the operational and constitutional rules and when obtaining equitable benefits from the forests (Martin & Lemon, 2001; Sekher, 2001). Although devolution means a transfer of access rights and decision-making power from the state to the local communities or user groups, empirical studies reveal that the state still holds authority and power in the distribution of benefits from forests (Agrawal & Ostrom, 2001; Kumar & Kant, 2005; Nguyen, 2006; Sarin *et al.*, 2003). In some countries, where authority to manage resources has been transferred to the local user groups, the local elites have captured the benefits from such a transfer of authority and the participation of the poor and disadvantaged groups, in relation to resource management and benefits, is almost ignored (Adhikari, 2001; Cornwall, 2003; Nygren, 2005; Oyono, 2005; Shackleton *et al.*, 2002).

Formal decision-making structures and processes, at the local level, can influence people's participation in natural resource management decisions. Formal decision-making structures define the users who can participate in decision making processes (Tang, 1991). At a user group level, a formal decision-making structure is the executive committee, and the group members represented on the executive committee are the constituents of the formal decision making structures (Gibson *et al.*, 2005). Resource users not occupying positions on executive committees are often marginalised from participating in decision processes (Gibson *et al.*, 2005; Sinha, 2003). Studies reveal that government-initiated participatory forest management, as in the case of joint forest management in India, often results in social networking between the local elites and government officials, which discriminates against women, the poor and lower caste users from participation in decision-making processes (Martin & Lemon, 2001). The local elites, who also hold political power, often take the leadership and dominate the local decision-making structures and processes of forest user groups in developing countries (Agarwal, 2001; Baral & Subedi, 1999; Gauli & Rishi, 2004; Lise, 2000). Women, the poor and marginalised people often have a low capacity for exercising power through their positions in the decision-making structures, for example, executive committees (Lachapelle *et al.*, 2004). The literature suggests that a complex interface between traditional and formal decision-making structures and processes at local level (as seen in the case of community-based natural resource management in Zimbabwe) also influences people's participation in resource governance (Nemarundwea, 2004).

Similarly, local-decision making processes are guided by formal rules, in addition to socio-cultural norms and hence, the attitudes and behaviours of local elites, which are also guided by the discriminatory socio-cultural norms, that constrain the participation of the poor, low caste and women in decision-making processes (Agarwal, 2001; Gauli & Rishi, 2004). Evidences from the government initiated community-based forest management regimes in India show that participation in decision-making processes, at the initial stage of forest management implementation, is also limited by certain basic rules imposed by the government (Martin & Lemon, 2001; Sinha, 2003). Furthermore, the leaders often have limited skills in facilitating a participatory way, which constrain the poor, women and marginalised groups from participating in decision-making processes, even though they were not meant to be excluded from participating (Sinha, 2003).

Access to decisions and an adequate information flow are other decision-making process related factors that affect user participation in common property resources

(Hanna, 1995a). Hanna (1995a) argues that user participation is low, if the decision-making process is top-down and institutional positions designate the decision-makers. On the contrary, a much larger degree of participation of resource users and other stakeholders is experienced, if the decision-making process has a bottom-up approach, where resource users are incorporated into various levels of resource governance and management decisions (Hanna, 1995a).

3.4.4 Institutional Arrangements and Property Rights

Proper institutional arrangements are required for the promotion of effective participation of users in the governance of a common property resource. The problem of non-effective participation persists, mainly due to the failure of policy frameworks and institutional arrangements to provide an adequate incentive structure that encourages people's participation in (and contribution to) resource governance and management. Ostrom (1986a) defined institutional arrangements as sets of rules that determine different levels of actions in resource governance and management. In a common property resource management context, individual decisions (e.g., participation decisions) made at the operational level are controlled by institutional arrangements (Ostrom, 1986a). Institutional arrangements deal with the relative power and control that determines the incentives and policies, and they should be able to enforce property rights (Ostrom, 1990; Richards, 1999). Institutional arrangements are an important aspect when exercising property rights. They provide administration and enforcement support to the users for the effective exercise of their rights (Agrawal & Ostrom, 2001).

A general framework of institutional analysis identifies three key aspects of typical situations that face participants in a variety of social circumstances: the *physical attributes of resources*; the *attributes of the community*; and the *set of institutional arrangements* used (Oakerson, 1986; Ostrom, 1986b), amongst which institutional arrangements are the most important, from a policy perspective (Tang, 1991). The incentive structures facing participants of a common property resource could be changed by changing the rules. The literature suggests that rules can be formal and/or non-formal, and working and non-working (Thomson & Freudenberger, 1997). All the codified laws and regulations issued by a legislative or formal process, which are promulgated at national, regional or local levels, are formal rules and these are in written form. The non-formal rules are often derived from customs and practices and they are generally found at local level. Similarly, working and non-working rules are

differentiated on the basis of their effect on people's behaviour. The working rules may be codified texts or customs that are enforced, whereas non-working rules are codified texts or non-written rules that are not enforced. Working rules may be formal or non-formal.

However, the hierarchy of rules that directly or indirectly affect people's behaviour is comprised of three levels: *operational rules*, *collective choice rules* and *constitutional level rules* (Kiser & Ostrom, 1982; Ostrom, 1993; Ostrom *et al.*, 1994; Tang, 1991; Thomson & Freudenberger, 1997). Operational rules define resource utilisation and management rules, such as who can participate; how they can withdraw the resources; what are the rewards or punishments; how to contribute to resource management; and how the resource benefits are utilised. Operational rules are, thus, important means of coordinating resource management activities and resource allocation. Since operational rules are not self-enforcing, collective-choice rules have to be formulated, in order to enforce decisions and formulate and modify the operational rules. Collective-choice rules are the rules for making operational rules, which specify who can make, modify or revoke the operational rules. Such rules help to solve collective action problems, by changing the operational rules if necessary, and detecting and sanctioning against rule-violations. The third type of rules, constitutional rules, determines eligibility for membership and the leadership structure. These rules also define how collective decision-making rules can be created, changed and revoked.

Similarly, literatures suggest that creating proper institutional arrangements that match local conditions can solve the negative management problems generated by group heterogeneity. The literature argues that heterogeneity makes collective actions difficult, due to the varied interests of different categories of people, in relation to resource management, and the likelihood of inequitable cost-benefit distribution arrangements amongst the users. The level of heterogeneity influences the process of resource governance and results in the differential participation of various social groups within resource governance (Poteete & Ostrom, 2004). A number of scholars have examined the relationship between economic and social heterogeneity and the success of collective actions in common property resource management (e.g., Adhikari & Lovett, 2006a; Baland & Platteau, 1999; Somanathan *et al.*, 2002; Varughese & Ostrom, 2001). Their findings suggest mixed evidences of economic and social heterogeneity in the successful management of a common property resource. Homogeneity, in terms of social and economic terms, induces more successful management of common property resources (Baland & Platteau, 1999). Heterogeneity increases the transaction costs

(Zak & Knack, 2001) and it reduces the willingness to pay for public goods, due to differing preferences across groups (Alesina *et al.*, 1999).

Varughese and Ostrom (2001) have argued that group heterogeneity affects the structure of constitutional and collective-choice arenas, within which users decide how to organise themselves and which rules to adopt, in order to allocate rights and duties, in addition to the costs and benefits. However, it is not a strong factor influencing the failure or success of collective action in common property resource management. Although it poses challenges for user groups, when overcoming the incentives for free riders, the negative impacts of heterogeneity can be avoided by designing proper institutional arrangements that match with the local circumstances. Adhikari and Lovett (2006a) also found a highly variable relationship between heterogeneity and the level of collective actions, which highlights that a flexible governance system needs to allow for the adaptation of management regimes, according to local conditions.

A number of scholars have proposed frameworks to understand the interrelationship of property rights and participation in the governance and management of common property resources. Property rights, which underline the nature and degree of ownership over the resources, have a great influence on the incentives for participation and investment in governance and management of common property resources (Schlager & Ostrom, 1992). Meinzen-Dick and Knox (1999) have argued that property rights play a central role in natural resource management, thus conveying authority and also shaping incentives for the resource management. A pure form of common property rights exists where the property rights are vested in each and every member of a tribe, village, community, cooperative or local government (Heltberg, 2002). These well-defined and enforced property rights give users the incentive to contribute to a common property and to improve the resource, through efficient management and equitable accessibility to the resources (Agrawal & Ostrom, 2001; Arnold, 1998).

Property rights can be defined as the rights to use a resource (Alchian & Demsetz, 1973). Bromley (1991, p. 15) defined property rights as “the capacity to call upon the collective to stand behind one’s claim to a benefit stream”. Meinzen-Dick and Knox (2001, p. 49) described four arguments for giving attention to property rights in natural resource management: (1) property rights offer an incentive for management, since it provides confidence to the right holders that they will reap the future benefits of their investment in the resource management; (2) property rights give the right holders the authority and control over the resource, thus giving them a sense of ownership; (3)

property rights help to reinforce collective action, by providing the right to earn an income to cover their resource management expenses; and (4) transferring property rights to the users demonstrates the government's commitment to the devolution process, which helps to generate users, thus increasing the users' commitment to sustainable resource management.

Property rights, which underline the nature and degree of ownership over the resources, have a great influence on natural resource management. *Open-access, common property regimes, state property regimes* and *private property regimes* are the major four property right regimes, each of which will have a different impact on the management of the resources (Bromley, 1991). No one person holds exclusive rights over the resources, in the case of open-access and hence, it is not considered to be a 'true' property right regime (Hanna *et al.*, 1995). A property right is vested in an individual for socially acceptable uses within private property rights, whilst property rights are vested in a well-defined group of people in common property right regimes (Hanna *et al.*, 1995; Heltberg, 2002). A pure form of common property rights exists where the property rights are vested in each and every member of a tribe, village, community, cooperative or local government (Heltberg, 2002). If the ownership and control of the resources resides with the state, it is called 'state property rights', where the state defines the rules and regulations over the resources. This can turn into a de facto open-access or private property situation, if the government fails to enforce its rights (Heltberg, 2002). However, Gluck (2002) has argued that a common property rights regime is an ideal combination of private, common and state property rights.

Based on different levels of authority in governing a natural resource and its impact on resource access, resource users can hold four different types of property rights: (i) *rights of access and use* (e.g., the right to enter and harvest some form of products); (ii) *rights to manage* (management and maintenance of resources to improve their condition, including limitations on harvesting rights); (iii) *rights to exclude* (authority to determine who else may use the resources; and (iv) *rights to alienate* (authority to transfer rights to others, either by inheritance, sale or gift) (Agrawal & Ostrom, 2001; Schlager & Ostrom, 1992). Owners possess all these four bundles of rights, whilst proprietors hold rights of access and use, rights to manage and rights to exclude, but they do not have rights to alienate. The claimants possess the rights of access and withdrawal, plus the rights to manage the resource. However, the authorised users hold the rights of access and withdrawal (Table 3.6).

Table 3.6: Right holders and associated bundle of rights

Right holders	Rights to access and withdrawal	Rights to manage	Rights to exclude	Rights to alienate
Owner	Yes	Yes	Yes	Yes
Proprietor	Yes	Yes	Yes	No
Authorised Claimant	Yes	Yes	No	No
Authorised users	Yes	No	No	No

Source: Adapted from Agrawal and Ostrom (2001); Schlager and Ostrom (1992)

Schlager & Ostrom (1992) have proposed three levels of actions associated with specific property rights, which affect the incentives that are frequently substantial to encouraging an individual's participation in common property regimes. The rights of access and withdrawal are the *operational level* property rights; the rights to management, the rights to exclusion and the rights to alienation are the *collective-choice* property rights; and the rights to devise collective-action rules are the *constitutional level* property rights (Schlager & Ostrom, 1992). In the context of the community forest management regimes in Nepal, Agrawal & Ostrom (2001) have claimed that the nature of the property rights assigned to the CFUGs, by the new forest legislation, is close to that of proprietors. Local groups have been granted three types of property rights: rights to access and withdrawal; rights to manage; and rights to exclude — but not the rights to alienation (Agrawal & Ostrom, 2001). These rights produce incentives for users to take participation decisions and to undertake long-term investments in the governance of community-based forest resource management. However, Agrawal & Ostrom (2001, p. 500) have argued that the property rights of the forest users can easily be limited by the state, due to the absence of "influence over constitutional level rights", since the government can change forest policy without notice or consultation with the stakeholders. This might place a limit on users' incentives to encourage participation decisions within resource governance.

An increasing number of literatures on community participation in common property resource management have highlighted that the transfer of property rights from the government to the community is necessary, in order to provide incentives for user' participation. Transfer of property rights (the legal framework that defines users' rights) assures the resource users that they will acquire the future benefits of their investment, in terms of their time, money and labour in resource management and it makes them aware that they should bear the costs incurred through misuse of the resources and

hence, it determines the incentive structures they face (Djamhuri, 2008; Meinzen-Dick & Knox, 1999).

Meinzen-Dick and Knox (1999) have suggested that collective activities for resource management encompass significant costs, such as transaction costs, costs for protecting resources, plantation and other management activities and also maintaining the infrastructure and rule compliance costs. In order to encourage people to participate in resource governance and management and to bear the costs of resource management, incentives need to be in place and property rights, which are necessary for resource users to carry out many management activities, are one of the most important incentives that the state can offer users, in order to motivate them to bear the costs of natural resource management. Furthermore, clearly defined property rights give users stronger incentives to participate and enhance their resource base, because property rights provide users with the confidence that their investment in the resource today will benefit them (or their offspring) in the future (Meinzen-Dick & Knox, 1999).

3.5 Conceptual Framework

The discussion, so far, has provided a clear insight into the various aspects of participation and the importance of incentives to enhance user participation in common property governance. Although the issue of participation is crucial, in the context of the stated goals of community forestry, household needs (in terms of the type of goods and services emanating from community forest management, including forest products and their quantity) may differ amongst households. Since incentives are a factor that motivates a user to participate more, they need to come from different sources and take many forms. Therefore, it is complex to understand the interactions of different incentives offered to individuals and communities, in relation to the environment that surrounds them (Thomson & Freudenberger, 1997). People make different choices when confronted by various incentives and this situation results in different levels of participation. Each member in a group faces a set of incentives and disincentives to participating in the resource governance, and their decision about how to participate depends on how these users weigh up those incentives. Therefore, despite having similar policy preferences, each household may or may not participate. Individual's motives/needs and the incentives offered may significantly influence his/her participation decision.

The conceptual framework in this study thus assumes that a user's level of participation in the community forestry governance is directly influenced by different types of incentives offered to the users by the CFUG. The incentives facing resource users (in a variety of social circumstances) are structured by the interactions of (i) the physical attributes of the resources; (ii) the characteristics of the community or user group; and (iii) the set of institutional arrangements or characteristics of the rules. Individuals react differently to the incentives they are offered and they adopt actions or strategies accordingly and look for choices that will result in patterns of participation and resource use. The conceptual framework that guides this analysis is presented in Figure 3.3. The interactions of these key-interrelated factors shape people's participation in resource governance and management. A higher level of participation is more likely to be achieved, if a user household has been provided with optimal incentives (rational, social or normative) that match their needs/motives.

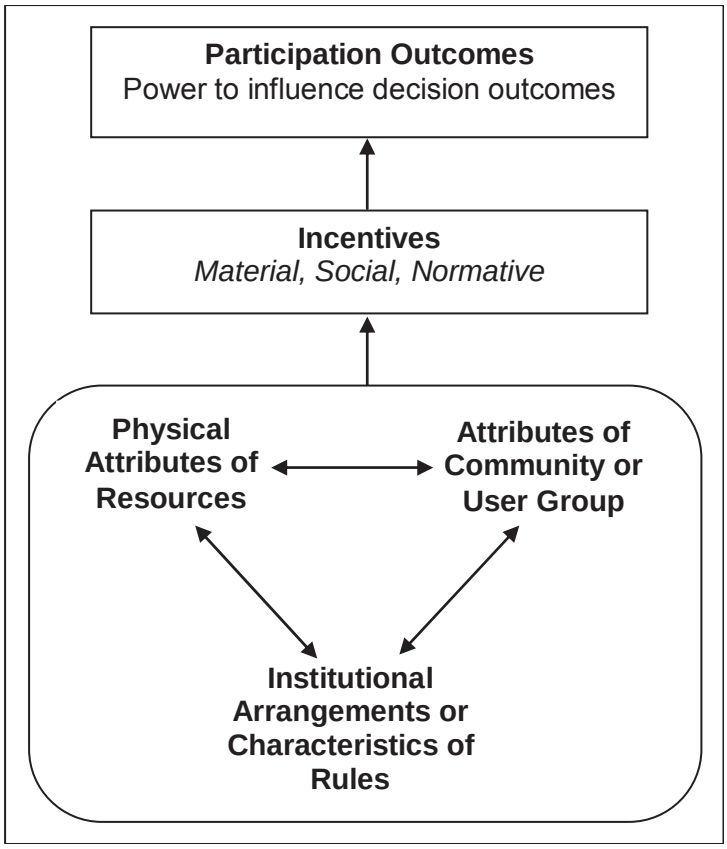


Figure 3.3: Conceptual framework for understanding the role of incentives on effective participation in resource governance and management

Adapted from Oakerson (1986); Ostrom (1990); Tang (1991); Thomson and Freudenberger (1997)

Incentives are related to the resource itself and certain characteristics of resources create incentives for people to change their behaviour. Three key attributes of resources, namely, the feasibility of exclusion, the nature of consumption, and the provision of public goods and the free-riding problem, can influence the incentive structure facing resource users, and these incentives have an influence on the users' participation decision on resource governance and management.

Similarly, another type of incentive is related to the community or user group within which the resource governance and management takes place. The different characteristics of the community or user group results in different incentives for people to govern and manage resources. The literature suggest that there are three key characteristics of a community or user group: socio-cultural structures and norms (caste system, dominance of patriarchy, family size); social stratification and alliances; and economic stratification and power relationships, which can play a significant role in improving people's participation in resource governance and management.

Similarly, the literature suggest that different types of rules and their characteristics (and the incentives created by them) influence users' participation behaviour in common property resource governance and management. These rules include formal and informal rules and the three hierarchies of rules: operational rules; collective decision-making rule; and constitutional rules. The structure of incentives facing resource users can be changed by changing the rules, and such interventions affect users' decision to participate in resource governance and management.

A basic assumption that applies to this research is that incentives will have a positive impact on an individual's attitudes and performance to participate in user group activities. Studies have revealed that there are complex interactions between motives and incentives, and that incentives result in a positive effect, when individuals receive the incentives they value, that is, incentives should not be provided when motives are low because an incentive is not desired at that time (e.g., Latham, 2007; Puffer & Meindl, 1992; Vroom, 1982). Therefore, this study further assumes that the type of incentives dealt with in this study match with the users' corresponding motives — and that the users' motives match with their group's values and objectives.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

This chapter offers an overview of the methodological approaches and procedures adopted for this research. The methodological approaches for this research are mixed methods of both quantitative and qualitative approaches. The chapter first discusses the study variables, data requirements and analytical model, followed by a brief description of the study areas. It then explains the data sources, data collection methods and sampling procedures, followed by the data analysis methods. The field visit schedule, data storage, security procedures and ethical considerations are also explained towards the end of the chapter.

4.2 Study Variables, Data and Analytical Model

This study relies on typologies of incentives (see section 5.2), in order to determine the study variables to operationalise an empirical econometric model. Specifically, the model to analyse the data for this study envisages that a participation decision is a function of the incentives offered to an individual and it includes variables related to these incentives. It is hypothesised that three incentives: *material, social* and *normative,* are the principal variables affecting an individual's behaviour, in regards to her/his participation in the governance and management of common property resources. An individual will have a higher probability of participation in common property resource governance and management, if s/he has a higher predisposition to each type of incentive (Knoke, 1988).

Participation in common property resource institutions is econometrically viewed as a series of explanatory variables, with participation in the governance of common property resources being a dependent variable. A participation index was used as a proxy for the level of participation in the governance and management of common property resources. This study examines a wider notion of participation by employing different indicators, each comprised of five distinct levels: very low or nominal

participation; low or passive participation; average or activity-specific participation; high or active participation; and very high level or interactive participation (see Table 3.3) to describe the extent of participation in the governance and management of common property resources.

A two-stage model was constructed, in order to estimate the conditions under which a household participates in the governance of common property resources. Firstly, an index of participation was constructed, as a proxy for participation in the governance and management of common property resources, by the use of a factor analysis on the indicators of participation, to identify different choice situations. Secondly, because the index of participation is qualitative and discrete in nature, an ordered probit model was constructed, to identify the relationship between different incentives and the level of participation of user group members. As an alternative (and for comparative purposes) a partial least square approach was also undertaken, to link the participation indicators to the various incentives.

4.2.1 Constructing Index of Participation: the Dependent Variable

In the context of common property resource governance, a member has various choices situations where s/he can decide whether to participate or not (Lise, 2007). Knowledge of whether a person is a member of a user group (or not a member) is not sufficient for measuring the extent of users' participation, because it does not account for changes in perception during the participation process. Some members may be involved very actively but still acquire less benefits, whilst others only reap the benefits without any active participation (Lise, 2007). To separate these different groups of people, in terms of their extent of participation, it is necessary to quantify participation, and this can be done by constructing an index of participation. The index of participation, which is used as the dependent variable for investigating the relationship between the incentives and participation, was constructed by employing a factor analysis out of a set of indicators of participation that measure users' participation (e.g., Atmiş *et al.*, 2007; Dolisca *et al.*, 2006; Kerapeletswe & Lovett, 2002; Lise, 2000, 2007).

Indicators of Participation

The index of participation is constructed and based upon six indicators of participation that are all highly correlated with one another. This study adopts the dimensions of participation proposed by Cohen & Uphoff (1980, p. 219), in order to define a number

of choice situations, which are interpreted as the indicators of participation. These indicators of participation comprise the key factors for strengthening resource governance and improving the livelihoods of the user group (see, e.g., Agarwal, 2001; Dev *et al.*, 2003; Dolisca *et al.*, 2006; Kanel, 2004; Lise, 2000, 2007; MFSC, 1989, 1995; Ostrom, 1990; Springate-Baginski *et al.*, 2003; The World Bank, 2001). In consideration of the equal importance of each individual indicator of participation, they were all given an equal weight in the construction of the participation index (see e.g., Atmiş *et al.*, 2007; Dolisca *et al.*, 2006; Kerapeletswe & Lovett, 2002).

The list of indicators of participation, prepared and based upon the literature review on participation in the governance and management of common property resources, was used to build a set of questions to be asked of the respondents, in order to collect answers relating to their participatory attitudes, which stipulate their actual level of participation. The list of indicators, however, was finalised after incorporating the responses from the key informants' interviews and the focus group discussions, during the pre-testing of the questionnaire. The six indicators of participation in the governance and management of common property resources are shown in Table 4.1 below.

Table 4.1: Indicators of Participation

Name of Indicator	Definition
Membership length	Number of years that a household has been member of the CFUG
Representation on the executive committee	Whether at least one member of the household is represented on the executive committee of the group
Level of participation at the meeting	Users' rating on their level of participation at meetings, in terms of contributing to the meeting
Level of participation in decision making	Users' rating on their level of participation in decision-making
Level of participation in implementation	Users' rating on their level of participation in implementation
Level of participation in overall benefits	Users' rating on the major benefits they derive from being a member of the group

The membership length was recorded as the actual number of years that a household has been a member of the CFUG, whilst representation on the executive committee was recorded as *Yes* or *No*, depending on whether at least one member of the household was represented on the executive committee of the group. The answer to

the users' rating on their level of participation in different group activities was framed in such a way that a higher number stands for a higher level of participation. The respondents were asked to rate their responses on a five-point Likert scale from 1 to 5, with 1 representing *No* (or very low level of participation) and 5 indicating a very high level of participation.

Factor Analysis

A factor analysis is a statistical approach used to analyse interrelations or correlations amongst a large number of variables and to explain these variables, in terms of their common underlying dimensions: that is, factors (Hair *et al.*, 2005; Kerapeletswe & Lovett, 2002). It is a statistical method with a basic concept of dimensionality reduction and it is used to describe variability amongst observed variables, in terms of fewer unobserved variables called factors, which will offer a better understanding of the data structure. This method is used for translating a large set of variables into a few orthogonal variables (with minimum loss of information) and it determines the number of underlying dimensions to be used in subsequent analyses, where each factor will represent an independent choice (Hair *et al.*, 2005; Kerapeletswe & Lovett, 2002). The basic principle that underlies factor analysis is that it reduces the data to more manageable proportions, by computing factor scores to represent the multiple indicators that are correlated with one another (Dolisca *et al.*, 2006; Kerapeletswe & Lovett, 2002). Once the factor scores are extracted, the subsequent analyses become much more manageable, with the use of one or a few factor scores, depending upon the choice of the user, instead of using several component items (Kerapeletswe & Lovett, 2002; Knoke, 1988).

Choice of Factor Analysis Implementation

There are many methods for performing a factor analysis, which usually differ in determining the number of common factors required and estimating factor loadings and specific variances. The Descriptive Factor Analysis is the simpler and more commonly used approach to finding factors and it uses the properties of principal component analysis (PCA). Although factor analysis has similar aims to PCA, there are basic differences between them (Figure 4.1). PCA is a mathematical procedure which transforms the correlated variables into a smaller number of uncorrelated variables called principal components. PCA summarises the total variation of the original

variables, whereas FA attempts to identify any underlying latent factors and it describes the behaviour of each original variable, in terms of latent variables or factors.

Figure 4.1: Differences between factor analysis and PCA

In PCA, new uncorrelated variables are obtained as linear combinations of the original variables, whilst in factor analysis the original variables are expressed as linear combinations of uncorrelated latent factors. For principal component model specifications, if X_1, X_2, ... X_p are the p correlated variables, the principal component analysis model can be presented as the linear combinations of X_1, X_2, ... X_p to produce new variables Y_1, Y_2, ... Y_p that are uncorrelated, that is**,**

$$Y_i = a_{i1}X_1 + a_{i2}X_2 + ... + a_{ip}X_p, \qquad i = 1, 2, ... p.$$

PCA takes into account all variability within the variables, so that the results will include as many principal components as there are variables, but factor analysis estimates how much of the variability is due to common factors (Hair *et al.*, 2005; Kerapeletswe & Lovett, 2002). Therefore, this study did not use descriptive factor analysis to construct the index of participation, but instead it was used as the initial or trial step towards the iterative factor analysis.

The maximum likelihood factor analysis (MLFA) and the iterated principal factor analysis (PCFA) are the other two commonly used factor analysis methods. The MLFA is the most commonly used and statistically superior procedure, which assumes normality on the given data and on the common factors and specific variates (Manly, 2005). One useful advantage of this method is that it does not have scaling problems: that is, it provides the same results, whether the raw data (covariance matrix) or the standardised data (correlation matrix) are used. The PCFA, on the other hand, is another popular but heuristic method, which is based on performing principal component analysis on covariance (or correlation) matrix, adjusted for the specific variances called reduced covariance matrix or reduced correlation matrix. However, this method does not assume normality on the data (Manly, 2005) and hence, it becomes preferable to MLFA, when the assumption of normality on the data is

questionable. However, this method is not scale-invariant, i.e., it does matter whether the data is standardised or not. Therefore, the multivariate normality of the data will be tested before determining which method is to be used for the data analysis. If the participation indicator variables data follow the multivariate normal distribution, the MLFA will be used: otherwise, the PCFA will be adopted.

Factor Analysis Model Specification

For factor analysis model specifications, it can be supposed that X_1, ..., X_p are observed *p* variables on *n* individuals. Theoretically, there are *m* underlying factors with $m<½(p-1)$ (Chatfield & Collins, 1980), which are usually denoted by F_1, ... ,F_m. The observed variables are modelled as linear combinations of the factors, plus *error* terms (Manly, 2005) such that:

$$X_1 = a_{11} F_1 + a_{12} F_2 + \ldots + a_{1m} F_m + \varepsilon_1$$
$$X_2 = a_{21} F_1 + a_{22} F_2 + \ldots + a_{2m} F_m + \varepsilon_2$$
$$\vdots$$
$$X_p = a_{p1} F_1 + a_{p2} F_2 + \ldots + a_{pm} F_m + \varepsilon_p$$

Generalising the above equations:

$$X_i = a_{i1} F_1 + a_{i2} F_2 + \ldots + a_{im} F_m + \varepsilon_i, \qquad i = 1, 2, \ldots\ldots, p \qquad (1)$$

Since the latent variables (or the factors) are common to all original variables, they are often called *common factors.* The common factors are independent of one another and they are standardised variables with zero mean and unit variance (Manly, 2005). The error terms ε_i are called *specific variates* associated individually with each of the original variables and these variates measure the residual information unexplained by the latent factor. The constants a_{ik} are called *factor loadings*, loading of the i^{th} variable on the k^{th} factor, which measures the correlation between the original variables and the factors.

From equation (1), for each i = 1, 2, ... , p,

$$\text{var}(X_i) = a_{i1}^2 \text{var}(F_1) + a_{i2}^2 \text{var}(F_2) + \ldots + a_{im}^2 \text{var}(F_m) + \text{var}(\varepsilon_i),$$
$$= a_{i1}^2 + a_{i2}^2 + \ldots + a_{im}^2 + \text{var}(\varepsilon_i), \qquad \textit{(since } F_k \textit{ are standardised with unit variance)}$$
$$= \sum_{k=1}^{m} a_{ik}^2 + \text{var}(\varepsilon_i) \qquad (2)$$

Here, $\sum_{k=1}^{m} a_{ik}^2$ is called the communality of X_i, which is the variance of X_i explained by the

common factors. Communality is the total amount of variance an original variable shares with all other variables included in the analysis. The var(ε_i) is called the specific variance of X_i, which is the variance of X_i that is not explained by the common factors. In the case of standardised data, communality cannot exceed 1, since $-1 \leq a_{ik} \leq 1$.

Once the factor scores were computed, these were used to construct the participation index as a proxy for the users' participation in the governance of common property resources. The participation index was constructed based on the normalised weighted sum of the factor scores of each respondent household and computed directly by the factor analysis. The weights used were the proportion of variation accounted for by each of the factors. Natural cut-off points of the normalised factor scores were used to define the participation index. The respondent households were then grouped by the participation index, in such a way that the higher the normalised factor score, the higher is the household participation index.

4.2.2 Estimating Relationship between Participation and Incentives: The Ordered Probit Model

It is hypothesised in this study that an individual's decision to participate in the governance of common property resources depends on the type and level of incentives which s/he values and that matches with his/her corresponding motives. Given the ordinal nature of an individual's responses (the dependent variable in this study), an ordered probit model was used to identify the relationship between different incentives and the corresponding level of participation of the user group members in the governance of common property resources. The dependent variable in this study, i.e., the index of participation, is an ordinal ranking and it is inherently ordered. When the dependent variable of main interest has an ordinal categorical nature, such polychotomous response data is analysed by using the ordered probit model (Greene, 2008; Liao, 1994). Moreover, the dependent variable, being a latent variable with different utility between participants and non-participants, is an individual discrete choice decision and hence, an ordered probit model is considered suitable for such data analysis (Cameron & Trivedi, 2005).

The ordered probit model, a well-established modelling process, has been used in categorical analysis such as behavioural analysis, severity analysis and level of participation, where the dependent variables are an ordered ranking of an arbitrary

number under the normality assumption (Greene, 2008; Kennedy, 2008; Ronning & Kukuk, 1996). This model results from the assumption that the error term is distributed normally across observations with the usual normalisation of mean zero and variance one, and it also takes into account the extra information implicit in the ordinal nature of the dependent variable (Kennedy, 2008). The ordered probit, which is theoretically superior to most other models for such data analysis, can be estimated via several commercially available software packages (Greene, 2008).

Moreover, the dependent variable, i.e., the index of participation, is an ordinal ranking and it is inherently ordered. In such cases, other models (e.g., the multinomial logit or probit model) would fail to account for the ordinal nature of the dependent variable, although the dependent variable is discrete (Greene, 2008). Since the dependent variable has a natural ranking-order, it cannot be treated as a continuous variable and therefore the multiple regression model, using ordinary least squares (OLS), produces insufficient estimates. An OLS model would also be inappropriate, because the spacing of these outcomes categories cannot be assumed to be uniform (Liao, 1994). The OLS would treat the difference between a '4' or '*strongly important'* response and a '3' or '*important'* response the same as that between a '3' or '*important'* response and a '2' or '*less important'* response, whereas they are only a ranking of responses coded 1, 2, 3 or 4 (Greene, 2008, p. 831). Similarly, the use of a linear regression model assumes that two respondents, who give the same response, have exactly the same attitude, which is not always the case (Daykin & Moffatt, 2002). The framing effects, due to the wording of the question, are likely to be avoided by using the ordered probit model, since it estimates the parameters of the underlying distribution rather than the response itself (Daykin & Moffatt, 2002). Considering that the dependent variable has more than two levels, a suitable procedure for this model estimation is a natural extension of a standard (binary) probit model, which is defined as an "ordered choice model" (Asciuto & Fiandaca, 2004).

Model Specification

For the basic specification of the ordered probit model, it can be assumed that Y_i^* is the latent variable that indexes the level of participation of user ***i*** in the governance of common property resources ($-\infty < Y_i^* < \infty$) and (according to the theory) an ordered probit model can be generalised as (Greene, 2008):

$$Y_i^* = \beta X_i + \varepsilon_i, \quad \varepsilon_i \sim N(0,1), i = 1, 2, ..., n \qquad (3)$$

where; Y_i^* is the latent variable, β is the vector of unknown parameters; β_0 is the intercept and β_i are the slope parameters in the model; X_i is the linear combination of explanatory variables; ε_i is the stochastic error terms assumed to follow a standard normal distribution across observations, and the mean and variance is normalised to zero and one.

The latent variable exhibits itself in ordinal categories and could be coded as 1, 2, 3, …, k. The continuous latent variable Y_i^* can take various threshold points (cutoffs), which separate adjacent categories of the observed Y_i. The observed ordinal variable, Y_i, takes on values 1 through k and the response of category *k* is thus observed when the underlying continuous response Y_i^* falls in the k-*th* interval as:

$$Y_i = k, \quad \text{if} \quad \mu_{k-1} \leq Y_i^* < \mu_k \tag{4}$$

Hence,

$Y_i = 1$	if $Y_i^* \leq \mu_1 (= 0)$	(very low participation)
$Y_i = 2$	if $\mu_1 < Y_i^* \leq \mu_2$	(low participation)
$Y_i = 3$	if $\mu_2 < Y_i^* \leq \mu_3$	(average participation)
$Y_i = 4$	if $\mu_3 < Y_i^* \leq \mu_4$	(high participation)
$Y_i = 5$	if $\mu_4 - 1 < Y_i^*$	(very high participation)

where Y_i is observed in k number of ordered categories, and the μ_j (j = 1, 2, 3, 4, 5) are the cut-points, or the unobserved unknown threshold parameters separating the adjacent categories of the observed Y to be estimated with β. By default, ordered probit models are estimated by assuming that the first threshold μ_1 is 0 (SAS, 2010). Figure 4.2 illustrates the relationship between the latent, underlying participation index Y_i^*, and the observed participation index Y_i.

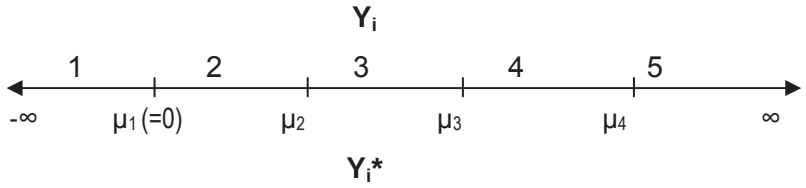


Figure 4.2: Relationship between latent and coded index of participation

In order to understand how changes in the predictors translate into the probability of observing a particular ordinal outcome, the probabilities for each of the observed ordinal response is given as:

$$Prob\ (Yi = k) = \Phi\ (\mu_k - \beta X_i) - \Phi\ (\mu_{k-1} - \beta X_i), \qquad k = 1, 2, ...,m; \quad i = 1, 2, ..., n \tag{5}$$

For all the probabilities to be positive, the cumulative normal distribution function Φ(.) is such that $\mu_1(=0) < \mu_2 < \mu_3 < \ldots < \mu_{k-1}$, and the sum total of the above probabilities is equal to one (Greene, 2008). Hence,

$$Prob\ (Y_i = 1: \text{very low participation}) = P\ (Y_i^* \leq \mu_1) = P\ (\beta X_i + \varepsilon_i \leq \mu_1) = \Phi\ (\mu_1 - \beta X_i) = \Phi\ (-\beta X_i),$$

$$Prob\ (Y_i = 2: \text{low participation}) = P\ (\mu_1 < Y_i^* \leq \mu_2) = P\ (\mu_1 < \beta X_i + \varepsilon_i \leq \mu_2)$$

$$= P\ (\mu_1 - \beta X_i < \varepsilon_i \leq \mu_2 - \beta X_i)$$

$$= \Phi\ (\mu_2 - \beta X_i) - \Phi\ (\mu_1 - \beta X_i) \qquad [as\ \mu_1 = 0]$$

$$= \Phi\ (\mu_2 - \beta X_i) - \Phi\ (-\beta X_i)$$

Similarly,

$$Prob\ (Y_i = 3 : \text{average participation}) = \Phi\ (\mu_3 - \beta X_i) - \Phi\ (\mu_2 - \beta X_i)$$

$$Prob\ (Y_i = 4: \text{high participation}) = \Phi\ (\mu_4 - \beta X_i) - \Phi\ (\mu_3 - \beta X_i)$$

$$Prob\ (Y_i = 5: \text{very high participation}) = 1 - \Phi\ (\mu_4 - \beta X_i)$$

The marginal effects of the variables X_i on the probabilities are not equal to the coefficients. The marginal effect refers to change in the probability of response with a unit change in a given explanatory variable (Greene, 2008). Interpretation of marginal effects help to answer questions such as: *Will an individual be more willing to participate if s/he receives incentives they value?* The corresponding marginal probabilities of changes in the regressors can, therefore, be calculated from the ordered probit model as follows:

$$\frac{d\ Prob\ (Y_j = 1)}{dX_i} = -\varnothing\ (\beta X_i)\ \beta$$

$$\frac{d\ Prob\ (Y_j = 2)}{dX_i} = [\varnothing\ (-\beta X_i) - \varnothing\ (\mu_2 - \beta X_i)]\ \beta$$

$$\frac{d\ Prob\ (Y_j = 3)}{dX_i} = [\varnothing\ (\mu_2 - \beta X_i) - \varnothing\ (\mu_3 - \beta X_i)]\ \beta$$

$$\frac{d\,Prob\,(Y_j = 4)}{dX_i} = [\varnothing\,(\mu_3 - \beta X_i) - \varnothing\,(\mu_4 - \beta X_i)]\,\beta$$

$$\frac{d\,Prob\,(Y_j = 5)}{dX_i} = [\varnothing\,(\mu_4 - \beta X_i)]\,\beta$$

However, interpretation of the marginal effect of changes in the explanatory variables can be difficult without additional computation, since the expressions for marginal effects only partially suggest the signs of the estimated marginal effects (Greene, 2008; Zhang *et al.*, 2007).

Frames of Analysis

The ordered probit model in SAS software (SAS, 2008) was used in this study. Factor analysis on participation indicators was used to construct participation index, which is used as the dependent variables and the incentives variables are used as the explanatory variables in this analysis. The output datasets include maximum likelihood parameter estimates for the ordered probit model, which estimate the relationship between incentives and level of participation, and marginal effects of explanatory variables on the probability of different levels of participation. The frames of analysis of the ordered probit model are given in Figure 4.3.

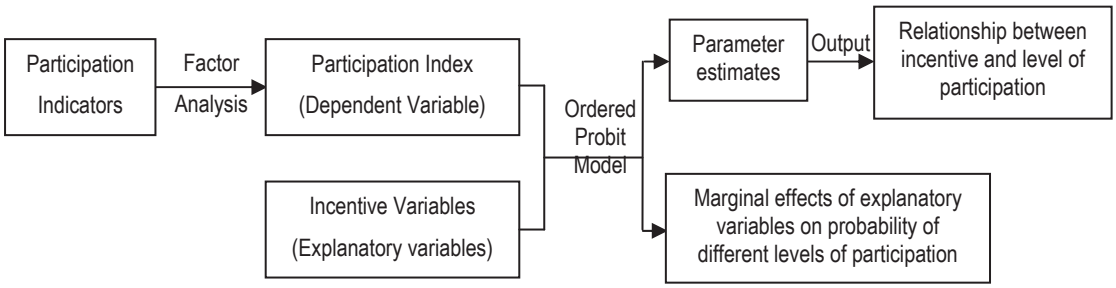


Figure 4.3: Frames of ordered probit model

4.2.3 Data Analysis Using Alternative Model: Partial Least Squares Method

Although an ordered probit model was used to identify the relationship between different incentives and the corresponding level of participation of user group members in the governance of common property resources, it was unable to deal with the multicollinearity that existed, in particular, in the incentive variables. Moreover, the

participation index is a subjective decision ranking. The participation index was constructed and based on the normalised weighted sum of the factor scores of each respondent household and computed directly by the factor analysis. The weights used were the proportion of variation accounted for by each of the factors. The natural cut-off points of the normalised factor scores were used to define the participation index. The respondent households were then grouped by the participation index, in such a way that the higher the normalised factor score, the higher is the household participation index.

The use of possible alternative models, such as *multiple regression analysis*, *canonical correlation analysis, discriminant function analysis* and *partial least squares (PLS) regression,* were also explored for data analysis, depending upon the suitability of the model for the data collected from the field. However, the PLS regression was found to be the most suitable, amongst these possible alternative models, to estimate the influence of individual incentives on each of the participation indicators. The PLS regression is also probably the least restrictive regression model compared to the alternatives, since these other multivariate methods do not extract the factors underlying the Y and X variables from cross-product matrices involving both the Y and X variables, but the PLS regression does extract these factors (StatSoft, 2010). In other words, the PLS method can deal with multiple Y's and multiple X's simultaneously: and hence, this method was used to further analyse the data.

The PLS regression, which is a multivariate data analysis method, is a statistical tool designed to deal with multiple regression problems, where the number of observations is limited and correlations between variables are high (Yang *et al.*, 2007). PLS regression is suitable to predict a set of dependent variables from a large set of explanatory variables (Abdi, 2010). It aims to transform a set of correlated explanatory variables into a new set of uncorrelated variables, called PLS factors. The PLS factors capture most of the information for the explanatory variables that is useful for explaining and predicting the dependent variables: and it reduces the dimensionality of the regression by using fewer PLS factors than the number of explanatory variables (Yang *et al.*, 2007). Unlike the usual factor analysis, where factors are formed and based on the X-variables only, the PLS method forms factors by using the covariance between the X-variables and Y-variables.

Model Description

The PLS regression produces factor scores as linear combinations of the original predictor variables (Abdi, 2010; Yang *et al.*, 2007). Let Y be the matrix of response variables and X be the matrix of predictors[35]. The PLS method starts with a linear combination T = *XW* of the predictors, where T is called the factor score matrix or score vector of predictors and W is its associated weight vector, and a linear combination U = *YQ* of the responses, where U is the score vector of responses and Q is its associated weight vector *(Malinowski, 2002; Yang et al., 2007)*. The PLS method predicts both X and Y by regression on T:

$$X = TP + E$$
$$Y = TC + F$$

where, *P* and C are called the X- and Y-loadings, and E and F are the matrices of residuals of X and Y, respectively. The PLS algorithms choose successive PLS factors that maximise the covariance between each T (factor score matrix of predictors) and the corresponding U (factor score matrix of responses): and these factors stand for variance information of X and Y as much as possible (Yang *et al.*, 2007). The first few factors, for an efficient PLS model, show a high correlation between T and U. In order to obtain the best predictive performance, a cross-validation method is used which determines the number of PLS factors that optimise the predictive ability of the model (Yang *et al.*, 2007). The standard algorithm for computing PLS regression components or factors is nonlinear iterative partial least squares (NIPALS) (Malinowski, 2002).

Frames of Analysis

The PLS procedure in SAS software has been used in this study. The participation indicators are used as the dependent variables and the incentives variables are used as the explanatory variables in this analysis. The output datasets include percent variation accounted for by PLS factors; dependent variable weights; model effect loadings; cross-validation for the number of extracted factors; and parameter estimation for centred and scaled data. The frames of analysis are shown in Figure 4.4.

35 An independent variable is also referred as a predictor or explanatory variable in this study.

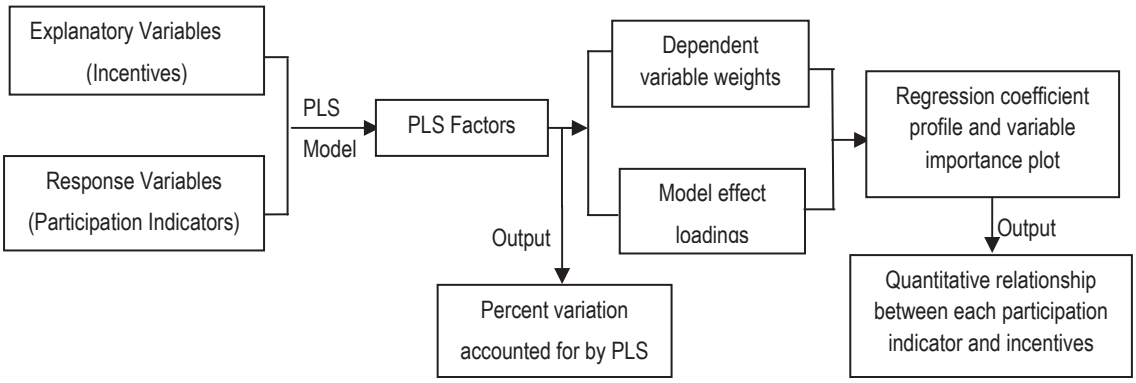


Figure 4.4: Partial lease-squares regression approach to study relationship between participation and incentives

4.2.4 Descriptions of the Explanatory Variables

The descriptions of the explanatory variables are explained in this section. For measuring users' attitudes towards incentives for participation decisions, a list of possible incentives was designed as predictors of participation covering several theoretical dimensions, in regards to the participation decision of a household in the governance of common property resources. This list was classified into three categories that corresponded to the various sources of motivation to participate in the CF governance and management (Table 4.2).

Table 4.2: List of incentives for participation decision

Material Incentives	Social Incentives	Normative incentives
• Access to forests and availability of forest products	• Social security and cohesion[36] through local institution building	• Well-defined and enforced property rights over forest resources assigned to the users
• Financial support to supplement household income	• Investment in local community infrastructure and development	• Payment for environmental services

The selection of these possible incentives has been based on the extensive literature on organisational incentives in collective action and community-based resource management: and it includes potential inducements or opportunities for augmenting rural livelihoods under the community forest management regimes in Nepal, which

36 Social cohesion can be defined as "the capacity of a society to ensure the well-being of all its members, minimising disparities and avoiding marginalisation" (Council of Europe, 2008, p. 14).

could impact on individuals' attitude and behaviour to positively motivate them towards active participation in resource governance. This list was finalised after the incorporation of the users' insights into the incentives provided by the community forest management regimes in Nepal, which were gathered from key informant interviews and focus group discussions, whilst pre-testing the survey questionnaire during the preliminary field visit.

This information was used to elicit possible responses to the users' perception on incentives and the effect on their level of participation, or their decision to refrain from participation. The responses were scaled as an integer value in a range from one to five in a 5 item Likert-scale, where 1 means that a particular activity by the group is "not important at all" and 5 means that a particular activity by the group is "very important", in order to provide motives or incentives for the user to participate in the governance and management of common property resources.

In order to examine which incentives best address the people's willingness to participate in the governance of common property resources, a total of six explanatory variables were used as factors to describe the users' willingness to participate and these are classified into three groups. The incentive variables are classified into three categories that correspond to various sources of incentives generated by the economic characteristics of the desired goods and services, for the participation in governance and management of common property resources. The meaning and definition of these variables included in the empirical model are summarised in Table 4.3.

Table 4.3: Description of the variables used in the model

Variable	Variable Title	Description
Dependent Variable		
Participation Index	INDEX	Index for participation in common property resource governance (5 = very high; 4 = high; 3 = average; 2 = low; 1 = very low)
Explanatory Variables		
Material Incentives	Access	Access to forests and availability of forest products
	Income	Financial support to supplement household income
Social Incentives	SocialSecurity	Social security and cohesion through local institution building
	Infrastructure	Investment in local community infrastructure and development
Normative incentives	PropertyRights	Well-defined & enforced property rights over forest resources assigned to the users
	Payment	Payment for environmental services

In order to examine the effect of changes in the incentives on the users' motives to participate in the governance of common property resource, an attempt was made to capture the perceptions of households on the changes in their level of participation, as a result of changes in the incentives. The data sources and data collection methods for capturing the users' perceptions are described in detail in the following section.

4.3 Data Sources and Data Collection Methods

The empirical analysis of the impact of incentives, on the level of participation in the community-based approaches of resource management, is based on survey data from Nepal. In order to examine the research questions and objectives within a concrete setting, this study focuses on members of CFUGs and they are the major data source. This study considers a user group member household as being the lowest unit of sampling and hence, the unit of data sources for the analysis. The members of CFUGs are the households who have been managing and utilising the forest resources for a long period. Information at this household level is most important, because it provides the necessary information for estimating their attitudes and behaviour, in regards to their participation decisions within their specific institutional context. Both the quantitative and qualitative data were collected from the field. In addition, useful information was also collected and reviewed through secondary sources, in the form of documents that included relevant literature, relevant policy documents, CFUG records, reports by the government and donor agencies and reports of past and on-going forestry programmes/projects.

4.3.1 Quantitative Data Collection

The quantitative data was required, in order to construct and analyse statistical models, in order to estimate the conditions under which a household participates in the governance of common property resources. The primary survey provided the necessary quantitative information for estimating people's level of participation and the role incentives play to change users' behaviour, in terms of motivating them to participate in their CFUG activities. The household surveys were the major tool for collecting the primary quantitative data required for the analysis. An extensive set of questionnaires (mostly using open-ended questions) was prepared and used to extract information from the respondents (see Annex 1). The draft questionnaire was pre-tested in four CFUGs and the responses were incorporated, in order to modify the questionnaire into a final questionnaire for the household survey. The questionnaire

was prepared in the Nepali language, for the convenience of the respondents; and the respondents were interviewed in isolation, to avoid any influences on their responses.

The decision-maker (speaking on behalf of the entire household) was chosen as the respondent. Although both household endowments and attributes (and the personal endowments and attributes of individual household members within a household) can influence the participation decision and level of participation (Agarwal, 2001), in the patriarchal culture of Nepal, the prevailing socio-economic-cultural settings gives decision-making power and control to the head of the household: this is generally a male who makes the majority of the households' decisions (Shrestha *et al.*, 2004). This also applies to decisions regarding governance and management of community forests (Seeley, 1996). This situation reflects the fact that the attitudes, behaviour and motivation of the (usually male) head of the household will determine the response to incentives and hence, the decision on participation. Therefore, this study targets the head of the household as the respondent for the data collection.

This primary survey collected varied information, in relation to the following incentive related variables:

- Socio-economic information, for example, household demographic information, wealth class, ethnicity, social position/ institutional membership, dependency over forest resources;
- Users' perceptions on why they participate and the level of their participation in group activities;
- Users' perceptions on (and attitude to) the incentives offered by their group to encourage their participation in the group's activities;
- Users' perception on their reason for non-participation;
- Users' perception on changes in their level of participation, as a result of any changes in the incentives.

In order to measure the users' attitudes towards incentives for a participation decision, the respondents were asked a set of questions, such as:

> *The CFUG you belong to may offer its users various kinds of incentives. How important are each of the following group activities to you personally, as a member of the group, to improve your participation in the governance and management of forest resources?*

In order to explore how changes in the level of incentives affect users' motives to participate in the governance and management of common property resources, an attempt was made to capture the perception of the households on changes in their level of participation, as a result of changes in the level of incentives. The respondents were asked to rank additional incentives, as per their importance to motivate them, in terms of increasing their participation in collective actions: and to compare their perceived or expected level of participation with their existing level of participation, as a result of the increase in incentive level. They were asked a set of questions, such as:

> *Would you like to change your participation in the governance of common property resources? If so, what activities would you like to participate more in? What incentives need to be changed or added for you to participate more?*

4.3.2 Qualitative Data Collection

In consideration that quantitative analysis may not solely be sufficient for a successful analysis of the problem (Burkey, 1993; Lise, 2007), qualitative data were also collected from the field, in order to gain an understanding of the institutional settings and overall governance and management practices and performances of the selected user groups in the study area. This qualitative information would supplement the quantitative findings with anecdotal evidence. Focus group discussions, key informants interviews and informal discussions/ observations were also carried out, in order to collect such qualitative information from the users and key informants.

Focus Group Discussions

Focus group discussion (FGD) can be defined as a discussion with a group of people who have similar backgrounds in relation to a specific topic (Waldegrave, 1999) and it is a relatively inexpensive means of eliciting information from a large number of respondents. Focus group discussions were conducted separately with the women and the poor and marginalised groups. It is believed that focus group discussions enhance the quality of information collected, by providing an enabling environment (particularly in the case of women, the poor and marginalised groups) where people can express their views and concerns within the comfort of their own small group. Otherwise, they may not feel comfortable or able to do this in a large group. A total of 16 focus group discussions were carried out in the field (Table 4.4) and approximately 225 users attended the focus group meetings held in eight CFUGs.

Table 4.4: Number of focus group discussions

Categories of Participants	No. of discussions
Local key informants (teachers, CFUG executive committee members)	2
Women users	2
Lower caste users	2
High caste users	2
Janajati users	2
Poor users	2
Rich users	1
Middle wealth class users	2
Users from all categories	1
Total	16

A checklist with a broad set of questions was prepared and used to extract information through the key informants survey and focus group discussions (Table 4.5). Such discussions were facilitated by a team of two members (the researcher and an assistant). Each discussion started with a brief presentation about the researcher, the research purpose and ethical issues. However, the order and the way of asking the questions were adjusted to fit the specific group situation, which resulted in participants appearing to be open, self-motivated and confident with each other, when offering their opinions.

Table 4.5: Broad set of questions for focus group discussion

Governance structure and practice	
1	What are the decision-making processes and information dissemination and transparency mechanisms?
2	What are the mechanisms for the mobilisation of the group fund?
3	How are the forest products and other benefits distributed?
4	What are the major benefits derived by the users from the forest/ user group?
Level of Participation and Incentives	
5	What are the major group activities where users participate?
6	What is the overall level of participation of users in (a) meetings and assemblies (b) decision-making, (c) activity implementation?
7	What are the major costs of participation in CFUG governance? And is there any subsidy, compensation or pay-off mechanism for the users, to compensate for their costs of participation?
8	What are the major constraints to participation of users in the governance and management of their group?

9	What are the activities initiated or incentives offered by the group to increase participation of users?
10	What are the programmes/activities initiated by the government/projects/NGOs to increase participation of users in the governance of their group?
11	What could be done to increase the overall participation of users in the governance and management of common property resources?

Interview with Key Informants

In order to understand the context of overall governance and management practices and performance of community forestry programmes in Nepal and the roles and strategies of the implementation agencies to strengthen incentive structures, which are intended to promote local users' participation, information was also collected from key informants. These key informants generally included local social and political leaders and the employees of relevant government and non-government organisations and projects, who work at national, district and local levels and who directly or indirectly influence the governance of community forestry programmes. A total of 30 key informants were interviewed. Interviewees for the key informants' interview were selected purposively, in order to obtain information on their experiences regarding the aim of this study. Table 4.6 lists the relevant organisations and the number of key informants interviewed from each organisation.

Table 4.6: Relevant organisations and number of key informants interviewed

Organizations	Number	Organizations	Number
District Forest Office, Tanahun	2	Department of Forests, Kathmandu	2
District Forest Office, Lamjung	2	CARE Nepal/ SAGUN Program, Lamjung	1
FECOFUN, Tanahun	1	CARE Nepal/SAGUN Program, Kathmandu	1
FECOFUN, Lamjung	1	Local political leader, Lamjung	2
FECFOUN Central Committee, Kathmandu	2	Local political leader, Tanahun	2
Local Resource Person (CF), Lamjung	2	FODECO Bandipur, Tanahun	1
Annapurna Conservation Project, Lamjung	1	Local School Teacher, Lamjung	2
Community Forestry Expert, Kathmandu	1	Local School Teacher, Tanahun	2
CFUG Chairpersons, Lamjung	3	CFUG Chairpersons, Tanahun	2

Such interviews were facilitated by the researcher himself using a checklist as the interview guideline (Table 4.7). Each interview began with a brief presentation about the researcher, the research purpose and ethical issues. However, the order and way of asking the questions were adjusted to fit the key informant's position and situation,

which resulted in participants appearing to be open, self-motivated and confident, when offering their opinions.

Table 4.7: Checklist for the key informants' interview

1	Viewpoints on the decision-making process and benefit distribution within the CFUGs
2	Participation of different groups of users (in terms of wealth and caste) in decision-making, implementation and benefit distribution
3	Major costs of participation in CFUG governance, and any subsidy, compensation or pay-off mechanism to compensate for their costs of participation
4	Major constraints to participation of users in the governance and management of their group
5	Activities initiated or incentives offered by the group to increase the participation of their users
6	Incentives offered or programmes/activities initiated by the relevant government agencies, non-government organisations and projects, to increase the participation of users in the governance of CFUG
7	Suggestions/ recommendations to increase users' participation in the governance and management of common property resources

Observations and Informal Discussions

Observations and information discussions were the other major means of collecting qualitative data. As described by Schutt (2006), field observations can help the researcher to understand the behaviour of people and the process, in a context that is more natural than interviews. The researcher attended two general assemblies, three executive committee meetings and he also observed the implementation of two forest-tending operation activities. These observations provided the researcher with an opportunity to observe the participation of users from different socio-economic categories, positions and gender: and to gain and understanding of 'how the users participate' in the governance of their common property resources. No structured data collection procedure was used to record the researcher's field observations, but detailed field notes were taken about the relevant activities that were observed. Similarly, informal discussions were also held with the participants of such meetings/ activities, in order to gain an understanding of their roles and the level of participation in such meeting/activities. Data from such observations and information discussions also contributed to the results.

4.3.3 Secondary Data Collection

Interviews may not solely be sufficient to ensure accuracy in explaining organisational processes. Documents can provide useful additional information to add to interviews,

when identifying and verifying various aspects of the observable fact under investigation (King, 2004). Congruent with this understanding, useful information was also collected and reviewed through secondary sources, in the form of documents, such as relevant literature, relevant policy documents, CFUG records, reports by the government and donor agencies and reports of past and on-going forestry programmes/projects. These documents provided useful preliminary information for gaining an understanding of overall governance and management practices and performances of community forestry programme in Nepal. It also helped the researcher to understand the roles and strategies used by the implementation agencies, to strengthen the incentive structures that are intended to promote local users' participation. All relevant policy documents relating to the forestry sector in Nepal were reviewed, in order to generate secondary information for the study. Such reviews also helped to draw up a list of the incentive needs and priorities that were intended to promote local users' participation in community forestry — from a policy perspective. The major policy documents reviewed (but the study was not limited to just these documents) were as follows: Three Year Interim Plan (2007/08-2009/10), particularly Forestry Sector; Poverty Reduction Strategy, 2001; Five-Year Periodic Plan (the 10th Plan: 2002-2007), in general and the forestry sector portion of the Plan, in particular; Master Plan for Forestry Sector, 1989; Forest Sector Policy, 2000; Forest Act, 1993 and Forest Regulations, 1995; National Biodiversity Strategy, 2002; Non-timber Forest Products Development Policy, 2004; Local Self-Government Act, 1998; and other relevant forestry sector policies, strategies and guidelines.

Furthermore, relevant reports by the government and donor agencies (e.g., annual reports, research reports, periodic plans and reports) and reports of past and on-going forestry programmes/projects were also reviewed. These documents provided useful preliminary information to gain an understanding of the overall governance and management practices and performances of CFUGs: and the roles and strategies used by implementation agencies, to strengthen the incentive structures that are intended to promote local users' participation. Similarly, CFUG documents and records, such as constitutions, community forest operational plans, meeting minute/attendances, forest products and/or benefit distribution records and other relevant records, were also carefully reviewed, to gain an understanding of the formal rules and users' rights in resource governance and management and to identify the types, nature and frequency of incentives offered by the group to its users, in addition to their impact on the participation of its users in the governance and management of the resources.

4.4 Study Area

This study was undertaken in two districts of the Middle Hills of Nepal, namely Tanahun and Lamjung, which lie in the Western Development Region[37] of Nepal. The study districts and the location of the selected CFUGs are shown in Figure 4.5. The Middle Hills region forms the major central belt of Nepal and it occupies approximately 30% of the country. As of July 2010, over one-quarter (28%) of the total CFUGs in the country lie in the Western Development Region, amongst which almost 20% lie in the two study districts (Department of Forests, 2011). The selected two districts have similar social, cultural and economic characteristics and they follow similar forest management practices. The districts also typically represent the western Middle Hills region, in terms of forest types, the dependence of local communities on forest resources for their livelihoods, and the socio-economic-cultural characteristics of the region (DFOLamjung, 2008; DFOTanahun, 2008). Both districts have a history of community forest management for more than two decades (Department of Forests, 2011). The trend of new community forest handed-over year-wise from 1992/93 to 2009/10 in the studied districts is shown in Figure 4.6.

37 The Western Development Region is located in the central-western part of the country.

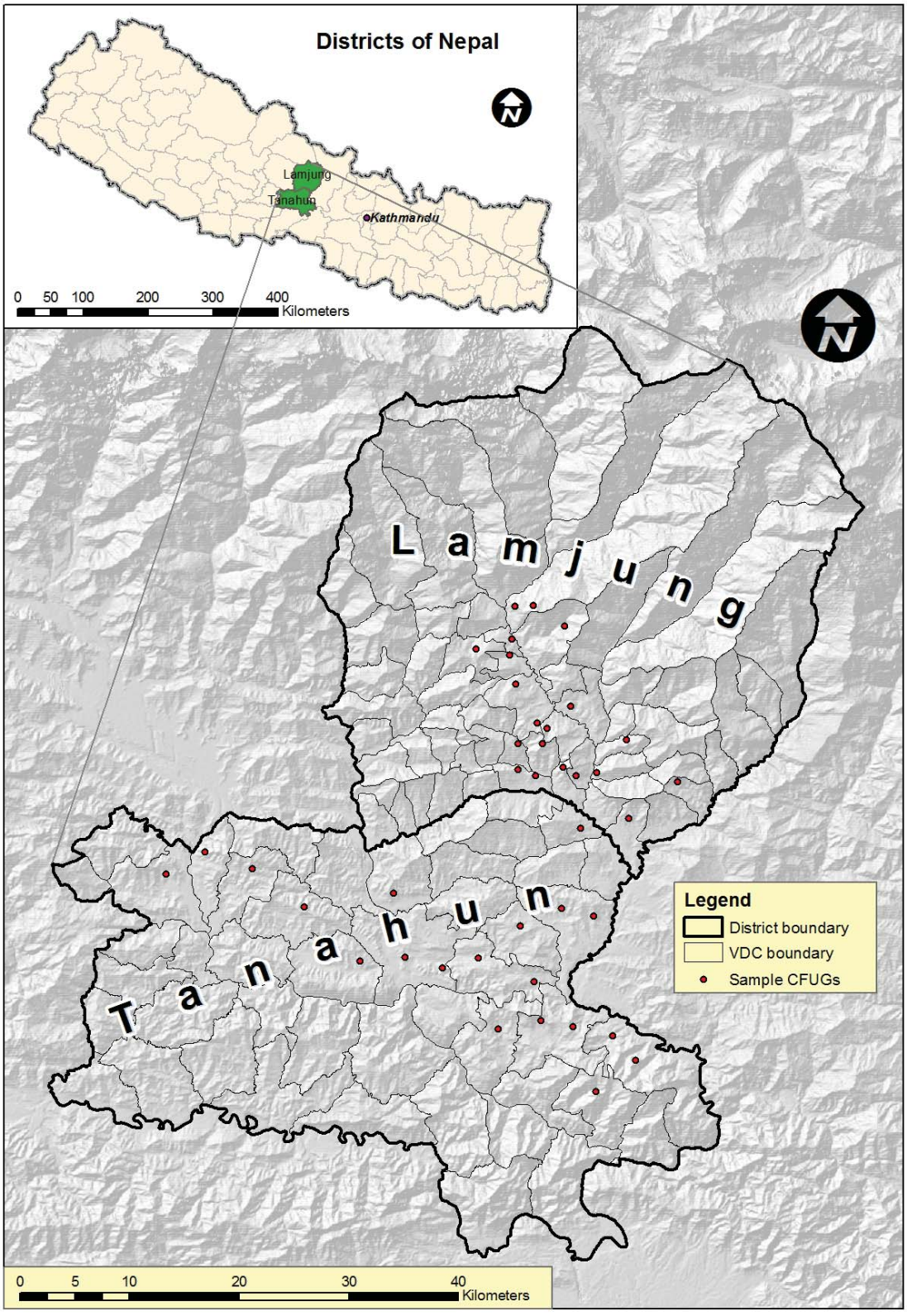


Figure 4.5: Study districts and the sampled CFUGs

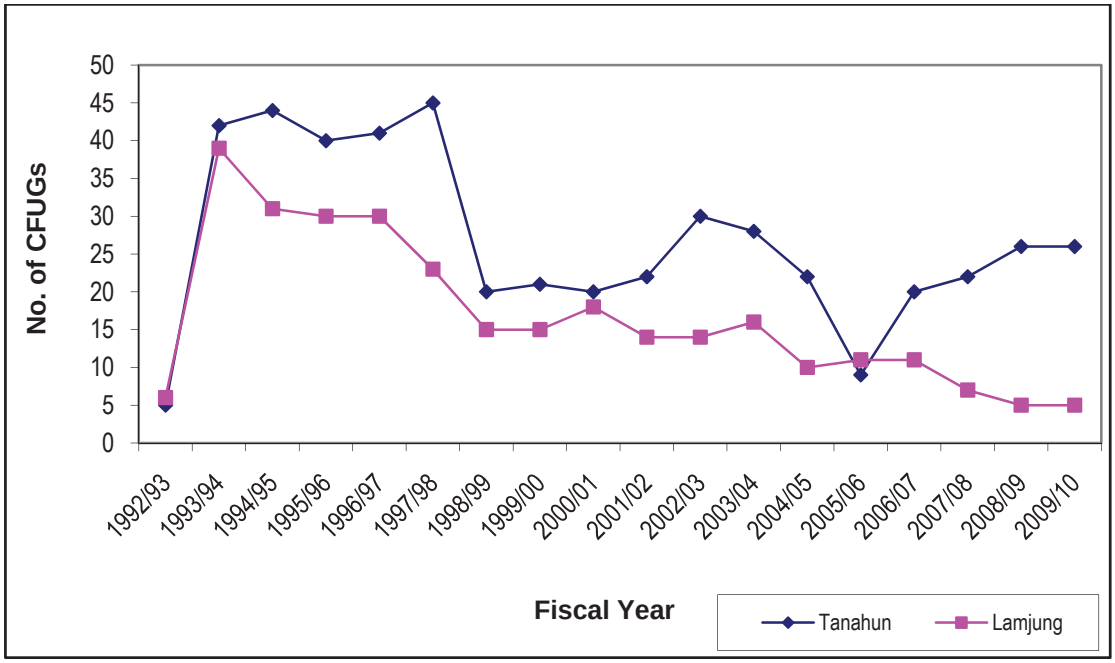


Figure 4.6: The trend of community forest hand-over in the study districts

(Source: Department of Forests, 2011; DFOLamjung, 2008; DFOTanahun, 2008)

The trend of area handed-over and beneficiary households in the two studied districts are presented in Figure 4.7 below.

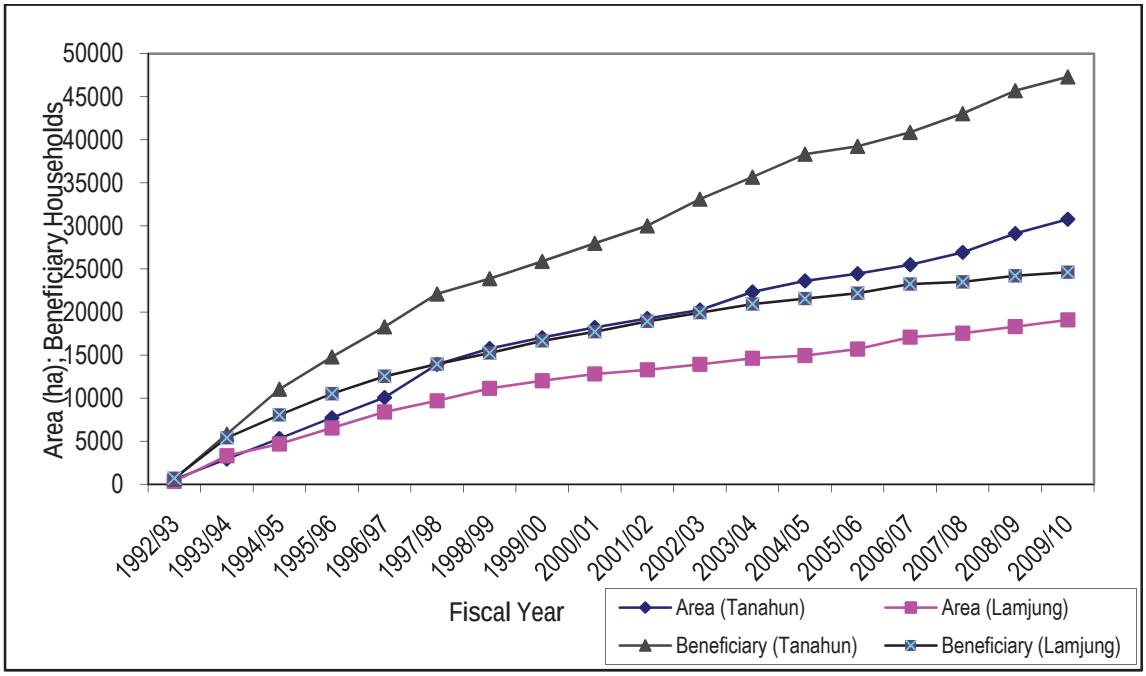


Figure 4.7: Trend of area handed-over and beneficiary households

(Source: Department of Forests, 2011; DFOLamjung, 2008; DFOTanahun, 2008)

Another reason for selecting these districts is that the principal researcher has been involved in various community forestry management activities in these two districts, through facilitating the users in the handing-over process of community forests and also the implementation of management plans. Given the limited availability of resources (both finances and time) this research can be considered as being a large pilot project that covers only two districts of Nepal, as the study area. Since the Middle Hills of Nepal are comprised of several similar districts to the studied districts (in terms of resource governance and management practices) the overall conclusions can, therefore, be generalised in the context of the Hills of Nepal.

4.4.1 Description of the Study Districts

Tanahun District

Tanahun district lies in the Western Development Region of Nepal. It is located between 27^0 3'N to 28^0 05' N latitude and 83^0 75'to 84^0 34' E longitude. The total area of the district is 1,546 sq. km. The altitude of the district varies from 187 metres to 2325 metres. The district has a sub-tropical and mid-temperate climate with an average rainfall of 2058mm and a maximum temperature of 25.8^0C and a minimum temperature of 15^0C. Topographically, the district is situated in the Middle Hills of Nepal.

Politically, the district is divided into one municipality and 46 Village Development Committees (VDCs). The total population of the district is 316,127 (male 46.4% and female 53.6%) with an average household size of 5.0 and a population growth rate of 1.8% (CBS, 2007b). The district has a multi-caste society, where people belong to different caste/ethnic groups, such as *Brahmin, Chhetri, Magar, Newar*, *Gurung* and some other occupational castes, such as *Kami, Damai, Sarki, Lohar, Gaine*. The average literacy rate in the district is 54.4% (CBS, 2007b).The main occupation of the people in the district is agriculture. Rice, wheat, maize, soybeans, mustard and other leguminous crops and cash crops, such as vegetables, are the main crops cultivated and buffalo, cow, bullock, goat, sheep, hen and duck are the main livestock raised. Other occupations include teaching, government service and non-governmental organisations, business and production labour.

The land use pattern of the district is characterised by heavy human and livestock penetration into the forests. Amongst the total area of the district, 41.4% of land is cultivated land and 41% of land is under forest cover and pasture (Table 4.8). The forests in the district are divided into three categories: *production forests, protection*

forests and *shrub land*. From the total forest area in the district, 78.9% is production forest, 11.5% is protection forest and 9.6% is shrub land. A forest with more than 45^0 slopes is categorised as a protection forest. Sal (*Shorea robusta*), Chilaune (*Schima walichii*), Katus (*Castanopsis indica*), Painyu (*Prunus cerasoides*), Asna (*Terminalia alata*), Jamun (*Syzygium cumini*), Botdhainyo (*Lagestromia parviflora*), Siris (*Albizzia spp.)*, Simal (*Bombax ceiba*) and Karma (Adina cardifolia) are the major tree species found in the district. The district is also rich in non-timber forest products (NTFPs): and a total of 75 different NTFPs are found in the district, most of which have food or medicinal values.

Table 4.8: Land use type of Tanahun district

Land Use	Area (ha)	% of the total land
Agriculture	63,946	41.40
Forests	62,654	40.50
Pasture	719	0.50
Others	27,281	17.60
Total	154,600	100

(Source: DFOTanahun, 2008)

From the total forest area in the district, 88% is identified as potential community forest areas. In terms of the organisational and spatial hierarchy of the Ministry of Forests and Soil Conservation, the forest resources fall under the District Forest Office Tanahun, which administers community forest hand-overs and management activities in the district. As of July 2010, a total of 483 community forests, with a total area of 30,777 hectares (approximately 56% of the total potential CF area in the district), have been handed over to 47,303 households (approximately 69% of the total households in the district) (see Figure 4.5 and 4.6) (Department of Forests, 2011; DFOTanahun, 2008). The average area of a community forest in the district is 63.72 ha and the average number of households, per CFUG, is 98: thus the average forest area, per household, is 0.65 ha. The members of CFUGs are those households who have been managing and utilising the forest resources, for a long period. Firewood is the only cooking fuel for poor households, whilst some rich households use kerosene, biogas and LPG gases, in combination with firewood.

Lamjung District

Lamjung district lies in the Western Development Region of Nepal. It is located between 28^0 03' to 28^0 30' N latitude and 84^0 11' to 84^0 38' East longitude. The total area of the district is 1,692 sq. km. The altitude of the district varies from 793 metres to 8,155 metres. The district has sub-tropical, lower temperate, upper temperate, alpine and tundra climates with an average rainfall of 2944 mm, a maximum temperature of 26.7^0C and a minimum temperature of 14.08^0C. Topographically, the district is situated in the Middle Hills (42.5%), High Hills (39.2%) and High Mountain regions (18.3%). Manaslu (8,162m), Annapurna (7,939m), Himalchuli (7,647m), Manaslu South (7,637m), Lamjungchuli (6,988m) and Bouddha Himal (6,974m) are the main Himalayas situated in the district (CBS, 2007a).

Politically, the district is divided into 61 Village Development Committees. The total population of the district is 204, 458 (male 52.2% and female 47.8%) with an average household size of 6.35 and a population growth rate of 1.43% (CBS, 2007a). The district has a multi-caste society, where people belong to different caste/ethnic groups, such as *Brahmin, Chhetri, Gurung, Newar* and some other occupational castes, such as *Kami, Damai, Sarki, Lohar*. The average literacy rate in the district is 56.6%.The main occupation of the people in the district is agriculture. Rice wheat, maize, soybeans, mustard and other leguminous crops and cash crops, such as vegetables are the main crops cultivated and buffalo, cow, bullock, goat, sheep, hen and duck are the main livestock raised. Other occupations include teaching, government service and non-governmental organisations, business and production labour.

Similar to Tanahun district, the land use pattern of the district is also characterised by heavy human and livestock penetration into the forest. Amongst the total area of the district, 17% of land is under cultivation, whilst 39% of land is under forest cover (Table 4.9). The pasture and shrub lands cover 13% and 10% of the total area of the district, respectively. Twenty percent of the total land is under other uses such as settlements, rivers, and mountains. Sal (*Shorea robusta*), Chilaune (*Schima walichii*), Katus (*Castanopsis indica*), Simal (*Bombax ceiba)*, Utis (*Alnus nepalensis)*, *Quercus* spp., *Rhododendron* spp., Champ (*Michalea champaka)*, Deodar (*Cedrus deodara*), Okhar (J*uglans regia), Bhojpatra (Betula alnoids)* are the major tree species found in the district. The district is also rich in NTFPs: a total of 32 different NTFPs are found in the district, most of which have food or medicinal values (DFOLamjung, 2008).

Table 4.9: Land use types of Lamjung district

Land Use	Area (ha)	% of the total land
Agriculture	28,770	17
Forests	66,673	39
Pasture	22,623	13
Shrub land	17,643	10
Other	33,491	20
Total	169,200	100

(Source: DFOLamjung, 2008)

From the total forest area in the district, 94% (including shrub lands and pasture) is identified as potential community forest areas. In terms of the organisational and spatial hierarchy of the Ministry of Forests and Soil Conservation, the forest resources fall under the District Forest Office Lamjung, which administers community forest hand-over and management activities in the district. As of July 2010, a total of 300 community forests, with a total area of 19,086 hectares (approximately 31% of the potential CF area), have been handed over to 24,630 households (approximately 69% of the total households in the district) (see Figure 4.5 and 4.6) (Department of Forests, 2011; DFOLamjung, 2008). The average area of community forest in the district is 63.6 ha and the average number of household, per CFUG, is 82: thus the average forest area, per household, is 0.77 ha. The members of CFUGs are the households who have been managing and utilising the forest resources for a long period. Firewood is the only cooking fuel for poor households, whilst some rich households use kerosene, biogas and LPG gases, in combination with firewood.

4.5 Sample Size and Sampling Design

A total of 40 CFUGs (20 CFUGs from each district within the two study districts) were randomly selected for the field data collection. Since the focus of this research is to determine the incentive conditions under which the users are most likely to participate in common property resource governance, the groups selected were officially registered groups that have been managing handed-over community forest for at least five years prior to the study. Therefore, at the first stage, the community forestry hand-over database, prepared by the respective District Forest Offices, was collected. A final list of the CFUGs, which were handed-over forests at least five years ago, was

prepared from the existing database, as the sampling frame for selecting the sample groups: and that list was used to select the sample groups. Information on the selected CFUGs is presented in Annex 2.

Similarly, due to resource constraints, the total sample size for the household survey was fixed at 200 user households (five households from each user group). The sampling frame for the survey was the list of group members in the respective CFUG constitution. This study followed a simple random sampling design for the selection of respondent households for the household survey. The respondents for the actual household survey were selected randomly from the list of user group members listed on their group constitutions. Although individuals from different wealth class and caste groups may have varied motives or expectations and they may respond to the same incentives differently, group heterogeneity (particularly in terms of wealth and caste) was considered only whilst analysing the data, instead of clustering groups during the data collection. The group heterogeneity was considered whilst analysing the data, in order to examine the interaction between the group heterogeneity and the level of participation in response to a particular incentive.

4.6 Data Analysis and Interpretation

4.6.1 The Data

The raw quantitative data was in the form of a structured questionnaire, where answers were collected during the household survey, and the raw qualitative data was in the form of field notes collected during the focus group discussions and key informants interviews, in addition to that gathered from informal discussions and observations. The respondents' expressions, comments, observations and feelings were reproduced through their 'words', both in the household survey questionnaire and field notes, to the best of the researcher's ability. Both the questionnaire and field notes were written in the Nepali language, the native language of the researcher's country and the participants.

Following the completion of the field data collection, the researcher presented a brief about the field activities, types of data collected, field impressions and initial findings, to his academic supervisors in New Zealand and he received their feedback accordingly. These feedbacks were used to improve the data analysis methods, as the research progressed.

4.6.2 Data Entry

The quantitative data collected during the household survey, through the use of a structured questionnaire, were carefully checked and coded before they were transferred to a computer. The data, which included the qualitative data from the focus group discussions and key informants' interviews, together with the field observations and informal discussions, were cleaned, entered and triangulated from different sources, in order to validate them.

4.6.3 Quantitative Data Analysis

Descriptive Data Analysis

Descriptive statistics were used to analyse the characteristics of both the survey and sample populations and these included the socio-economic characteristics of the respondents and the distribution of households, in terms of existing participation in group activities and other incentive variables. Descriptive statistics, such as frequency distribution, percentage, mean, standard deviation, standard error of mean and maximum-minimum, were used to summarise and present the analysed data. Such analysis results were also used to interpret the empirical results of the quantitative outcomes.

Model-Based Data Analysis

The level of participation of an individual household in the governance and management of common property resources is hypothesised to be positively correlated with the incentives offered to them. The quantitative survey data were analysed in two stages, in order to gain an understanding of the conditions under which a household participates in the governance of common property resources. Firstly, a factor analysis was used to identify latent dimensions (participation factors) underlying the different variables that measured users' participation in the governance of common property resources. Secondly, an ordered probit model was used to analyse the relationship between different incentives and the level of participation of user group members in the governance and management of common property resources. This model was also used to analyse changes in the existing level of participation, as a result of the incentives. The empirical results of the analysis were then discussed, in order to test the research argument/hypothesis. Similarly, as an alternative (and for comparative purposes) a partial least square approach was also undertaken, in order to link the participation indicators to the various incentives.

4.6.4 Qualitative Data Analysis

Dey (1993) has defined qualitative data analysis as an iterative process of describing, classifying and inter-connecting data. It involves an iterative movement between the original data and the conceptualisation, abstraction and interpretation derived from the data (Spencer *et al.*, 2003). Qualitative data analysis helps the researcher to generate concepts and linkages between this process, based on the data and to check the data, in order to discover whether his/her concepts and interpretations are reflected in the process (Schutt, 2006).

The first step in the qualitative data analysis was for the researcher to thoroughly read his field notes and to make comments in the margins and identify themes. This analysis was focused not only on *what* the respondents said, but also the way in which it was said and hence, the researcher went through the original field notes (in Nepali). The use of qualitative data analysis software, such as NUDIST or N-VIVO, can be very useful for managing qualitative data, but this was not the best tool for this study. The original field notes were in Nepali and this software has no facility for this language. The researcher, therefore, found the manual method of qualitative data analysis suitable for this study.

4.7 Field Visit Schedule for Data Collection

A total of 16 weeks were allocated for the field research. A tentative schedule for the proposed field visit is presented in Annex 3. The first five weeks were spent in field visit planning, preparation and communication. This included secondary information collection which included the following: formal and informal discussions with government officials, forestry-sector donor agencies/projects and relevant I/NGOs; the final selection of the study area; communication with the CFUGs involved, the DFOs, project organisations and I/NGOs; the recruitment/training of local researchers for data collection; and the pre-testing and finalisation of the questionnaire (including Nepali translation) and printing of the questionnaire. A detailed schedule of the household survey and other qualitative data collections, including individual and group interviews, were prepared after communication with the CFUGs involved.

Another seven weeks were spent in the field conducting the household survey, the key informants interviews and focus group discussions, in addition to observing group meetings and other group activities. Both the household survey and other qualitative

information collections were generally conducted by the researcher himself with help from an assistant. Following the field work, approximately three weeks were spent checking the questionnaires and coding the answers, in addition to sharing the initial findings with local experts from government offices, forestry-sector donor agencies/projects and relevant I/NGOs, in order to gather their feedback, comments and suggestions. In addition, any remaining secondary information was collected at this time.

4.8 Data Storage and Security

At the completion of the research, the data was placed in the safe-keeping of the researcher and it will only be accessible to the researcher and his supervisors. The data will be retained for at least five years and then destroyed. The data stored on the computer will be cleaned up. If needed for a new research project, the data will not be re-used without returning to the participants to seek their informed consent, including the seeking of approval from the Massey University Human Ethics Committee (MUHEC).

4.9 Ethics

This research followed the MUHEC's Code of Ethical Conduct for Research. This research project is considered to be a low risk project, since the nature of the harm is no more than is normally encountered in daily life and the research follows the MUHEC low risk notification guidelines. The following major ethical processes have been followed during this research, the detailed documents of which are presented in Annex 4.

The participants in this research were provided with an information sheet which outlined the researcher's introduction; project description and invitation to participate; participant identification and selection criteria; project procedures, including time involved; data management; and a statement of participant's rights to decline to participate. The information sheet also includes the contact details of the researcher and supervisors for the participants to make contact, if they had any questions about the project. Finally, it includes compulsory statements, such as a committee approval statement.

Participants were invited to participate in the research and their informed consent was obtained. The informed consent form includes the title of the research and the time period for retaining the signed form (a minimum of five years from the research completion date). It also includes the participant's statement agreeing to participate in the research and the participant's full name, signature and date.

Privacy and confidentiality considerations: A signed confidentiality agreement was obtained from the research assistants, who collected and processed any data which contained personal information. This confidentiality agreement covers an agreement to not disclose, retain or copy any information.

4.10 Summary

This chapter has given an overview of the methodological approaches and procedures adopted for this research. In this study, a mixed methodological approach (both quantitative and qualitative approaches of data analysis) was employed to analyse the incentives to becoming involved in community forest management in Nepal. Quantitative data was required to construct and analyse statistical models, in order to estimate the conditions under which a household participates in the governance of common property resources. The primary survey provided necessary quantitative information for estimating people's level of participation, in addition to the role incentives play, in order to change the users' behaviour. This study considers a user group member household as being the lowest unit of sampling and hence, the unit of data sources for the analysis.

A two-stage model was constructed, in order to estimate the conditions under which a household participates in the governance of common property resources. Firstly, an index of participation was constructed as a proxy for participation, using a factor analysis of indicators of participation, in order to identify different choice situations. Secondly, an ordered probit model was used to identify the relationship between different incentives and the level of participation. As an alternative (and for comparative purposes) a partial least squares approach was also undertaken to link the participation indicators to the various incentives.

Considering that quantitative analysis may not solely be sufficient for a successful analysis of the problem, qualitative data were also collected from the field, in order to

gain an understanding of the institutional settings and overall governance and management practices and performances of the selected user groups. Focus group discussions, key informants interviews and informal discussions/observations were carried out, to collect the qualitative information. The qualitative data was analysed by the use of a manual method, which focussed not only on *wha*t the respondents said: but also the *way* in which they said it.

This study was undertaken in two districts located the Middle Hills of Nepal. Given the limited availability of resources (both finances and time) this research can be considered as being a large pilot project that covers only two districts of Nepal, as the study area. The results from the descriptive statistics are reported in Chapter 5 and the quantitative data analysis results are presented in Chapter 6.

CHAPTER FIVE

USERS' PARTICIPATION IN THE GOVERNANCE AND MANAGEMENT OF COMMUNITY FOREST

5.1 Introduction

In this chapter, the findings of the descriptive statistics are reported. Firstly, a description of the characteristics of the surveyed households is provided. This description comprises socio-economic characteristics, such as the age and gender of the household head; its wealth-ranking category; caste group composition; family size; major source of income; length of membership in the CFUG; and affiliations with other organisations. Subsequently, the users' existing level of participation in the governance structure of the group and in various group activities, such as meetings, decision-making processes and activity implementation, are reported. The users' existing level of access to the forest resources and the major benefits derived by them (from being a member of the group) is also described in the following section. The incentives provided by the community forestry regimes in Nepal are also discussed. The users' attitudes towards changes in the incentives for their participation decision in the governance and management of common property resources are reported. Finally, this chapter concludes with a description of factors that constrain the users' participation in the governance of a community forestry programme in Nepal — and how these constraints could be alleviated.

5.2 Characteristics of Community Forest Users

A description of the respondents' household characteristics is presented in this section. A household unit has been taken as the unit of data collection and data analysis. A brief description of these characteristics can be helpful to understand the socio-economic status of the forest users under study: and to explain how these

characteristics influence users' perception on incentives, in order to improve their participation in the governance of their forest resources.

Table 5.1 shows a summary of the respondent households' profiles. The ages of the respondents range from 25 to 76 years, with a mean age of 53 years and a standard deviation of 8.73. Similarly, the family size of the respondents' households range between two and 36 members, with an average family size of seven members. Data analysis further shows that a higher proportion of households (57%) have a family size of 6 -10 members, whilst another 34% of households have a family size of less than five members.

Table 5.1: Respondents' household profiles

Demographic Features	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Respondent's Age	200	25	76	53.22	8.73	76.20
Family size	200	2	36	6.90	3.41	11.59
- Adult Male	200	1	8	2.99	1.10	1.22
- Adult Female	200	1	16	2.74	1.54	2.38
- Children (<16 yrs)	200	0	13	1.17	1.42	2.01
Length of Membership	200	1	15	11.40	3.45	11.91

Source: Field Survey, 2008/9

Similarly, the length of membership of a household in their CFUG ranges from one year to 15 years, with an average of 11.4 years (Table 5.1). This statistic shows that respondent households have significant experience in the governance and management of their community forest resources. The socio-economic characteristics of the respondent households are presented in detail in the following sections.

5.2.1 The Wealth Ranking

The data analysis results (Figure 5.1) show that, from the total number of respondents, the medium wealth-class respondents constitute the highest proportion (44%) amongst the three wealth-classes, followed by the poor (29%) and the rich (27%). This composition also corresponds to the average wealth-class profile of the two districts (CBS, 2006).

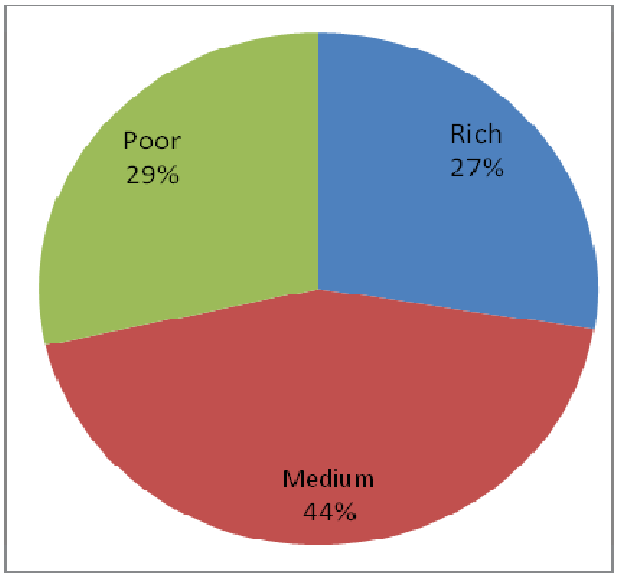


Figure 5.1: Wealth-being ranking of the respondent households

Wealth is referred to as a symbol of power or social status in the local community. The respondents were categorised into three wealth classes according to their wealth-being ranking. The 'wealth-being ranking' is a participatory tool employed to rank the wealth class of users. The government of Nepal has made the wealth-being ranking a mandatory process while preparing/revising the CFUG constitution through the recent revision of the Community Forestry Guidelines, in order to institutionalise the experiences of CFUGs in relation to poverty reduction (Pokharel *et al.*, 2009). The CFUGs identify the rich, medium and poor user households through this well-being ranking, which is based on locally developed criteria.

A typical example of a wealth-being ranking criteria used in community forestry is given in Table 5.2. The participants of the well-being ranking exercise set the criteria for the categorisation of user households. The DFO (and/or project) staff (as facilitators) leads the discussions in an interactive way, thus ensuring the process is documented. These criteria mainly tend to be comprised of land holding and other property; the availability of food grains; family size and education level of family members; employment and remittance income; and social status and recognition.

Table 5.2: A typical example of wealth-being ranking used in community forestry

Wealth Class	Criteria
Poor	• General labour is the only source of income or unable to work (disabled) • No private land of their own or land holding size is less than 0.2 hectare and produce from their own farm is only sufficient for a maximum of three months • Poor housing and sanitation, small huts made with wood/mud and thatched roof • Raise few unproductive livestock mainly for manure • Most of the family members are illiterate • Poor access to forest resources and other services at local/district level
Medium	• Land holding size between 0.2 to 0.7 ha, and produce from their own farm is sufficient for up to 9 months • Houses made with mud brick/stone and galvanised zinc plate/thatched roof • Some employed in junior level low income earning jobs or working as labour outside the country • Own few livestock • Few of the family members are literate with some having above secondary level education • Moderate access to forest resources and other services at local/district level
Rich	• Land holding size more than 0.7 hectare and produce from their own farm is sufficient for all year round and sell surplus • Good housing and sanitation, stone/mud bricks and cemented houses with slate, zinc plate or concrete roof • Agriculture and/or established business are the major income sources • Most of the family members are educated • Permanent jobholders with higher positions/ higher earnings • High access to forest resources and other services at local/district level

Source: Adapted from Department of Forest (2002)

5.2.2 Caste Groups Composition

The respondents were categorised into three broad caste groups according to the caste groups recognised by the Government of Nepal: the high caste, *Janajatis* and the lower caste, or *Dalits*. The caste system is deeply rooted in Hindu society and it is based on four primary divisions: Brahmins (considered as priest and religious leaders); Chhetries/Thakuries (warriors); Baisya (artisans such as Gurung, Newars, Magars, Thakali, Limbus, etc.); and Sudra (occupational castes, such as Kami, Damai, Sarki, Lohar, etc., who are traditionally considered as untouchables). In this study, Brahmins, Chhetries and Thakuris are categorised as high castes and Sudras as lower castes. The *Janajatis* include the forty-four ethnic groups identified as *Janajatis* in the 2001

population census. The lower castes, or *Dalits,* include sixteen groups representing low Hindu castes, who suffer most through discrimination based on this hierarchical Hindu caste system (CBS, 2002).

Data analysis shows that the majority of respondent households are from the higher caste (50%), followed by Janajatis (35%) and lower caste, or Dalits (15%) (Figure 5.2). This composition of caste groups also corresponds to the overall caste group composition of the two studied districts (CBS, 2006).

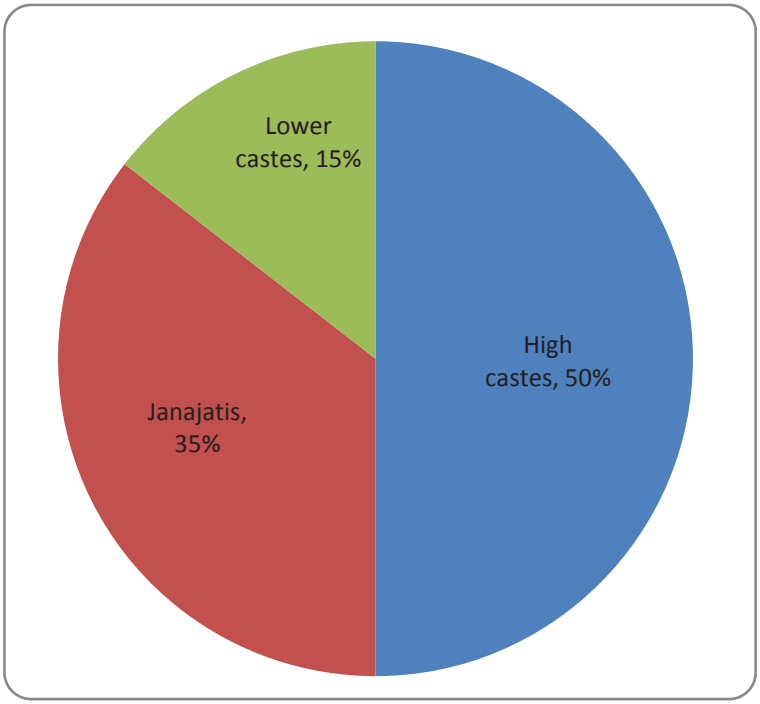


Figure 5.2: Caste groups of the surveyed households

In terms of wealth by caste groups, the descriptive analysis results shows that 73% of rich households are from the high caste, whereas only 2% of rich households belong to the lower caste (Table 5.3). Similarly, 59% of the total medium wealth-class households belong to the high castes and 40% of them belong to the *Janajatis.* Only 1% belongs to the lower castes. Interestingly, only 14% of poor households belong to the high castes, whereas 47% and 39% belong to the lower castes and *Janajatis*, respectively.

Table 5.3: Distribution of caste groups by wealth category

Wealth Category	High caste	Janajatis	Lower caste	Total
Rich	40 (73)	14 (25)	1 (2)	55 (100)
Medium	52 (59)	35 (40)	1 (1)	88 (100)
Poor	8 (14)	22 (39)	27 (47)	57 (100)

Note: Figures in parenthesis are the percentage of households within wealth categories

5.2.3 Gender of the Household Head

The majority of the surveyed households (91%) are headed by male members. This is mainly due to the Hindu religion-based patriarchal socio-cultural structure prevailing in both the study districts, in which women are subordinate to men, both at household and community level. The female-headed households are mainly the households with single woman or where male members have gone away from home, usually in search of a job/work.

5.2.4 Representation on a CFUG Executive Committee

Representation on a CFUG executive committee (EC) is another clear indicator to show the users' level of participation in the governance of community forests. Studies reveal that EC members participate more in the governance of their groups than non-EC members and hence, very often executive committee members have more access to decision-making within the group and also benefits from the group (Adhikari *et al.*, 2007; Agrawal & Gupta, 2005; Bajracharya, 2008; Kanel & Niraula, 2004).

The descriptive statistics (Table 5.4) show that the majority of the surveyed households (78%) report their non-representation on an executive committee. From the total households represented on committees, a higher proportion of the households (47%) are from the medium wealth class, followed by the rich (33%) and the poor (20%). In terms of caste groups, the majority of EC members are from the high castes (51%), whereas only a few (13%) are from the lower castes. The presence of natural resource management related projects in the districts have had a positive impact, which is shown by the increased representation of the poor and lower caste households on the executive committees. However, the participation of these households within CF governance is still passive.

Table 5.4: Representation on the CFUG executive committees by wealth and caste groups

Representation in EC	Wealth Category			Caste Group		
	Rich	Medium	Poor	High caste	Janajatis	Lower caste
Yes	15 (33)	21 (47)	9 (20)	23 (51)	16 (36)	6 (13)
No	40 (26)	67 (43)	48 (31)	77 (50)	55 (35)	23 (15)
Total	55 (27.5)	88 (44)	57 (28.5)	100 (50)	71 (35.5)	29 (14.5)

Note: Figures in parenthesis are the percentage of households within wealth and caste group categories.

In order to assess the actual level of participation of the poor and lower caste households in decision-making, it is important to analyse their positions on the CFUG executive committees. Table 5.5 presents the positions held on these committees by the wealth category, which clearly depicts the status of poor households in the CFUGs, in terms of their influence or position at decision-making level. Amongst the 45 EC member households, a higher proportion of medium class households (47%), followed by the rich (33%) and the poor (20%) are represented on the EC. However, rich members (67%) dominate the key positions for decision-making (chairperson, vice-chairperson, secretary and treasurer). The majority of medium class households (75%) hold advisory positions. Similarly, medium class households also dominate the ex-committee membership. It is interesting to note that none of the poor households are represented in key positions or advisory positions — their representation is limited to only the members of the committees.

Table 5.5: Positions held on the CFUG executive committees by wealth category

Wealth-Class	Key positions	Advisor	Member	Ex-member	Total
Rich	10 (67)	1 (25)	3 (15)	1 (17)	15 (33)
Medium	5 (33)	3 (75)	9 (45)	4 (66)	21 (47)
Poor	0	0	8 (40)	1 (17)	9 (20)
Total	15 (100)	4 (100)	20 (100)	6 (100)	45 (100)

Note: Figures in parenthesis are the percentage of total EC members.

Table 5.6 depicts the status of the lower caste households in the CFUGs, in terms of their influence or position at decision-making levels. The data shows that the majority of EC members (51%) belong to the high castes, whilst only a few (13%) were from the lower caste (Table 5.6). Again high caste members dominate the key positions for decision-making and advisory positions on the committees and again, none of the lower caste members hold any key or advisory positions on the committees.

Table 5.6: Positions held on the CFUG executive committees by caste groups

Caste Group	Key Positions	Advisory	Member	Ex-member	Total
High caste	9 (60)	3 (75)	7 (35)	4 (66)	23 (51)
Janajatis	6 (40)	1 (25)	8 (40)	1 (17)	16 (36)
Lower caste	-	-	5 (25)	1 (17)	6 (13)
Total	15 (100)	4 (100)	20 (100)	6 (100)	45 (100)

Note: Figures in parenthesis are the percentage of total EC members.

5.2.5 Representation within other Organisations

Representation within organisations other than CFUGs is considered to be another indicator to assess a user's access exposure to other similar organisations in the community (e.g., registered NGOs, community/user groups, task-specific informal groups, political parties and local governing bodies). Such affiliations also reflect a household's prior knowledge and experience of collective actions. The descriptive statistics show that the majority of households (68%) are not affiliated with any other organisation (Figure 5.3). This implies that these households do not have prior knowledge and experience of collective actions. This also means that these households do not have commitment, from a participation point of view, to any organisation other than their CFUGs. Only approximately 16% report their representation on other local community user groups, such as an irrigation user group, school management committees and a drinking water user group. Similarly, 14% of households report their affiliation to task-specific informal groups, such as road construction/maintenance and school maintenance, whereas only 1% of households report their involvement in registered NGOs, political parties and local governing bodies (Figure 5.3).

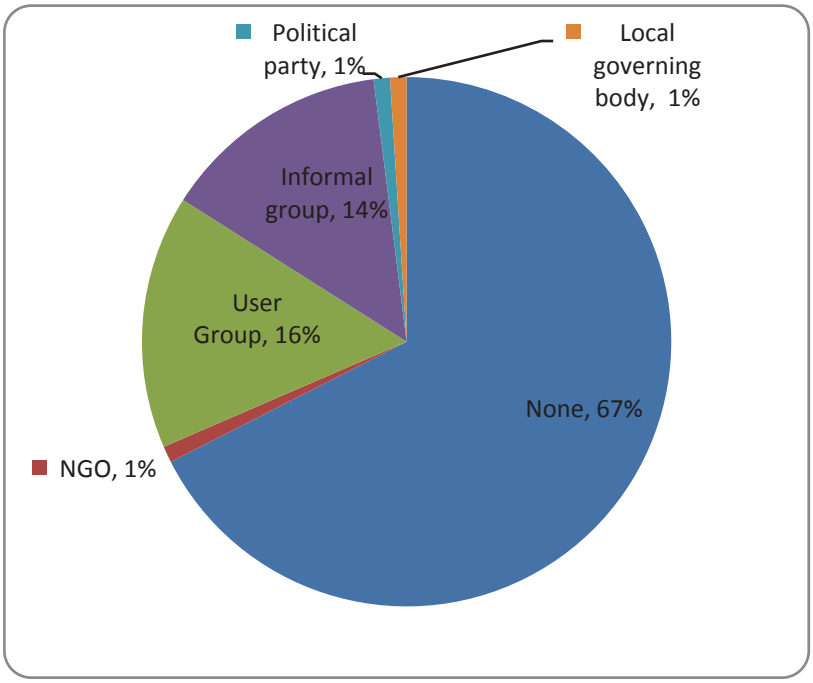


Figure 5.3: Percentage of households affiliated with other organisations by organisation type

In terms of wealth category, 53% amongst the rich report their affiliation to other organisations, whereas 93% amongst the poor are not affiliated with any other organisation (Table 5.7). Similarly, the proportion of households affiliated to other organisations is higher amongst the high castes (42%), followed by Janajatis (27%) and the lower castes (14%).

Table 5.7: Affiliation with other organisations by wealth and caste group

Affiliation	Wealth Category			Caste Group			
	Rich	Medium	Poor	High caste	Janajatis	Lower caste	Total
Yes	29 (53)	32 (36)	4 (7)	42 (42)	19 (27)	4 (14)	65 (32)
No	26 (47)	56 (64)	53 (93)	58 (58)	52 (73)	25 (86)	135 (68)
Total	55 (100)	88 (100)	57 (100)	100 (100)	71 (100)	29 (100)	200 (100)

Note: Figures in parenthesis are the percentage of households within wealth and caste group categories.

In terms of positions held in other affiliated organisations, the majority of the represented households (60%) are members of a committee. Only 29% are represented in key decision-making positions, whereas 2% hold advisory positions and 9% are ex-committee members.

5.2.6 Income Sources

The major income sources of the households are summarised in Table 5.8. Agriculture is reported as the main occupation and hence the main source of income by 87% of households. This shows that 87% of households depend on agriculture for their livelihoods, which are largely dependent on forest resources. This dependence reflects the importance of forests in their livelihoods. Similarly, government service and pensions are reported to be the second major source of income for 52% of households, followed by physical labour (17%) and remittances (16%). Forest dependent traditional occupations, such as *Daure* (selling firewood to earn a living) and blacksmiths (running a charcoal-based business) are the main source of income for only one household and a secondary source of income for five households. Interestingly, only one household reports agriculture as the second main source of income.

Table 5.8: Major income sources of the surveyed households

Sources of Income	Major Source	Secondary Source
Agriculture	173 (87)	2 (1)
Government service/ pension	6 (3)	104 (52)
Business	16 (8)	18 (9)
Remittances	2 (1)	32 (16)
General labour	4 (2)	34 (17)
Traditional occupations	2 (1)	10 (5)

Note: Figures in the parenthesis are percentage of households

5.3 Users' Participation in Community Forest Governance

The users' participation in CFUG governance can be observed in four main stages: *user group meetings or user group assemblies*; *decision-making*; *activity implementation*; and *utilisation of resources or benefits*. The respondents were asked to rate their level of participation at each stage of participation. Their responses are rated on a five-point Likert scale from 1 to 5, with 1 representing a very low level of participation and 5 being a very high level of participation. The five levels of participation are defined as follows:

a) *Very low (or nominal) participation*: S/he does not attend any group meeting/activity. If attending, s/he does not stay throughout the meeting/activity. Being just a

member of the group, s/he has access to the resources and benefits, but the actual level of access may depend on the level of participation.

b) *Low (or passive) participation*: S/he attends a few group activities or meetings after being instructed to do so by the decision-makers and listens to decision-making but does not speak. S/he may (or may not) stay throughout the activity/meeting.

c) *Average (or activity-specific) participation*: S/he attends and stays throughout many of the activity-specific group activities or meetings because s/he is consulted and/or contributes resources, such as labour or cash.

d) *High (or active) participation*: S/he attends most of the group activities or meetings and expresses an opinion/dissatisfaction and offers alternatives, whether or not they are asked for or heard.

e) *Very high (or interactive) participation*: S/he attends most of the group activities or meetings and has a voice to influence the group's decisions. S/he takes part in strengthening the governance of the group and managing the resources.

5.3.1 Overall level of Participation

The respondents were asked to rate their overall level of participation in CF governance and management. The descriptive statistics show that approximately half the respondents rate their overall level of participation as low and very low (Figure 5.4). Only a few households rate their overall participation as very high (3%) and high (21%).

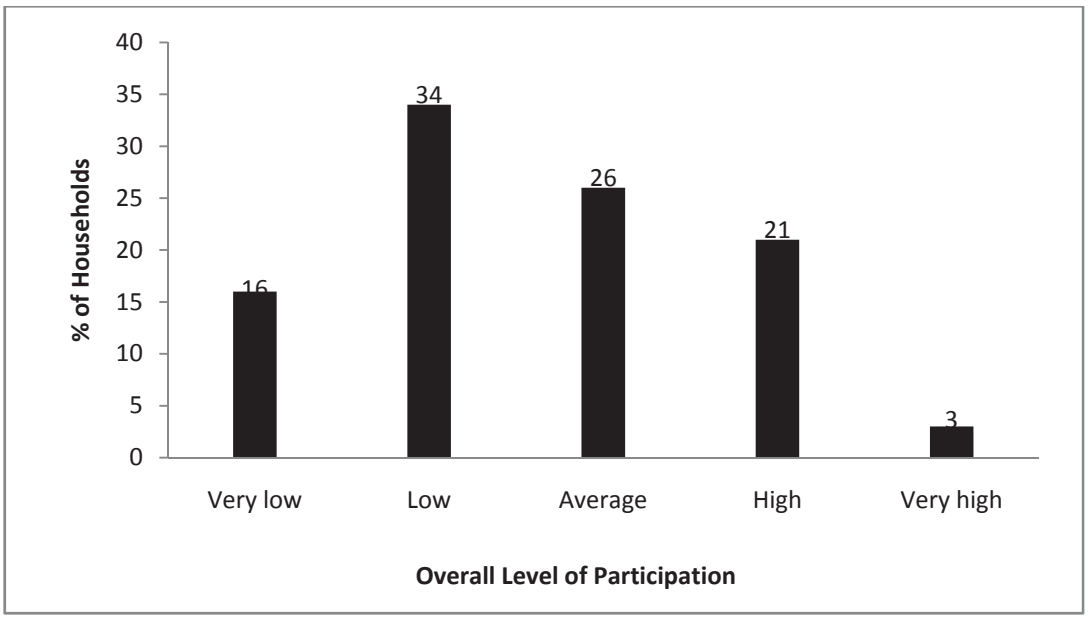


Figure 5.4: Users' rating on their overall level of participation in CF governance

The users' responses have also been analysed in terms of wealth category and caste groups (Table 5.9). Just over one-quarter of households, amongst the rich and medium class, rate their level of overall participation as high or very high. The majority of households amongst the poor (66%) report their overall participation level as low or very low. Interestingly, none of the poor households report very high levels of participation.

Table 5.9: Users' rating of overall level of participation by wealth category

Wealth Category	Very low	Low	Average	High	Very high	Total
Rich	5 (9)	15 (27)	20 (36)	12 (22)	3 (6)	55 (100)
Medium	6 (7)	30 (34)	26 (30)	23 (26)	3 (3)	88 (100)
Poor	21 (37)	22 (39)	7 (12)	7 (12)	0	57 (100)

Note: Figures in parenthesis are the percentage of households in each wealth category.

In terms of caste groups, the majority of households amongst the Janajatis (57%) and lower castes (73%) state their participation as being low or very low, with none of the lower caste households participating at a very high level (Table 5.10). The overall participation of higher caste households is comparatively better than the other two caste groups, but it is still not encouraging.

Table 5.10: Users' rating of overall level of participation by caste group

Caste Group	Very low	Low	Average	High	Very high	Total
High caste	6 (6)	32 (32)	33 (33)	24 (24)	5 (5)	100 (100)
Janajatis	14 (20)	26 (37)	17 (24)	13 (18)	1 (1)	71 (100)
Lower caste	12 (42)	9 (31)	3 (10)	5 (17)	0	29 (100)

Note: Figures in parenthesis are the percentage of households in each caste group.

The data has also been analysed to check if there is any effect of membership length on the level of participation (Table 5.11). The results show that the majority of households (68%) have been members of their CFUGs for more than 10 years. Overall participation of new members (a member for 1-5 years) is better amongst the three length categories, followed by older members (a member for more than 10 years).

Table 5.11: Users' rating of overall level of participation by membership length

Membership Length	Very low	Low	Average	High	Very high	Total
1-5 years	1 (6)	4 (22)	6 (33)	6 (33)	1 (6)	18 (100)
6-10 years	15 (33)	17 (37)	10 (22)	4 (8)	0	46 (100)
> 10 years	16 (12)	46 (34)	37 (27)	32 (23)	5 (4)	136 (100)
Total	32 (16)	67 (33.5)	53 (27.5)	42 (21)	6 (2)	200 (100)

Note: Figures in parenthesis are the percentage of households in each length group.

The rating of overall participation, by representation on the CFUG executive committees reveals that EC members, irrespective of their positions, participate at a higher level than non-EC members (Table 5.12).

Table 5.12: Users' rating of their overall participation by representation on EC

Representation in EC	Very low	low	average	high	Very high	Total
Yes	0	0	13 (29)	27 (60)	5 (11)	45 (100)
No	32 (21)	67 (43)	40 (26)	15 (10)	1 (1)	155 (100)
Total	32 (16)	67 (33.5)	53 (26.5)	42 (21)	6 (3)	200 (100)

Note: Figures in parenthesis are the percentage of households in each category.

5.3.2 Participation in User Group Assemblies

There are two tiers of organisational structures within CFUGs: *user group assemblies* and *the executive committee*. A user group assembly comprises all members of the user group and it has the mandate to make any decisions related to forest management, including framing rules on forest use and setting penalties for rule violators; preparing a schedule for silvicultural operations; and managing group funds. The user group assembly is the main meeting forum, where all members are expected to attend and (in some CFUGs) they are compelled to participate. In general, CFUGs schedule one user assembly per year, but some groups also schedule two assemblies a year. Provisions for user group meetings (as and when necessary) are also made in some CFUGs. Such provisions for user group assemblies are provided for in each CFUG's constitution/ operational plan. However, passive groups may not meet even once a year. Participation at such meetings is crucial for users, since most group decisions are made or endorsed through these user group assemblies.

The data shows that only 30% of the CFUGs have held two assemblies in one year, whilst the majority of CFUGs (70%) hold only one assembly each year. In terms of participation, 25 households do not participate in user group meetings. From the participating households, the household heads (who were mostly males) participated from 89% of the households. Female members participated from only 10% of the households.

In terms of the level of participation, a higher proportion of households (43%) report a very low level of participation (Table 5.13). Only approximately 6% of households participate at a very high level.

Table 5.13: Users' rating of their participation in user group meetings

Very low	Low	Average	High	Very high
85 (42.5)	32 (16)	41 (20.5)	31 (15.5)	11 (5.5)

Note: Figures in parenthesis are the percentage of total households.

Users' rating of their participation in the user group meeting or assemblies, by wealth category and caste groups, is presented in Table 5.14. Although there is low variation amongst rich households in their level of participation, the majority of households amongst the poor (74%) and medium class (52%) participate at a low level of participation. Not surprisingly, none of the poor households report a very high level of participation. In terms of caste groups, the majority of households amongst the lower caste (73%) and Janajatis (55%) express a low level of participation, whereas participation of the high castes range from very low to very high levels (Table 5.14). Again, none of the lower caste households participate at a very high level.

Table 5.14: Users' rating of their participation in group meetings by wealth and caste group

Level of participation	Wealth			Caste Group			Total
	Rich	Medium	Poor	High caste	Janajatis	Lower caste	
Very Low	12 (22)	31 (35)	42 (74)	25 (25)	39 (55)	21 (73)	85 (42.5)
Low	11 (20)	15 (17)	6 (10.5)	21 (21)	9 (13)	2 (7)	32 (16)
Average	11 (20)	24 (27)	6 (10.5)	26 (26)	12 (17)	3 (10)	41 (20.5)
High	13 (24)	15 (17)	3 (5)	20 (20)	8 (11)	3 (10)	31 (15.5)
Very high	8 (14)	3 (3)	0	8 (8)	3 (4)	0	11 (5.5)
Total	55 (100)	88 (100)	57 (100)	100 (100)	71 (100)	29 (100)	200 (100)

Note: Figures in parenthesis are the percentage of households in each category.

The data has also been analysed to see how participation of EC members differs with that of non-EC members and this has produced an interesting result (Table 5.15). The majority of EC members (69%) rate their participation in user group meetings as high and very high, whereas the majority of non-EC members (73%) rate their participation as very low and low. This implies that, in general, EC members have a higher level of participation than non-EC members.

Table 5.15: Users' rating of their participation in group meetings by representation in EC

Level of participation	EC Representation		Total
	EC members	Non-EC members	
Very Low	2 (4)	83 (54)	85 (42.5)
Low	3 (7)	29 (19)	32 (16)
Average	9 (20)	32 (21)	41 (20.5)
High	21 (47)	10 (6)	31 (15.5)
Very high	10 (22)	1 (1)	11 (5.5)
Total	45 (100)	155 (100)	200 (100)

Note: Figures in parenthesis are the percentage of households in each category.

This is an interesting result, which shows that even the user group meetings are dominated by EC members, in terms of their participation and influence on such meetings. The EC members, who reported very low and low levels of participation, were mostly the poor and lower caste members.

5.3.3 Participation in Decision-Making

In this study, participation at executive committee meetings is referred to as participation in decision-making. Although the user group assembly is the apex body of a CFUG that makes/endorses all decisions regarding resource governance and management (including setting operational rules and defining the rights and obligations of its members), there has been an increasing practice of decision-making at executive committee meetings. The executive committees have no particular rights regarding decision-making: however, they implement the decisions reached at the user assemblies, as defined in the CFUGs constitutions and CF operational plans, thus exercising their rights, as authorised by the user groups. In practice, executive committees make decisions, which they then put forward to the user group assemblies for endorsement. Hence, the executive committee meetings become the main practical forum for decision-making. Generally, the executive committee meets once a month,

but this timing also depends on the activeness of each CFUG and its executive committee.

The data points out that the majority of households (55%) do not participate in decision-making (Table 5.16). From the total of 155 non-EC member households, only 29% participate in decision-making. Amongst the 45 EC member households, 93% participate in decision-making processes. Three EC members, who did not participate in decision-making, were from the poor and lower castes. They were nominated as EC members from the poor and lower caste category, as a step towards making their CFUG more inclusive, in terms of wealth and caste groups. They complain that they were neither consulted on making decisions, nor were their voices ever heard. Even their presence is merely acknowledged at EC meetings, except for signing the meeting attendance register.

Table 5.16: Participation of users in decision-making by representation in EC

Participation in decision making	EC Representation		Total
	EC members	Non-EC members	
Yes	42 (93)	45 (29)	90 (45)
No	3 (7)	110 (71)	110 (55)
Total	45 (100)	155 (100)	200 (100)

Again, the majority of the rich and higher caste households dominate the participation and they have a great influence on decision-making forums (Table 5.17). The majority of the households amongst the poor and lower castes do not participate in decision-making.

Table 5.17: Participation of users in decision-making by wealth and caste group

Participation	Wealth Category			Caste Groups		
	Rich	Medium	Poor	High caste	Janajatis	Lower caste
Yes	35 (64)	42 (48)	13 (29)	57 (57)	25 (35)	8 (27)
No	20 (36)	46 (52)	44 (71)	43 (43)	46 (65)	21 (73)
Total	55 (100)	88 (100)	57 (100)	100 (100)	71 (100)	29 (100)

Note: Figures in parenthesis are the percentage of total households within each category.

The respondents' rating of their level of participation in decision-making is presented in Table 5.18. From the 90 households participating in decision-making, only 11% and 19% report very high and high levels of participation, respectively.

Table 5.18: Users' rating of their level of participation in decision-making

Very low	Low	Average	High	Very High	Total
2 (2)	29 (32)	32 (36)	17 (19)	10 (11)	90 (100)

Note: Figures in parenthesis are the percentage of participating households.

Users' rating of their participation in decision-making, by wealth category and caste groups, is presented in Table 5.19. It is interesting to note that none of the rich and Janajati households reports their participation in decision-making as very low, whilst none of the poor and lower caste households reports their participation as high or very high. The majority of the poor and lower caste households participate at a low level of decision-making. The participation of other wealth and caste groups, however, was more skewed towards an average level of participation (Table 5.19). These findings that poor and lower caste users are involved in a low level of participation in decision-making also coincides with findings in the literature, which reveal that low participation excludes lower socio-economic profile groups from decision-making processes and ultimately from benefits (e.g., Agrawal & Gupta, 2005; Maskey *et al.*, 2006).

Table 5.19: Users' rating of their participation in decision-making by wealth and caste groups

Level of	Wealth Category			Caste Groups			Total
Participation	Rich	Medium	Poor	High caste	Janajatis	Lower caste	
Very low	0	1 (2)	1 (8)	1 (2)	0	1 (13)	2 (2)
Low	11 (31)	11 (26)	7 (54)	19 (33)	8 (32)	2 (25)	29 (32)
Average	10 (29)	17 (41)	5 (38)	18 (32)	9 (36)	5 (62)	32 (36)
High	6 (17)	11 (26)	0	13 (23)	4 (16)	0	17 (19)
Very high	8 (23)	2 (5)	0	6 (10)	4 (16)	0	10 (11)
Total	35 (100)	42 (100)	13 (100)	57 (100)	25 (100)	8 (100)	90 (100)

Note: Figures in parenthesis are the percentage of participating households in each category.

Amongst the 90 households participating in decision-making, the majority of EC members (60%) rate their participation as high and very high, whilst the majority of non-EC members (56%) rate their participation as low and very low (Table 5.20). None of the EC members rate their participation in decision-making as very low and none of the non-EC members rate their participation as very high.

Table 5.20: Users' rating of their participation in decision-making by representation on executive committee

Participation in decision making	Representation in EC		Total
	Yes	No	
Very low	0	2 (4)	2 (2)
Low	4 (10)	25 (52)	29 (32)
Average	13 (31)	19 (40)	32 (36)
High	15 (36)	2 (4)	17 (19)
Very high	10 (24)	0	10 (11)
Total	42 (100)	48 (100)	90 (100)

Note: Figures in parenthesis are the percentage of participating households in each category.

This again supports the findings of the literature that members, who have better access to decision-making levels, through representation on executive committees, have a greater likelihood of participation (e.g., Agrawal & Gupta, 2005; Maskey *et al.*, 2006).

Reasons for not Participating in Decision-Making Process

Since a high number of households are not participating in decision-making, it is important to examine the reasons *why* they are not participating. The participants report eight major reasons for not participating in decision-making (Table 5.21). A lack of access to decision-making levels/EC meetings is the main reason for non-participation of 84% of non-participating 110 households. They do not have access, because they are not represented on their executive committee. It was observed that the general members have an illusive perception that only executive committee members are entitled to participate in decision-making. By building up such a misleading perception amongst the general members, the rich and elite caste members, who hold most of the positions on the executive committees, can then dominate the decision-making processes and *their* perspectives become the rules for the whole group. This rich/elite caste group can then naturally influence the decision-making outcomes, in order to maximise their own benefits from the community forestry. In most cases, the poor and lower caste users are seldom represented at decision-making levels; even if they are represented and present at meetings, they tend to be hesitant to speak up in front of the rich and elite caste people.

Table 5.21: Users' responses/reasons for not participating in decision-making

Reasons	No. of Households
Lack of access to EC meetings	92 (84)
Lack of relevant skills, knowledge or experience	22 (20)
High opportunity costs of time (poverty)	22 (20)
No timely information about the meetings	6 (5)
Nobody listens to me, why should I participate?	3 (3)
No time to participate (busy)	3 (3)
No interest	3 (3)

Source: Field Survey 2008/09

Note: Figures in parenthesis are a percentage amongst the non-participating households

Similarly, a lack of confidence, due to a lack of basic knowledge or experience in community forest governance, is another major reason reported by 20% of non-participating households. They are hesitant to participate in such meetings, since they lack confidence to participate and know very little about CF governance and consequently they are not able to contribute anything to the decision-making..

Poverty was another significant reason reported by the respondents that affected their participation in CF management, in addition to decision-making. Approximately 20% of households report that poverty, or high opportunity costs relating to time, as being another major reason for not being able to participate. Since CFUGs lack the mechanism for offering financial compensation to the poor participants for participating in group activities, the poor cannot afford to participate.

Another reason reported by a few respondents (5%) is a lack of timely information about the meetings. A few respondents report their inability to participate in decision-making processes, due to time constraints relating to their full-time involvement in job/services, businesses, household chores or other priorities. This reason was reported by three households, particularly those with smaller family sizes. Three respondents were not interested to participate in governance and management of their community forests, since they did not require any forest products from the community forests.

It is interesting to note that three poor and lower caste respondents did not participate in the decision-making process, despite being members of the executive committee.

They complain that the executive committee never consults them or hears their voices whilst making decisions. Very often, even their presence is not acknowledged by the rich and higher caste members. A poor, lower caste executive committee member explains:

> "I am a poor and lower caste user. I was not interested to participate in meetings. An officer from a project requested me to become a member of the *Samiti* (executive committee) to make the *Samiti* inclusive in terms of wealth and caste, so I said Yes. But I didn't know anything about the role and responsibilities of a *Samiti* member. …….. when I was absent from a meeting, the next time our chairman asked me why I was absent. But when I was present in the next meeting, nobody acknowledged my presence and nobody consulted me for anything. …….. Being a lower caste, I could not sit together with the higher castes and speak in front of them. I lack strategy on how to deal with the rich and elite caste members. So why should I attend the meetings when nobody acknowledges my presence or when I cannot speak or put my views?" (FGD/CFUG-17)

5.3.4 Participation in Activity Implementation

Major Activities Implemented by CFUGs

A Community Forest Operational Plan (CFOP) is the primary long-term (usually for five years) planning document that guides a CFUG in community forest management and it includes information about forest management activities. CFUGs prepare a detailed annual activity implementation plan based on the CF Operation Plan, in order to implement activities on a day-to-day basis. The major activities implemented by the CFUGs can be broadly divided into two categories or objectives: *management of forest resources*; and *improvement in the livelihoods of its members* (Table 5.22). Silvicultural-tending operations (which mainly include thinning, pruning, singling, weeding and cleaning activities) and forest protection, and plantation activities are the major activities implemented by the CFUGs under the management of forest resources. Activities related to livelihood improvement are comprised of local community infrastructure improvement; pro-poor income generation activities; training and empowerment programmes for capacity building of forest governance; and activities to promote good governance practices within the groups.

Table 5.22: Activities implemented by CFUGs

Activities Implemented	No (%) of CFUGs
Activities related to forest resource management	
Silvicultural operations	40 (100)
Forest protection	20 (50)
Plantation (including multipurpose tree species)	3 (8)
Activities related to livelihood improvement	
Community infrastructure improvement	9 (23)
Pro-poor income generating activities	3 (8)
Users' capacity development programmes (e.g. training, workshops, empowerment programmes)	3 (8)
Promoting good governance practices	2 (5)

All CFUGs carry out silvicultural tending operations once a year. The users call it a forest management activity and it is the main activity undertaken to extract and distribute forest products to the members. In general, one member from each user household participates in carrying out of these forest management activities. Two different distribution practices of forest products (extracted during the forest management activity) were observed in the field. In most of the CFUGs, the collected forest products were distributed equally amongst the participants. However, in a few CFUGs, instead of distributing the products equally, each individual participant retained the forest products they had personally extracted during this forest management operation. However, in both the cases, if a user household did not participate in a forest management operation, it would not get any forest products.

The protection of the forest from illegal harvesting (from within and outside the group) is still a major concern of approximately half the CFUGs (Table 5.22). As a result, these CFUGs had established some form of forest protection mechanisms. Three different forest protection mechanisms, viz*., protection through hiring a watcher*; *a rotational protection system*; and *an informal protection system,* were observed in the field. Seven CFUGs hire watchers from within the membership and they are paid either from the group fund, or from collecting a household levy in cash from each user household. Other eight CFUGs practice a rotational forest protection system (including the l*auro*

palo[38] system), under which every user household patrols the forests on a rotational basis. The remainder of the CFUGs reports an informal system of forest protection, under which no watcher is employed or rotational arrangement undertaken, but every household is responsible to protect the forest on an informal basis.

Another resource management related activity, as reported by three CFUGs, is planting and especially the planting of multi-purpose tree species (Table 5.22). The main objective of such plantations are to produce multiple forest products (e.g., fuel wood, fodder, timber and medicine) in order to fulfill the users' demand for various forest products. This also helps to generate group funds through the production and sale of these high value forest products, particularly non-timber forest products, whilst at the same time it improves the condition of the forest, due to increased vegetation cover on degraded or marginal forest land.

Under livelihoods improvement related activities, local community infrastructure improvement is implemented by nine CFUGs (Table 5.22). This is mainly comprised of construction and maintenance of local drinking water systems, roads, school buildings, small irrigation systems, temples and community halls. However, the respondents report that mostly the rich and elite caste members benefit from such investments. For example, poor household in the rural Hills region of Nepal cannot afford to send their children to school and hence, they may not see investment in schools as being beneficial for their household. Similarly, investment in irrigation systems is more beneficial to those who have land holdings. This finding is also consistent with other studies which have revealed that CFUGs invest a greater part of their funds into community infrastructure development activities but due, to their domination in the decision making positions, it is generally the rich and elite members who benefit from such facilities (Kanel *et al.*, 2003; Kanel & Niraula, 2004; Pokharel, 2010).

Three CFUGs support their poor and marginalised members, through the implementation of pro-poor income generation activities, such as livestock raising, butchery, a small tea shop and vegetable farming. Under this programme, the poor members are provided with a small-scale grant (or low-interest credit support) as seed money to start their business. These poor households were found to be very excited about their new businesses, but they were not sure about future success or the

[38] *Lauro* (the stick) is handed over to the following day's watcher, from the previous day's watcher, under the rotational protection system arrangement.

sustainability of businesses in the long-term. Three CFUGs conduct training and empowerment programmes for capacity building of the users on various aspects of CF governance and management, through mobilising the group's funds. Such capacity building programmes are reported to be more effective than those programmes organised by the DFOs. The DFO training programmes are more target-orientated, since they are more focused on achieving the goals in their annual plans, rather than reflecting on the users' actual needs.

In addition, two CFUGs had initiated the implementation of activities for promoting good governance practices within the group, through technical support from donor-funded projects (Table 5.22). Such activities had impacted on the promotion of transparency in decision-making, in addition to highlighting financial matters, thus ensuring that the leadership is accountable to the general members. It is clear that there is a need to also replicate such activities in other CFUGs.

Participation in Activity Implementation

It can be understood from the discussion above that users' participation in activity implementation is at a higher level than their participation in user group meetings or decision-making processes. The great majority of surveyed households (97%) report their participation in group activities implementation. The users' participation levels were observed to be higher within forest management activities, rather than in livelihood improvement related activities.The major reason for such a high participation in forest management operations (as reported from the field) is because participation in forest management is one of the conditions for access to benefits from the CFUGs, particularly in relation to forest products.

Labour contributions, cash contributions, monitoring and technical and administrative support are the major forms of participation identified in activity implementation. From the participating households, 92% participated by contributing their labour to forest management, whilst 18% of households contributed their labour to forest protection. Approximately 17% of households pay a household levy and other annual fees for forest protection, including a salary to the forest watchers. Generally, EC members are involved in monitoring of implementation, but a few are also involved in providing technical and administrative support during the implementation of activities. However, only a few households report contributing their labour for planting (2%) and

infrastructure improvement (4). These activities are generally carried out by hired labour, who are paid through the group's funds.

From the total participating households, almost all households (irrespective of their wealth and caste groups) report their participation in forest management activities. Failure to participate in these activities would exclude them from collecting forest products. The CFUGs have made a provision for compulsory participation in forest management activities, in order to gain access to forest products and other benefits. As mentioned previously, silvicultural-tending operations are the major activities for extracting forest products from community forests. Six households did not participate in activity implementation. From these six non-participating households, three rich and higher caste households state that they do not participate, because they do not need any forest products from the community forests, since they have sufficient forest products on their own farmland. Two poor and lower caste households complain of not receiving information regarding activity implementation. One medium-wealth class household is not interested in participating.

Only 39% of surveyed households collectively report their participation in livelihood improvement related activities. A lower number of poor and lower caste households participate in such activities. The major reason reported for this low number of poor and lower caste participation is due to their low access to (and less benefits from) these activities. Usually, the rich and elite caste members greatly benefit from these activities, due to their domination in making decisions about these activities.

Altogether, almost all households participate in activity implementation, but their level of participation varies significantly. Therefore, the respondents were asked to rate their level of participation in activity implementation. The data analysis shows that a higher proportion of respondents (43%) rate their participation as average (Table 5.23). Only two households express a very high level of participation, whereas four households report a very low level of participation.

Table 5.23: Users' rating of their participation in activity implementation

Very high	High	Average	Low	Very Low	No participation
2 (1)	55 (27.5)	86 (43)	47 (23.5)	4 (2)	6 (3)

Note: Figures in parenthesis are the percentage of households.

The data has been further analysed, in order to examine the level of participation by wealth category and caste groups (Table 5.24). Amongst the wealth categories, a higher proportion amongst rich (50%) and medium (47%) households rate their participation as average, whilst a higher proportion of poor households (45%) rate their participation as low. Similarly, a higher proportion of the users rate their participation as average, throughout all caste groups. Although poor households have lower opportunity costs of labour, they value cash and they have a higher opportunity cost of time, which has resulted in their low level of participation.

Table 5.24: Users' rating of their participation in activity implementation by wealth category and caste group

(% of households)

Category	Very low	Low	Average	High	Very high	Total
Rich	4	15	50	29	2	100
Medium	1	16	47	36	0	100
Poor	2	45	36	16	2	100
High Caste	3	18	47	31	1	100
Janajatis	0	29	42	29	0	100
Lower Caste	4	36	39	18	4	100
Total	4 (2)	47 (24)	86 (43)	55 (28)	2 (1)	194 (100)*

* Six households did not participate in activity implementation

5.3.5 Participation in Benefits

The benefits from CFUGs are one of the strong incentives for users to participate in the governance of their common property resources. In order to understand the users' participation in obtaining benefits, the respondents were asked if they had received any benefits from being a member of a CFUG. Almost 94% of respondents report deriving benefits from their CFUG, due to being a member of the group. Only six households, who did not participate in any of the group activities, report not deriving any benefits from the group. The respondents report eight major benefits that they derive from being a member of a CFUG (Table 5.25). Amongst the benefitting 188 households, forest products were the major benefits derived by the users — and all households report that they derive forest products from their community forests.

Table 5.25: Households deriving major benefits from being a member of a CFUG

Forest Products	Environmental Benefits	Capacity Building	Social Recognition	Financial Support	Ease of Access	Infrastructure Development	Social Harmony
188 (100)	70 (37)	41 (22)	28 (15)	22 (12)	19 (10)	15 (8)	10 (5)

Note: Figures in parenthesis are the percentage of households within the benefitting households

Environmental benefits, such as soil conservation, improved quality and quantity of water, carbon sequestration and aesthetic/recreational benefits are reported as being the major benefits, by 37% of households. However, the majority of the respondents are not aware of the economic value of these environmental benefits. Similarly, 22% of respondents have received support in building their capacity of CF governance and management, through training and empowerment programmes. This indicates that users still lack knowledge and skills relating to CF governance and management. The provision of basic training, relating to CF process and governance, for all users is still a far cry within the community forestry programme in Nepal, due to its limited budget, manpower and bureaucratic inefficiency.

Social recognition, particularly of the poor and lower caste members, by nominating them as members of an executive committee acknowledges their contribution to resource governance. This recognition is reported as another important benefit by 15% of respondents, particularly the poor and lower caste households. In the context of prevailing discriminatory socio-cultural norms, which are associated with the unequal power relationships amongst users from different economic classes and different castes, representation of poor and lower caste members in decision-making positions could be seen as a substantial achievement towards social transformation. Otherwise, the poor and lower caste people are generally excluded from decision-making processes. They are considered to be 'untouchables', who are illiterate and (as a result) they feel powerless and they lack confidence. This situation has also affected their social dignity and prestige. Few respondents (5%) believe that such a social transformation would be an example of social harmony and cohesion within a group promoted by the CFUGs, thus bringing all caste and wealth class users together under the same institutional set-up.

Financial support from CFUGs, as a grant or loan for income generating activities, is another important benefit for 12% of households. Such support also includes a subsidy on forest product prices or exemption on fees, e.g., membership fees or the annual household levy. However, all CFUGs are not in the position to provide financial support to poor users, due to a lack of sufficient funds. The majority of CFUGs do not have any regular source of income to increase their funds. The major sources of CFUGs' income include the sale of forest products, membership fees, household levy, fines and financial support from government/donor agencies.

Nevertheless, the lack of financial transparency and distributional inefficiencies are often reported as a problem in many CFUGs. Decisions regarding CFUG fund mobilisation are made by the powerful (rich, elite caste) committee members—frequently in their own favour. Many users did not even know how much money is in their group fund: and where this money is invested, or who has borrowed the money. These (rich, elite caste) committee members are reluctant to lend money to the poor. They presume that the poor would not use the money for the same purpose for which the loan has been taken. They believe that the poor would rather spend the money buying household commodities, rather than investing it in income generating activities, thus making it difficult to repay the loan. However, on the other hand, the poor complain that only the powerful members have access to the group's funds. The poor respondents explain:

> We do not know how much money there is in our group fund. The *Samiti* (executive committee) people might know about it. We cannot ask them about it, because we are not in *Samiti*. The Secretary mentioned about the funds in the last user group assembly, but we did not understand it because we are illiterate. … we do not need to understand it either. After all, we are not getting money from the group, not even as loan. They do not want to lend money to the poor because they think the poor cannot pay back the loan, but that is not true. Only rich *Samiti* members or their relatives may use the money, because they are the ones who make all the decisions about it. We cannot bargain with them because they are rich and powerful. It could have negative impacts on our livelihoods. (FGD/CFUG-7)

Similarly, the ease of access to forest resources, due to the hand-over of forests to local communities as community forests for their protection, management and utilisation is reported as another major benefit, but only by 10% of the benefitting households. It is interesting to assess why only such a low proportion report ease of access as a benefit. Although the forest policy and legislation, relevant to community forestry programmes in Nepal, have assigned property rights over community forest resources to local users, all users are not enjoying equal access to forest resources. Restrictive operational rules, for example, opening a forest for forest product collection only once a year, or restriction the extraction of certain forest products (e.g., timber, fodder, grazing), all limit users' access to the forests. In general, the rich members, who do not depend on community forests for their forest product needs (but who dominate the decision-making positions and processes) exert a strong influence over the formulation of such rules. The poor members, on the other hand, depend on community forests for their basic forest product needs, but they seldom have access to

the formulation of such rules. The operational rules, thus, often ignore the needs of poor users and therefore they face restrictive access to forest resources, despite the legal property rights assigned to them over the forest resources:

> In the past, before the hand-over of the forests as community forests, we had to get permission from *Pradhanpancha*[39] or DFO to extract forest products from this forest. Today, we need to get permission from the Samiti. But the reality is that the same people who used to control forests in the past are still controlling the forests by holding key positions in the Samiti. So, there is not much difference to the poor and disadvantaged groups in terms of resource access in the past and present. We are facing only restricted rights over the forest resources. (FGD/CFUG-30).

In addition, only a small number of households (8%) benefit from local community infrastructure improvements implemented through CFUG funds' investment. As mentioned previously, only nine CFUGs have invested in local community infrastructure improvement activities. However, the actual benefits of such projects are reported as being much less. Again, the rich and elite caste members are largely benefiting from such infrastructure improvement projects.

Access to Forests and Availability of Forest Products

As mentioned above, forest products are the major and the most important benefits derived by users from the community forests. Firewood, timber, fodder/grass and grazing are the major forest products collected. However, the users' access to forests and the availability of forest products varies from group to group. Some community forests are open to all forest products (with some regulations) whilst others have restrictions on the collection of certain forest products. In general, users have access to community forests at least once a year to collect firewood, but 45% of the CFUGs studied open their forests twice a year for firewood collection. Twenty-two CFUGs (55%) open their forests only once a year for the harvesting of timber. Another 18 CFUGs either did not have large trees to produce timber, or timber harvesting was restricted, due to the degraded condition of the forests. Similarly, fodder collection is restricted in four CFUGs, whilst grazing is restricted in eight CFUGs.

In terms of forest product collection, 92% of households collect firewood, 55% collect timber, 45% collect fodder/grass and 16% graze their cattle inside the forests (Table 5.26). It is important to note that firewood is the only source of energy for cooking and

[39] Head of the Village Panchayat during the Panchayat system in Nepal

heating in most rural households in the study area. However, the firewood demands of only 13% of households is fulfilled from the community forests, whereas 24% of households collect even less than 25% of their annual firewood demand. The poor users, who in general do not have any (or sometimes very small) landholdings, do not have sufficient trees on their own land to supplement the deficit and hence, they generally experience an acute firewood crisis for at least three to four months every year. A few of them collect the logs carried down by rivers during flooding, or they travel long distances to government forests, in order to collect firewood. The rich households have installed biogas plants as an alternative source of energy, but the installation of biogas plants is still out of reach for many poor households, due to the high costs of installation.

Table 5.26: Users' level of forest product demand fulfilled

	Annual demand fulfilled					Total
Forest products	>25%	26-50%	51-75%	76 -<100%	100%	
Firewood	44 (24)	62 (34)	30 (16)	24 (13)	23 (13)	183 (92)
Timber	10 (9)	31 (28)	5 (5)	9 (8)	55 (50)	110 (55)
Fodder/ Grass	19 (21)	52 (58)	10 (11)	3 (3)	5 (6)	89 (45)
Grazing	-	18 (58)	9 (29)	2 (6)	2 (6)	31 (16)

Note: Figures in parenthesis are the percentage of households

Another important forest product for rural livelihoods in Nepal is timber. Timber is mainly used for construction and maintenance of houses and animal sheds and for making agricultural tools. Community forests are reported as being the only source for timber in the study area. However, due to the young age or degraded conditions of the forests, only 55% of households from 22 CFUGs are able to harvest timber from their community forests, but only half of this 55% report their annual timber demand being fulfilled. Approximately, 37% of the timber harvesting households received less than half of their annual demand (Table 5.26). Frequently, rich members, who dominate decision-making positions, set a high price for timber, which also limits poor people's access to timber.

Fodder and grass are other important forest product used to sustain agriculture-based rural livelihoods in the Hills of Nepal. Fodder and grass are the main feed for livestock in rural villages. These products are collected by 45% of the total households in 18 CFUGs, but 79% of households collect less than half of their annual demand (Table 5.26). The distant locations of forests from settlements, a lack of desired fodder

species and restrictions on collection are the reasons for the low supply of fodder and grass from community forests. Farmers collect the deficit fodder and grass from their own farm, or from marginal public lands. Many of them also use agricultural residues, as staple livestock feed, to fulfill their fodder shortage. Grazing their cattle in the forests is another strategy to overcome the fodder shortage for 16% of households. Again,the remote location of the forests, which often have steep slopes and restrictions on grazing, are seen as constraints for grazing livestock in the forests.

Users' Rating of Benefits

It can be understood from the above discussion that different users have benefitted differently from the CFUGs. Even the same benefits are perceived differently by the users from different wealth and caste groups. In order to assess the users' perception of the level of benefits they receive from their CFUGs, the respondents were asked to rate the overall benefits they receive from being a member of a group. Table 5.27 presents the result of the users' ratings, where the majority of households (53.5%) rate the benefits they derive as low. Only one household reports receiving a very high level of benefits.

Table 5.27: Users rating of benefits they derive as a member of a CFUG

Very Low	Low	Average	High	Very High	Total
29 (14.5)	107 (53.5)	39 (19.5)	24 (12)	1 (0.5)	200 (100)

Note: Figures in the parenthesis are the percentage of total surveyed households

The users' ratings of benefits, in terms of wealth class, caste groups and representation on the executive committee, are presented in Table 5.28. It is important to note that the majority of households, across all wealth and caste groups, rate the benefits they receive as low or very low. A relatively higher percentage of rich and high castes report they receive a slightly higher level of benefits than the other wealth and caste groups.

In terms of EC representation, a higher proportion of EC members (38%) rate the benefits they derived as high, than the proportion of non-EC members. None of the EC members report their level of benefits as very low or very high. On the contrary, the majority of non-EC members (60%) report the level of benefits they receive as low, whilst only 6% report the level as high or very high. These findings match the findings of other similar studies, where executive committee members can influence decision-

making outcomes, to maximise their own benefits from community forestry (Adhikari *et al.*, 2007; Bajracharya, 2008; Kanel, 2004; Kanel *et al.*, 2003).

Table 5.28: Users rating of benefits by wealth group, caste groups and representation on executive committee

Level of Benefits	Wealth Category			Caste Groups			Representation in EC	
	Rich	Medium	Poor	High Caste	Janajatis	Low Caste	Yes	No
Very Low	9 (16)	7 (8)	13 (23)	11 (11)	12 (17)	6 (21)	0	29 (19)
Low	21 (38)	50 (57)	36 (63)	48 (48)	43 (61)	16 (55)	12 (27)	95 (60)
Average	16 (29)	20 (23)	3 (5)	25 (25)	12 (17)	2 (7)	16 (36)	23 (15)
High	8 (15)	11 (12)	5 (9)	15 (15)	4 (6)	5 (17)	17 (38)	7 (5)
Very High	1 (2)	0	0	1 (1)	0	0	0	1 (1)
Total	55 (100)	88 (100)	57 (100)	100 (100)	71 (100)	29 (100)	45 (100)	155 (100)

Note: Figures in parenthesis are the percentage of households within each category

When the respondents were asked to rate the forest product benefits they derive from their community forests, almost half rate the benefits as average, whilst only a quarter rate it as high (Table 5.29). Twelve households said they never need or derive any forest products from their community forests, whilst only two households rate the forest product benefits they derive as very high.

Table 5.29: Users' rating of forest product benefits from community forests

None	Low	Average	High	Very High	Total
12 (6)	36 (18)	99 (49.5)	51 (25.5)	2 (1)	200 (100)

Note: Figures in parenthesis are the percentage of households

5.3.6 Dimensions of Participation and Level of Participation

The different levels of participation of households in the four stages of participation, namely, user group meeting or assemblies, decision-making, activity implementation and benefits are summarised in Table 5.30. On average, amongst the four participation stages, the respondents show a lower degree of participation in decision-making and a higher degree of participation in activity implementation. Participation at user group meetings is found to be higher than that relating to overall benefits.

The poor and lower caste users are involved in a low level of participation at user group meetings and decision-making: and they have a lower access to benefits. The rich and higher caste users are involved in high levels of participation and they have higher levels of access to benefits.

Table 5.30: Participation stages and level of participation

Participation Stages	None	Very low	Low	Average	High	Very high
Overall Participation	-	32	68	52	42	6
User Group Assembly	25	60	32	41	31	11
Decision-Making	110	2	29	32	17	10
Activity Implementation	6	4	47	86	55	2
Overall Benefit	6	23	107	39	24	1

Similarly, the EC members participate more at meetings and decision-making and they derive more benefits than the non-EC members. This indicates that representation on an executive committee results in better access to decision-making levels, which then results in a higher participation of EC members in resource governance.

5.4 Incentives Provided by Community Forest Management Regimes in Nepal

This section describes the incentives provided by community forest management regimes in Nepal to local user communities, in order to promote their participation in the governance and management of community forests. An incentive is a factor that motivates a user to participate more and it comes from different sources and takes many forms. Therefore, it is complex to understand the interactions of different incentives, which face individuals and communities, within the environment surrounding them (Thomson & Freudenberger, 1997). People make different choices when confronted by various incentives, which result in different levels of participation. Each member in a group faces a set of incentives and disincentives to participating in resource governance — and their decision about how to participate depends on how these users weigh up those incentives. Literature suggest that resource users typically face three types of incentives related to (1) *characteristics of the resources*; (2) *characteristics of the community or user group*; and (3) *characteristics of the rules* (Oakerson, 1986; Ostrom, 1990; Thomson & Freudenberger, 1997). The characteristics of the resources, community and rules are vital in determining

incentives for people's involvement in resource governance and management: and hence an understanding of these key characteristics is important, in order to identify and analyse incentives for efficient resource governance in common property resource management. This study uses these attributes to identify the incentives provided by community forestry regimes in Nepal.

5.4.1 Incentives Related to the Characteristics of the Resources

Using the attributes of Cernea and Bromley (1989), a community forest is regarded as an example of a common property resource. In common property resource management, competition for resources creates strong incentives for local users to be involved in protection and management. In the case of community forestry in Nepal, the over-exploitation of forest resources, due to uncontrolled access to forests and the subtractive nature of benefits, has resulted in forest degradation. When there was a high demand for forest products, but limited supply, the potential users competed for the limited resources. This competition for resources created strong incentives for the traditional users to protect and manage their forests as community forests.

Since a forest is an open-access resource, there is always a growing tendency to overexploit it. This over-dependency has exerted a heavy and unsustainable pressure on all forest resources. Since many people depend on forests for their basic livelihoods, it was not possible to close the forests for use, unless the people's dependence on the forest was reduced in exchange for offering them alternative/better opportunities. Therefore, a community forestry approach was chosen as the mechanism to modify the incentives related to resources, in an effort to change people's behaviour of over-exploiting the resources and to improve resource governance. The major features of the community forestry programme in Nepal are as follows: (1) *ensuring the users are the custodians* (2); *giving the user groups common property rights over the forests*; and (3) *replacing the open-access regime.* These custodianships and rights, in turn, have provided the users with a stronger incentive to protect and manage their forest resources.

One of the important characteristics of a natural resource is the feasibility of exclusion (Thomson & Freudenberger, 1997). Feasibility of exclusion means that, whether it is easy or difficult to control access to goods and services, the exclusion has an important impact on people's incentive to participate in the resource governance and management. When the feasibility of exclusion is high, the rights-holders or the users

feel that their tenure rights are secure and (as a result) they are generally more willing to participate. However, the feasibility of exclusion is low in the case of community forests because controlling access to forests, which are on the periphery of village land, is often very difficult. The users have to take the risk of losing their benefits from the community forest, due to a lack of a high feasibility of exclusion. The community forestry contracts give no assurance to forest users, in relation to tenure security. The government has only given user rights to the user groups over the community forests — but not tenurial rights — and hence the government can withdraw the allocated community forests at any time or nationalise the community forests again, as it did in 1957, due to the forests' potential to generate revenue. Thus, this tenurial insecurity has reduced the incentive to participate and invest in improvements to forest resources.

Another characteristics of resources, the nature of consumption of the goods and services from the community forests (whether subtractive or joint) also creates incentives and disincentives for users' participation in the resource governance (Thomson & Freudenberger, 1997). When consumption of goods or services by one person prevents another person from using the same goods or services, for example, timber and/or firewood, it is referred as *subtractive consumption*. However, if two or more people can benefit from the same goods or services at the same time (without compromising the amount available for others), for example, shade and shelter or improved air quality, then the nature of the consumption is called *joint consumption*. However, consumption of community forest goods and services can be subtractive as well as joint. Users are likely to feel a stronger incentive to participate in the governance and management of resources, if they gain tangible benefits. However, not all community forests have provided net tangible benefits for their users. In many cases, users' have restricted access to forests and there is insufficient availability of forest products. Such restricted access to forests and insufficient availability of forest products and other tangible benefits has reduced users' incentive to participate in CF governance and management.

The provision of public goods is another characteristic of common property resources and free-riding is a serious problem in the governance of common property resources. Community forests provide public goods and services, which have a low feasibility of exclusion and a joint nature of consumption, such as protection of biological diversity; medicines; watershed conservation; improved air and water quality; and aesthetic and recreational values. Therefore, it is important to analyse what are the implications of producing public goods, in terms of incentives for the users who invest their time and

money to protect and manage the forests. Since it is nearly impossible to exclude non-members from enjoying these public goods and services, these non-members enjoy the benefits without making any effort to participate in resource management — and this is a free-rider problem. People do not want to participate in resource management because they do not want others to free-ride on their efforts, which is also the case within community forestry in Nepal. The incentive is much weaker for the users, when the output from forest management is a public good, or when there is a free-rider problem. The solution to such a problem requires a high level of community institution and effective governance. The provision of payment for environmental services (PES) could be another example to solve such a problem.

PES is referred to as a mechanism to improve the provision of indirect environmental services, where providers of environmental services receive direct payments from the beneficiaries of these services, in return for adopting practices that ensure environmental conservation (Wunder, 2005). Wunder (2005) has identified four types of PES that currently stand out: (i) *carbon sequestration and storage;* (ii) *biodiversity protection;* (iii) *watershed protection*; and (iv) *landscape beauty*. In this regard, community forests in Nepal can provide all four types of environmental services. In addition, they can be taken as potential carbon sinks, to generate substantial income for the CFUGs, by selling carbon credit on international markets (Maharjan, 2004). It has been estimated that suitably targeted forestry projects can produce carbon offsets at a predicated market price of US$ 15-20/ton and regeneration of dry secondary forests could double carbon sequestration from 27.3 to 55.2 ton/ha in ten years, at a very modest cost (CIFOR, 2002, p. 2).

Forests are the main source of biodiversity in Nepal and they provide habitat for thousands of indigenous and rare species of fauna and flora, which are not well conserved at the present time. However, studies reveal that current active forest management practices, by CFUGs in community forestry, only recognise biodiversity conservation as a secondary issue and there is evidences that biodiversity has either been in decline, or it has been altered under the current practices of active community forest management, because the current selective approaches of forest management prefer tree species which produce quality timber and which have medicinal or spiritual values, over shrub species (Acharya, 2003). The question can be asked: *Why do CFUGs conserve those species which are of no use to them?* Only the offering of incentives or compensation mechanisms could motivate forest users to conserve

biodiversity in community forests — and one of these could be payment for environmental services: that is, biodiversity conservation services.

Similarly, there are evidences of improved watershed conditions under community forest management. Community forestry has been regarded as 'social fencing' that restricts uncontrolled open-grazing on shrub and pasture land (Fleming & Fleming, 2009). Moreover, the aesthetic and scenic beauty of well-protected forests helps to promote eco-tourism in the areas and earnings from tourism development can be spent on socio-economic development and livelihood support for local communities, which could then create strong incentives for users to participate in resource governance and management.

5.4.2 Incentives related to Characteristics of Community or User Groups

Similar to resources, the characteristics of a community or user group also creates different incentives that affect how the users participate in managing the resources. These characteristics provide incentives or disincentives for the users to participate in resource governance. Social cohesion and the users' willingness to strive for common goals is one key factor that determines a user group's ability to manage resources: and this includes the social structure of the group, such as family structure, gender relationships and caste systems that affect its cohesion and interests regarding CF governance (Thomson & Freudenberger, 1997).

Socio-cultural norms that prevail in the study area play an important role in shaping incentives for participation in CF governance. The study area is dominated by Hindu religion-based socio-cultural norms, such as untouchability and patriarchy, which are associated with the unequal power relationships amongst the users of different caste groups — and these factors have a significant influence on the users' participation within resource governance. Lower caste people suffer from caste-based discrimination, since they are considered as 'untouchables', which affects their social dignity and prestige. As a result, they lack confidence to attend CFUG meetings or they are hesitant to speak up in front of a large group of people. Even if they attend a meeting, they often sit at the back of the area, from where they neither hear nor participate in the decisions being made. The higher caste and rich users have an attitude that, whatever lower caste people say, it is not relevant or it is incorrect and hence the concerns of the lower caste users are not usually heard or represented whilst making decisions. Furthermore, the higher castes are comparatively better educated and they are

considered by the community to be better leaders, whereas ethnic and lower caste users are less educated and they are considered to be less competent for leadership. Hence, people from lower economic classes or lower castes are also not easily accepted as members on CFUG executive committees, or decision-making structures. Since most of the CFUGs surveyed are heterogeneous, in terms of the caste structure of their members, these socio-cultural norms, based on hierarchy of caste, have generated a strong disincentive amongst the users from the discriminated caste groups to not participate actively in CF governance.

Moreover, these economic stratification and power relationships are directly associated with caste structures in the study area, where rich and powerful people usually belong to a higher caste and the poor people usually most often belong to a lower caste and vice versa. Wealth is referred as a symbol of power or social status in the local community. Most of the CFUGs in Nepal are heterogeneous, in terms of the wealth of their members and wealthy members usually dominate most of the decision-making positions — and hence the decisions regarding CF governance. The concerns, interests or needs of poor members are not usually heard or represented whilst making these decisions. In many cases, the wealthy elite caste users are not concerned if the users from the lower economic classes do not participate, since they can then make decisions in their own favour. This has also generated a strong disincentive amongst the poor users not to participate actively in CF governance.

Furthermore, people's dependence on particular resources and their perception and attitudes towards those resources for their livelihood strategies also determine the incentive structures. People with a high dependence on the resources would have a strong incentive to participate in resource governance and management. This is directly linked to the economic well-being of users. Poor people usually depend more heavily on forest resources than the rich people, in order to fulfil their subsistence forest product needs. Hence, poor users may face different incentives than the rich users and they will have different participation choices from the well-off users.

The dominance of patriarchy is another discriminatory socio-cultural norm found within the study area that has affected users' ability and willingness to participate in resource governance. Such a practice constrains women's opportunities to participate in the governance of common property resources, through various social systems. Under a patriarchal structure, women hold inferior positions to men, who make the majority of the decisions, both in the household and community. Women have less access to

ownership of property and they are generally less educated than men. They are not supposed to leave home or attend group meetings and express their views freely. The poor and lower caste women are even more marginalised and powerless, compared to rich, higher caste women, because the poor and lower caste women face more discriminatory societal norms than others and they have virtually no opportunity to be represented in the decision-making processes.

In general women are only informed of decisions about forest management when their labour contribution is sought, but usually their interests and views are not represented, when decisions about resource access and use are made. Frequently, women can be found participating in activity implementation, particularly in forest management activities, such as protection, thinning, pruning, planting and collecting forest products (mainly firewood). Such gender division of labour and discriminatory practices, resulting in limited access to (and opportunities for) participating in decision-making processes, have reduced incentives for women to participate in CF governance. Men and women both need to be integrally involved in resource management and — if both men and women feel their concerns are reflected in resource governance agreements — both will have a stronger incentive to participate in the governance and management of common property resources.

However, in some CFUGs, which are supported by NGOs or forestry projects to strengthening their resource governance, the concepts of social inclusion and representation of the women and the poor and lower caste users in the decision making processes/ forums have recently been initiated and the initial impact of this project has been positive. Since representation in the decision-making processes/ forums, such as a position on an executive committee, is considered to be a symbol of social power or prestige in the local communities (Lachapelle *et al.*, 2004), such representation has resulted in an improved level of participation for women, the poor and lower caste users: and hence this situation has provided them with a stronger incentive to participate in the governance of their resources.

The influence of social stratification on community forestry has also affected the incentives for community participation in the governance and management of community forests. The CFUGs are characterised by two main hierarchies – highly influential users or elite members and less influential users: the poor and disadvantaged groups. The less influential users have low access to the forest officer and they receive scant support from this forest officer, whilst access to (and support

from) a forest officer for elite members is high (Figure 5.5). Such pragmatic alliances between forest officials and members of local elites, within the community forestry sector in Nepal, has resulted in higher level of rich, higher caste members participation in resource governance, than the poor, lower caste members, as also suggested by Agrawal and Gupta (2005).

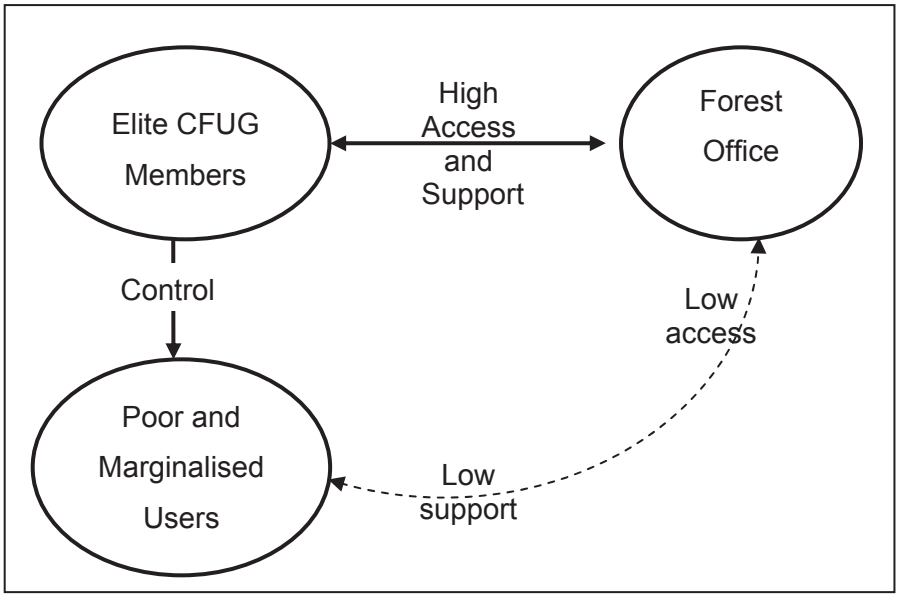


Figure 5.5: Social stratification in community forestry in Nepal

Such alliances have been a reality since the beginning of forest management in Nepal (Malla, 2001), where only elite members have direct access to state functionaries. Existing negative self-centred behaviour and rent-seeking behaviour are mainly responsible for the formation of such alliances (Timsina & Paudel, 2003a). Forestry staff members build alliances with local political leaders and elites, during the handing-over process of forests, in order that they can seek benefits by exploiting the forest later. The elites possess the political power needed to maintain profitable relationships with these forest officials and to exercise their power over the general users — as if they were the forest officer's representatives — and to allow users to extract resources at their behest (Timsina & Paudel, 2003a). Such stratification and alliances have, therefore, provided the less influential users with a strong disincentive to participate in the governance of community forests.

Furthermore, another characteristic of the community, i.e. family size, often plays an important role in determining a user's ability to participate in resource governance.

When the family size is very small, the users fail to participate in CF governance, due to a lack of adequate manpower. Six households express their inability to participate effectively in the governance and management of community forest, due to their small family size.

5.4.3 Incentives Related to the Characteristics of Rules

Rules are created and enforced after a community decides to become involved in collective action to improve resource governance and management. Creating and enforcing rules provides incentives for people to change their behaviour. People face incentives related to rules in daily life, in the form of rewards and punishments. However, the enforcement of rules is also important, in terms of creating incentives. Where rule enforcement is predictable, people comply with the rule over time, but where rule enforcement is weak or non-existent, it will probably not affect people's behaviour at all. For example, if the incentive structure is such that membership is solely sufficient to derive benefits from the user group, users may decide to no longer to participate in CF governance, or they may try to change the incentives, in order to provide more benefits for those who participate more: or they may decide that it really does not matter, because the amount of benefits provided by the user groups is insignificant, in terms of their annual demand. Therefore, it is important to understand which rules have an impact on users' participation behaviour. Different types of rules and their characteristics are described in section 3.4.5. The incentives that the rules create for resource governance and management are explained in this section.

Prior to the initiation of the community forestry regime, local users had access to the forests under customary property rights, through informal governance mechanisms that existed within the communities (Bajracharya, 2008; Tachibana & Adhikari, 2009). However, under customary property rights, more powerful members with higher social status controlled the governance process, set the rules and enforced them and thus had greater access to benefits from the forests (Banana & Gombya-Ssembajjwe, 2000). Therefore, customary property rights did not provide any incentive to the poor and less powerful members to participate in forest governance and management. Under the community forestry regime, customary property rights were replaced with legal property rights and operational rules, although the governance process is still controlled by the elite powerful members.

In acknowledgement of this situation, the government formulated new legislation to make it more inclusive, under which both the powerful and less powerful users within a community all obtained CFUG membership. The nature of the property rights assigned to the CFUGs by the new legislation in Nepal is close to that of proprietors. This legislation has given CFUGs the right to acquire, sell and distribute forest products independently, which in turn gives them a strong incentive to effectively manage the community forest (OED, 2001). Since legal property rights are the key factors that influence the governance of common property resource (Agrawal & Ostrom, 2001; Bromley, 2001; Meinzen-Dick & Knox, 2001; Meinzen-Dick *et al.*, 2004; Ostrom, 2004; Schlager & Ostrom, 1992; Varughese, 1999), this has also impacted on CFUG governance structures and processes and therefore, it has provided incentives for the users to participate in the governance and management of community forests. However, Agrawal and Ostrom (2001, p. 500) have argued that the community forestry regimes in Nepal have granted very limited rights for alienation to local groups and hence, the property rights of the forest users can easily be limited by the state, due to the absence of 'influence over constitutional level rights': and the government can change forest policy without notice or consultation with the stakeholders. This risk of uncertainty has provided a disincentive for users to enhance their effective participation in CF governance.

The incentive structure, in the case of community forestry in Nepal, is such that membership is solely sufficient to derive benefits from the user groups. A user holding membership would not be punished if s/he does not participate in CF governance. Although such a rule adds incentives that protect the rights of users, the characteristic of this rule reduces the incentive for users to participate. In consideration, however, some groups have made provision for compulsory participation in CF governance and management, particularly in forest management activities. An example of such a compulsory provision is that a user is not allowed to extract forest products if s/he does not participate in forest tending operations: and hence, participation is one of the conditions to have access to benefits, including forest products, from the group. Such a provision in the rule has provided users with a strong incentive to participate in forest management activities and this has resulted in achieving the participation of 97% of the sampled households in forest management activities. However, such a compulsory provision of participation in management activities has also been criticised by the users, as an example of forced participation: and thus it is considered to be a disincentive associated with this rule.

Similarly, supporting Institutional arrangements are vital to the creation and enforcement of rules. These include the organisational structure, legal rules and enforcement mechanisms and informal institutions, such as norms and behaviours (Richards, 1999). Institutional arrangements deal with the relative power and control that determine the incentives and policies and they should be able to enforce property rights and provide a regulatory basis for markets (Richards, 1999). Therefore, even carefully designed policies/rules and incentives are not sufficient for achieving users' participation — and therefore the institutional capacity for implementing, monitoring and enforcing these incentives and policies, at local and national level, is essential (Wells, 1998). Wells (1998) also argues that an institution fails, where that institution is poorly designed or lacks proper coordination and it only has top-down administrative arrangements (Richards, 1999). This latter situation is the case in Nepal. Institutional arrangements for community forestry in Nepal are caught up in a vicious cycle of bureaucratic inefficiency and moral hazard problems, such as corruption and rent-seeking behaviour (Adhikari, 2006).

Institutional arrangements are also an important aspect in exercising property rights, since these arrangements provide administration and enforcement support to users, for the effective exercise of their rights (Agrawal & Ostrom, 2001). Forest Department officials in Nepal are expected to provide CFUGs with support, to help solve their problems and resolve disputes regarding enforcement of their property rights. This is important, because the effectiveness of a property rights regime depends on the level and amount of support received by the group, to empower its members when they interpret and enforce their rights (Agrawal & Ostrom, 2001). However, the existing policy does not have any clear provision to resolve such property rights related disputes.

There is a critical imbalance in power relationships between forest users and government institutions, due to the monopoly of government forestry staff in the provision of services. The existing institutional arrangements fail to identify the real stakeholders within the forestry sector and to define their roles. The roles of Village Development Committees and District Development Committees, for example, need to be clearly defined, since these two local government bodies play an important role in CF governance, at local level. The roles of civil society and the private sector in CF governance are also poorly defined. Forest bureaucracy and political interests still control policy processes. Bureaucrats and government forestry staff, who benefit from the status quo, still maintain their power, authority and ability to control resources and

they have a strong incentive to continue influencing control over resources: and therefore they are unlikely to facilitate changes, in order to strengthen the communities' participation abilities, in relation to resource governance and management (Thomson & Freudenberger, 1997)

Moreover, the existing institutional arrangements for community forestry are not adequate for community development activities within the community. Again, elite members influence decisions about which development activities should be implemented, for example, decisions on drinking water supply versus road construction, school support versus fancy office furniture. Similarly, neither policy, nor legislation, is clear about the criteria for deciding priorities for such activities. Such a lack of clarity and guidelines also encourages corruption within the group, or at the level of forestry staff. As a result, the CFUGs have inequitable outcomes, which generally benefit the elite members of the groups. Frequently, this creates a conflict amongst the users in relation to funds mobilisation for development activities and hence, there is a disincentive to participate in CF governance. Moreover, conflict management mechanisms are also generally lacking within community forestry in Nepal. Considering the growing scope, magnitude and intensity of conflicts in natural resource management, the lack of an effective and timely management of such conflicts could have negative impacts on the livelihoods of the forest users — and at the same time it could lead to further degradation of forest resources (Uprety, 2006).

Nepal's community forestry programme will probably fail to achieve the active participation of all categories of its users in CF governance, due to a lack of appropriate incentive mechanisms. The most recent forest legislation (*Forest Act, 1993*) has given CFUGs some incentives to act as autonomous and corporate institutions: and to acquire and sell all forest products (MFSC, 1995). However, there is no clear policy as to whether or not community forests can operate on a commercial basis and thus earn a profit (Tarasofsky, 2000).

Moreover, there are no incentives for the users, or other private operators, to invest in community forest management, due to the uncertainty in gaining returns from the investment. For example, the government's decision to impose a 15 percent tax[40], on the sale of forest products outside the CFUG, has discouraged CFUGs from investing

[40]The government decided to levy 40 percent tax on the sale of surplus forest products outside the CFUG in 2000, which is reduced to 15 percent after protest from the users and the litigation in the Supreme Court.

in community forest management activities, due to the potential risk of losing the returns for their investment, if the government increases its share of the revenue from the sale of forest products. Such a type of value-added tax has an 'efficiency effect' (Figure 5.6). The tax stifles the incentive to fully explore markets outside the CFUG and (as a result) there will not be any incentive for the CFUG to make further investment within community forestry.

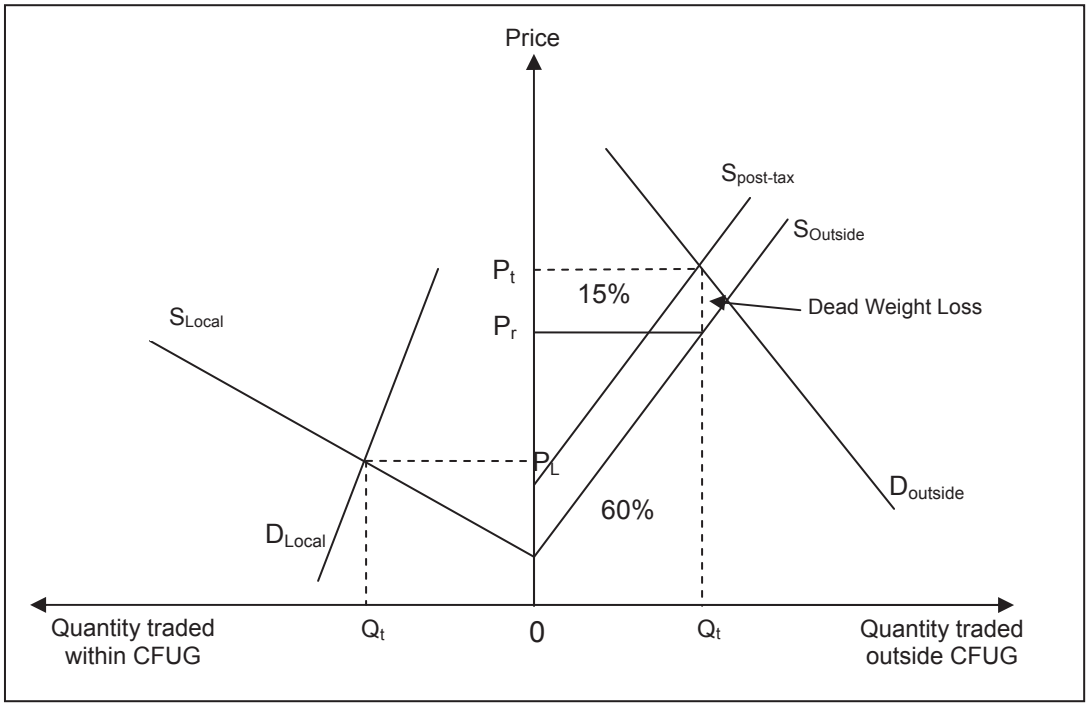


Figure 5.6: Revenue tax and its effects

Figure 5.6 shows the effects of tax (value based tax) on the supply and price of forest products within a community forest. Here, the forest product supply curve from a community forest is different, depending on whether the product is traded within or outside the CFUG. The demand is inelastic within the CFUG and hence the demand curve (D_{Local}) is steeper, whereas the demand for products (timber) outside the CFUG is larger than that within the CFUG. The tax also leads to a segmentation of the market and it creates two distinct markets for products (a market within the CFUG and a market outside the CFUG) with divergent prices (P_L and P_t) for the same quantity traded (Q_t). Since the price within the CFUG is much lower than the price outside the CFUG, local elites tend to control the local market (especially timber) supporting only the low value uses within the CFUG and with low amounts of revenue. There will also

be inefficiency due to dead weight loss. Such market segmentation also gives users incentives for engaging in arbitrage activities (buying at a cheaper price and selling outside, at a higher price). This arbitrage incentive leads to corruption and depresses the price in the market, in order to minimise tax. On the other hand, it might provide an incentive to under-report outside sales, to avoid paying tax to the government, thus encouraging corruption by the elite, who could bribe forest officials to under-report. However, principally, the tax probably keeps the local price (P_L) lower than the price (P_r) after tax, so that the local users (e.g., blacksmiths who depend upon forests for their livelihoods) will have their needs met.

It can be further argued that recent community forestry legislation may not result in efficient outcomes, because various members may have diverse interests and they may not agree, for example, on a particular rule regarding restriction on forest products extraction, including grazing. This could be critical in the elite-dominated, hierarchical society, where the elite group influence the majority of decisions towards their own interests. The elite members of a CFUG, who have sufficient private on-farm tree resources, for example, could influence the long-term objectives of forest management to reduce/ restrict forest product extraction, in the short-term. This type of arrangement, firstly, may not be efficient in terms of production from the point of view of sustained yield: and secondly, it severely affects poor users who do not have private on-farm tree resources.

A study conducted on resource extraction from community forestry (Edmonds, 2002) discovered a 14% reduction in extraction, after the handing-over of forest areas as community forests. The users most affected by this reduction are the poor and particular occupational/ethnic groups, whose livelihoods depend on forests (e.g., blacksmiths are restricted from burning coal and poor people from selling firewood, which is often their only means of livelihood). The existing policies and legislation have failed to address this problem: and there are no incentive mechanisms for sustaining such people's occupations and hence, the people's livelihoods, who were previously totally dependent on the forests (Adhikari, 2006).

Community forestry has proven to be successful in conserving biodiversity, in terms of species and gene conservation and ecosystem conservation (Kellert et al., 2000). Community forests are also generating other environmental values, such as carbon sequestration, aesthetic values and soil and watershed conservation. However, there is no incentive for the users to provide such biodiversity and environmental values within

community forests. Furthermore, markets are missing for environmental goods and services within community forestry in Nepal (Karky, 2004), so users cannot reap the benefits of these public goods type services. As a result of the public good which forests generate in-situ, there is also a free-riding problem. A sharing mechanism of benefits amongst the users for maintaining the elements of biodiversity is absent from community forestry. Incentive mechanisms for new opportunities, such as biodiversity prospecting contracts and recognition of intellectual property rights (Young, 1997), are also lacking in the existing community forestry policies in Nepal.

Moreover, there is also no market to internalise the externalities created by forest management activities. Forest management activities in the Middle Hills region create unidirectional externalities, such as floods, landslides and sedimentation problems that can have both positive and negative impacts on the farmers and user groups in the Terai region. In this region, users could suffer the negative impacts of these off-site effects, due to poor forest management in the Hills. It is difficult for low country people to persuade high country people to internalise these externalities, due to a lack of properly defined property rights. In contrast, the Middle Hills people cannot market this value of long-term efficient forest management to the lowland people, again due to a lack of well-defined property rights.

5.5 Measuring Users' Attitudes towards Incentives for Participation

The previous section has described the fact that users are motivated to participate or refrain from participating in CF governance and management for various incentives or disincentives. In order to measure the users' attitudes towards incentives for participation decisions, six incentives were used as predictors of participation, which cover several theoretical and practical dimensions, in regards to participation decisions of a household within the governance of common property resources. This information has been used to elicit possible responses relating to the users' perception on incentives and the effect on their level of participation, or their decision to refrain from participating. The respondents were asked to rate their responses on a five-point Likert scale from 1 to 5, with 1 representing very low importance and 5 representing a very high importance, for each particular incentive:

How important is each of the following to your participation in the community forest? Please respond in the following manner: 5 = very important; 4 = important; 3 = neutral; 2 = less important; 1 = not important at all

The descriptive statistics show that, from the six incentives, two incentives: access to forests and availability of forest products, and well-defined/enforced property rights assigned to users over forest resources are rated as the most important incentives by the majority of respondents (Table 5.31). Approximately 94% and 75% of respondents rate access to forests and availability of forest products and well-defined and enforced property rights as important, or very important, respectively. Just over half the respondents consider financial support as important, or very important, whereas almost half the respondents are neutral about payment for environmental services, to improve their participation decision. However, a higher number of respondents rate both social incentives as less important incentives.

Table 5.31: Users' attitudes towards their participation in decision-making

(% of households)

Incentives	Not important	Less important	Neutral	Important	Very Important
Material Incentives					
Access to forests and availability of forest products	0.5	2.5	4.5	19.0	73.5
Financial support to supplement household income	1.5	31.0	15.5	37.5	14.5
Social Incentives					
Social security, cohesion and support	0.5	51.0	29.5	19.0	0
Community infrastructure and development	1.0	43.0	26.5	27.0	2.5
Normative Incentives					
Well-defined/enforced property rights	0	8.0	16.5	40.0	35.5
Payment for environmental services	0	13.5	48.0	37.0	1.5

Table 5.32 presents the users' rating of incentives by wealth-class. Amongst the wealth categories, access to forests and availability of forest products is very important to the majority of the medium class (84%) and the poor (79%), rather than to the rich (51%). This is because a significant number of medium class and poor households report community forests as their only source for forest products supply. Hence, access to forests and the availability of forest products can be considered as a strong incentive to improve participation of users of all wealth categories.

Table 5.32: Users' rating of incentives by wealth-class (no. of households)

Level of Participation	Rich	Medium	Poor	Rich	Medium	Poor	Rich	Medium	Poor
	Access			Income			Social Security		
Not important	1 (2)			1 (2)	1 (1)	1 (2)			1 (2)
Less important	3 (5)	2 (2)		31 (56)	30 (34)	1 (2)	24 (44)	41 (47)	37 (65)
Neutral	7 (13)	2 (2)		17 (31)	14 (16)		14 (25)	30 (34)	15 (26)
Important	16 (29)	10 (11)	12 (21)	6 (11)	38 (43)	31 (54)	17 (31)	17 (19)	4 (7)
Very important	28 (51)	75 (84)	45 (79)		5 (6)	24 (42)			
Total	55 (100)	88 (100)	57 (100)	55 (100)	88 (100)	57 (100)	55 (100)	88 (100)	57 (100)
	Infrastructure			Property Rights			Payment		
Not important			2 (4)						
Less important	21 (38)	30 (34)	34 (61)			16 (28)	6 (11)	8 (9)	13 (23)
Neutral	12 (22)	27 (31)	14 (25)	3 (5)	10 (110	20 (35)	24 (44)	39 (44)	33 (58)
Important	20 (36)	28 (32)	7 (11)	25 (45)	40 (45)	15 (26)	23 (42)	40 (45)	11 (19)
Very important	2 (4)	3 (3)		27 (49)	38 (43)	6 (11)	2 (4)	1 (1)	
Total	55 (100)	88 (100)	57 (100)	55 (100)	88 (100)	57 (100)	55 (100)	88 (100)	57 (100)

Note: Figures in parenthesis are percentage of households in each wealth category

Financial support to supplement household income incentive is rated important, or very important, by the majority of poor households (96%), whereas it is less important to the majority (56%) of rich households (Table 5.32). It is not surprising that none of the rich households report financial support as very important. The responses amongst the medium class households, however, are mixed and range between less important to important. This implies that poor users have considerable expectations from their CFUGs, in relation to receiving financial support for their livelihood improvement. Hence, financial support can be considered as a strong incentive, particularly to poor users, in order to improve their present level of participation in the governance of community forestry. However, surprisingly, one poor household reports that financial support from the CFUG is not important:

> …… Firstly, I do not believe that a poor, lower caste user gets any fianancial support from a CFUG. It is all captured by the rich and powerful members. Secondly, even if I got some support, I don't have any idea about how and where to invest the money. I do not have any knowledge about potential income generating activities. I also lack self-employment orientated skills. So, it would be another burden to me. (FGD/CFUG-7)

Both social incentives – social security and cohesion through local institutional building, and local community infrastructure development — are considered to be less important to improve participation of users in community forest governance. Both these

incentives are rated as less important by the majority of poor households, whereas the rating of medium class and rich households ranges between less important to important (Table 5.32). There is a wide gap between the rich and poor in the Middle Hills of Nepal, in terms of their power to influence decisions about resource management. The social structure in the Middle Hills of Nepal is such that the rich people always dominate the poor people, whilst the poor need to depend on the rich for their livelihoods. Given these socio-economic factors, the poor households consider enhancing social cohesion amongst different social groups as being very difficult and hence, this is shown in their low rating. Similarly, a possible reason for poor households' low rating on the community infrastructure development incentive is that such activities largely benefit rich households, since they decide which infrastructure project is to be implemented and where. For example, investment in an irrigation system provides benefits to rich users, who have land to irrigate; but the poor usually do not have land to irrigate.

Amongst the normative incentives, well-defined property rights assigned to user groups over forest resources are considered to be a strong incentive by the majority of the rich (94%) and medium class (88%), to improve their participation in resource governance and management. None of the rich and medium class respondents rate it as less important or not important. However, a significant number of poor households (28%) rate this incentive as less important, to improve their participation. Amongst the poor households, only 26% rate it as important and 11% rate it as very important.

The members of a CFUG are legally entitled to equal legal rights over forest resources for its management and utilisation, by drawing-up the operating rules, through gaining access to decision-making and resource benefits. However, these legal rights of poor and disadvantaged members are restricted by the elite (rich, high caste) members, due to poor people's limited power and confidence to bargain with these elite members: and also the elite members' authority over the governance of resources and their linkages with forestry officials. The rich and elite caste members exercise their power over poor and disadvantaged users, as if they were the forest officer's representatives and they only allow poor users to extract resources at their behest. For example, several users, mostly poor and occupational castes, are severely affected by restrictions on grazing and fodder collection, or bans on making charcoal. These poor and occupational caste users are totally dependent on the forests for sustaining their traditional occupations and livelihoods. Such restricting rules, however, are of very little value to the well-off users, since they are less dependent on the forests, due to their alternative resources.

This issue has also been reflected in poor users' responses, in regards to the importance of a property rights incentive to improve their participation in resource governance. A poor member expresses his thoughts, as follows:

> ……. Yes, I have heard DFO staff saying that all the users have equal rights on the community forest. But we poor do not have any rights. The rich and higher caste committee members hold the rights and decide everything about forest management and forest products distribution. We follow their orders. They tell us when, how and how much forest products to collect, and we follow them. Neither do they consult with us, nor can we suggest anything to them regarding forest management. (FGD/CFUG-30)

Another incentive, payment for environmental services, has mixed responses. Less than half the respondents amongst the rich (44%) and medium class (46%) consider it as important, but a majority amongst the poor (58%) rate it as less important (Table 5.32). A significant number of households in each wealth class are neutral about this incentive. This implies that PES is considered as neither a strong nor weak incentive, to enhance participation of users in resource governance. A possible reason for the low rating of this incentive may be that the users are not quite sure about how the PES works, since they have not yet received any PES. The reason for this lower rating by the poor could be related to the elite's control over CFUG funds. Such payments ultimately go to the CFUG fund, the benefits from which are largely captured by the rich and elite caste members.

The users' rating of incentives has also been analysed in terms of caste groups and it is presented in Table 5.33. This result corresponds very much to the rating of incentives by wealth category. The ratings of rich households correspond to that of the high castes, whilst ratings of poor households correspond to that of lower castes. Medium class households and Janajatis have similar ratings. Overall, material incentives are considered more important by lower castes, whilst the normative incentives are rated more important by high castes. The ratings of Janajatis are in between the two caste groups. However, the social incentives are rated as neutral or less important by the majority of respondents amongst the caste groups (Table 5.33).

The majority of households amongst the three caste groups consider access to forests as a strong incentive to increase their participation. Those who respond that access to forests is less important are amongst the households who do not need to depend on community forests for any forest product needss, since they have sufficient forest

products on their own farmland. Another material incentive, financial support to supplement household income, is more important to lower caste users, who are mostly poor, compared to higher castes or Janajatis (Table 5.33). Therefore, it is not surprising that 94% amongst the lower caste rate this incentive as important, or very important. The high castes, who are generally well-off and with a regular source of income do not expect financial support from CFUGs to sustain their livelihoods. Hence, only a few of them rate it as important. Over half of Janajatis rate this incentive as important, or very important. This indicates that Janajatis also consider this to be a strong incentive that would stimulate their participation in resource governance.

Table 5.33: Users' rating of incentives by caste groups

Level of Participation	High caste	Janajatis	Lower caste	High caste	Janajatis	Lower caste	High caste	Janajatis	Lower caste
	Access			Income			Social Security		
Not important		1 (1)			2 (3)	1 (3)			1 (3)
Less important	4 (4)	1 (1)		44 (44)	18 (25)		46 (46)	38 (54)	18 (63)
Neutral	8 (8)	1 (1)		20 (20)	11 (15)		28 (28)	24 (33)	7 (24)
Important	19 (19)	15 (21)	5 (17)	30 (30)	26 (37)	19 (66)	26 (26)	9 (13)	3 (10)
Very important	69 (69)	53 (76)	24 (83)	6 (6)	14 (20)	9 (31)			
Total	100(100)	71 (100)	29 (100)	100 (100)	71 (100)	29 (100)	100(100)	71 (100)	29 (100)
	Infrastructure			Property Rights			Payment		
Not important		1 (1)	1 (3)						
Less important	35 (35)	30 (43)	21 (72)	2 (2)	8 (11)	6 (21)	5 (5)	13 (180	9 (31)
Neutral	24 (24)	23 (32)	6 (22)	6 (6)	15 (21)	11 (41)	41 (41)	40 (57)	15 (52)
Important	36 (36)	17 (24)	1 (3)	41 (41)	33 (47)	6 (21)	51 (51)	18 (25)	5 (17)
Very important	5 (5)			51 (51)	15 (21)	6 (17)	3 (3)		
Total	100(100)	71 (100)	29 (100)	100 (100)	71 (100)	29 (100)	100 (100)	71 (100)	29 (100)

Note: figures in parenthesis are percentage of households in each caste group category.

Both social incentives are rated as less important across the caste groups. Social secuirty and cohesion are reported as less important by the majority of lower castes (63%) and Janajatis (54%) (Table 5.33). It is interesting to note that none of the respondents rate this incentive as very important, amongst the caste groups. This indicates that this incentive is not a stong incentive to motivate users to increase their participation in CF governance. The deeply rooted discriminatory hierarchial socio-cultural norms against the lower castes may be a significant constraint to promoting social harmony and cohesion amongst different social groups within a CFUG. This might also have influenced the responses about this incentive. Local community infrastructure development is also rated as less important by a majority of lower castes.

The responses of higher castes and Janajatis ranges between less importat, to important. A possible reason for this low rating from lower caste households may be that community infrastructure development activities have mostly benefitted higher caste members, who have power to influence the decision-making processes.

Well-defined property rights are rated as a strong incentive by the majority of higher castes (92%) and Janajatis (68%). However, the lower castes consider it to be a less strong incentive to increase their participation in CF governance (Table 5.33). As mentioned previously, in the case of poor households, the legal rights assigned over community forests, to the users, have little meaning to lower castes, because the forests are genearlly controlled by higher castes. Few households, who rate property rights as less important express that their free and unrestricted access to the forests in the past (before the community management regimes) have been restricted by these newly assigned property rights. Payment for environmental services is considered to be neither a strong nor weak incentive across caste groups. A high proportion of respondents, amongst higher castes, rate it as important, but more Janajatis and lower castes are neutral about this incentive motivating them to increase their participation. However, none of the respondents rate this incentive as not important.

A strong linkage was observed between EC representation and participation in CF governance and management (see Section 5.3). Hence, the data was further analysed, in order to understand the influence of EC membership on incentives and how EC members and non-EC members respond to the same incentive for improving their participation. These results are presented in Table 5.34. The results show that access to forests and the availability of forest products is rated to be very important by the majority of both EC (84%) and non-EC members (70%). None of the EC members rate it as less important, or not important, whilst only 4% of non-EC members rate it as less important and not important.

Well-defined property rights are the second important incentive rated by both the EC and non-EC members, which would motivate them to increase their participation in resource governance and management. Approximately 96% of EC members and 69% of non-EC members rate well-defined and enforced property rights as a strong incentive to increase their effective participation in resource governance (Table 5.34).

Table 5.34: Users' rating of incentives by representation on executive committee

Level of Participation	EC member	Non-EC member	EC member	Non-EC member	EC member	Non-EC member
	Access		Income		Social Security	
Not important	-	2 (1)	-	3 (2)	-	2 (1)
Less important	-	5 (3)	10 (22)	53 (34)	10 (22)	91 (59)
Neutral	1 (2)	8 (5)	12 (26)	18 (12)	18 (40)	40 (26)
Important	6 (14)	32 (21)	16 (36)	59 (38)	17 (38)	22 (14)
Very important	38 (84)	108 (70)	7 (16)	22 (14)	-	-
	Infrastructure		Property Rights		Payment	
Not important	-	2 (1)	-	-	-	-
Less important	14 (31)	71 (46)	-	17 (11)	4 (9)	23 (15)
Neutral	18 (40)	35 (23)	2 (4)	31 (20)	21 (47)	75 (48)
Important	12 (27)	42 (27)	13 (29)	67 (43)	19 (42)	54 (35)
Very important	1 (2)	5 (3)	30 (67)	40 (26)	1 (2)	3 (2)
Total	45 (100)	155 (100)	45 (100)	155 (100)	45 (100)	155 (100)

Financial support towards household income generation is rated as the third important incentive. Fifty-two percent each of EC and non-EC members rate this incentive as important, or very important (Table 5.34). However, 34% of non-EC members and 22% of EC members rate it as less important. Further data analysis shows that the respondents who rate financial support as less important are comparatively well-off households, who do not seek any financial support from CFUGs.

From the two social incentives, social security and cohesion is rated to be less important by a majority (59%) of non-EC members, but a higher proportion of EC members are neutral (40%) about it, or rate it as important (38%) (Table 5.34). Another social incentive, local community infrastructure development, is rated as important by less than one-third amongst both EC and non-EC members. A higher proportion amongst EC members (40%) are neutral about this incentive, whilst that proportion amongst non-EC members (46%) rate it as less important.

Payment for environmental services is also reported to be not so strong an incentive to increase users' effective participation in CF governance (Table 5.34). Almost half of respondents amongst both EC and non-EC members respond that it is neither important nor less important in terms of increasing their effective participation. However, none of the respondents amongst both categories rated it as not important.

Overall, it can be concluded that, from the six incentives, access to forests and availability of forest products and well-defined and enforced property rights are the most important incentives, as rated by respondents across all three categories (wealth, caste and EC representation), to motivate them to increase their effective participation in CF governance. Financial support by CFUGs, to supplement household income, is another important incentive, particularly amongst poor and lower caste users. Both social incentives are less popular amongst respondents, particularly amongst poor and lower caste members. Similarly, a significantly higher proportion of respondents are neutral over the payment for environmental services incentive. Interestingly, financial support for income generation activities and investment in community infrastructure development are rated as not important by a few poor, lower caste and non-EC members. The reason may be that rich and elite castes dominate the decision-making positions and processes and very often they make decisions in their favour. The poor and lower caste members thus have a lesser expectation that they will benefit from such activities.

5.6 Changes in the Incentives and Participation Decision

Unlike the case of private property, where owners feel secure that they will enjoy all the benefits of their investment, individual incentives, on their own, are not sufficient to lead users to increase their participation in common property resource governance. A broader modification in the incentive structure, as an effort to change users' behaviour and improve governance, may be required, in order to encourage users to feel more secure about recouping the benefits of their involvement. Creating additional incentives, by changing the rules governing resource access and use, could also increase users' willingness to participate. Therefore, the respondents were asked whether they would like to improve their present level of participation, if they were provided with additional incentives or changes to the present level of incentives.

A total of 115 households (58%) indicate that they would improve their present level of participation, if they were provided with additional incentives (Table 5.35). In terms of wealth category, the majority amongst the poor (65%), followed by the rich (56%) and medium class (53%) were ready to change their present level of participation following changes in the incentives. Amongst the caste groups, the majority amongst lower castes (76%), followed by high castes (56%) and Janajatis (52%) would like to change their present level of participation following changes in the incentives.

Table 5.35: Users' intending to improve participation following changes in incentives, by wealth and caste group

Like to Improve Participation?	Wealth Category			Caste Groups			Total
	Rich	Medium	Poor	High caste	Janajatis	Lower caste	
Yes	31 (56)	47 (53)	37 (65)	56 (56)	37 (52)	22 (76)	115 (58)
No	24 (44)	41 (47)	20 (35)	44 (44)	34 (48)	7 (24)	85 (42)
Total	55 (100)	88 (100)	57 (100)	100 (100)	71 (100)	29 (100)	200 (100)

Note: Figures in parenthesis are the percentage of households within each category

The data shows that 60% of male-headed households show their positive response to improving their level of participation following changes in incentives, whilst only 33% of female-headed households express their intention to change. The data analysis further shows that a majority amongst the EC members (84%) express their intention to improve their participation following changes in incentives, whilst only 50% amongst the general members or non-EC members are keen to improve their participation following changes in incentives (Table 5.36).

Table 5.36: Users' intending to improve participation following changes in incentives, by EC membership

Member's status	Intention to improve participation		Total
	Yes	No	
EC members	38 (84)	7 (16)	45 (100)
General members	77 (50)	78 (50)	155 (100)
Total	115 (58)	85 (42)	200 (100)

Note: Figures in parenthesis are the percentage of households within each category

5.6.1 Activities in which Users would Increase their Participation Following Changes in Incentives

Respondents who show positive responses to improve their level of participation, following changes in incentives were asked which activity they would like to increase their participation. The majority of respondents report on more than one activity, in which they would like to increase their participation, following changes in incentives, provided they were offered the opportunity and responsibility to do so. Their responses are summarised in Table 5.37.

Table 5.37: Activities in which users would like to increase their participation

Activities	Households	
	No.	%
Participate in CFUG meetings and decision-making processes by being a member of EC	34	30
Prepare and facilitate activities to improve livelihoods of poor users through group fund mobilisation	31	27
Participate in all activities conducted by the group	25	22
Organise capacity building programmes for users (e.g., awareness, empowerment programmes) on CF governance and management	20	17
Promote good governance practices within the group including transparency in group decisions and financial matters	12	10
Implement income generation activities, e.g., multipurpose tree species plantings, utilisation of NTFPs to increase CFUG income	9	8
Empower women and disadvantaged groups (poor, Dalits) to improve their participation at decision-making level and CF governance	7	6
Forest protection from illegal harvesting and encroachment	6	5
Prepare and facilitate activities to improve local community infrastructure	5	4
Speak for the rights of poor users including equitable distribution of forest products and other benefits and subsidy on fees and forest product prices	4	3
Develop community forest as a recreational park	3	3
Implementation of the operational plan for effective forest management	3	3
Strengthen group as a local institution and promote social harmony	1	1

The highest proportion of respondents (30%) report they would participate more in CFUG meetings and decision-making processes, in which many users, particularly the poor and disadvantaged groups still do not have access. Approximately, 27% of respondents realise that there has been minimal achievement in the area of improving poor users' livelihoods and they indicate their intention to participate more in preparing and facilitating activities to improve the livelihoods of poor users, through group fund mobilisation. Similarly, approximately 22% of respondents are not specific about the activity in which they would like to increase their participation, but they express that they would participate actively in all activities conducted by their CFUG (Table 5.37).

Several users identify a lack of knowledge and experience in CF governance and management as one of the major hindrances for their participation, despite their interest to participate. Ensuring that the users are aware of the importance of their participation in resource governance: and that they are capable of participating at decision-making levels and can therefore influence decisions requires capacity building of those users. Approximately 20 households (17%) show their commitment to be involved in users' capacity building programmes, to improve their confidence through increased knowledge and also to empower them to participate actively in decision-making processes (Table 5.37).

Furthermore, twelve households want to be involved in strengthening good governance practices within CFUGs, by promoting transparency in group decisions and financial matters, through empowerment of users, particularly women and disadvantaged groups. Similarly, nine households are keen to participate in the implementation of income generating activities, e.g., planting multipurpose tree species and utilising non-timber forest products (NTFPs) to increase the income of their groups. Preparation and facilitation of activities to improve local community infrastructure is another activity, in which users would like to increase their participation, following changes in incentives. Moreover, forest protection from illegal harvesting and encroachment; the implementation of the CF operational plan for effective forest management; lobbying for the rights of poor users for equitable distribution of forest products and other benefits; strengthening a CFUG as a local institution; and promoting social harmony and cohesion within the community are other activities where they would like to increase their participation, following changes in incentives.

5.6.2 Incentives Necessary to Induce Effective Participation

This section describes the incentives that the respondents report to be necessary, in order to change or add to the inducement for them to increase their participation in CF governance and management. In order to identify the incentives necessary to induce users' effective participation in resource governance and management, the respondents, who indicated they would like to increase their participation in CF governance and management were then asked the following question: *What incentives need to be changed or added for you to increase your participation?*

The majority of respondents report the need for more than one incentive to be changed (or added to), in order to improve their present level of participation in CF governance and management. Their responses are summarised and presented in Table 5.38.

Table 5.38: Incentives necessary to induce effective participation of users

Incentives	Households	
	No.	%
Material Incentives		
Wages, allowances or equivalent subsidy for the time spent participating in meetings or other group activities	30	26
Awareness training and/or empowerment programmes for users' empowerment and capacity building in CF governance and management	29	25
Financial support for CFUGs from the government or donor agencies to implement income generating activities and training activities	24	20
Mobilisation of CFUG funds to support poor users to improve their livelihoods, through increased income and employment opportunities	19	17
Skill development training for livelihoods improvement, such as NTFPs identification/utilisation, household level income/ employment generating activities	10	9
Exemption on fees and subsidy to forest product prices for poor users	10	9
Equitable distribution of forest products and other benefits	6	4
Compensation for crop/livestock damage by wildlife (crop/ livestock insurance programme)	4	3
Financial/ technical support for installation of renewable energy technologies, such as solar system, biogas	2	2
Social Incentives		
Policy provision for compulsory inclusion of women, poor and lower caste users at decision-making level and effective implementation and monitoring of inclusive policy (by DFO)	33	29
More encouragement, trust and opportunity/responsibility, particularly for women, the poor and disadvantaged group users from the group, to represent them in key decision-making positions	28	24
Transparency in group fund mobilisation and decision-making process and timely information dissemination	8	7

Incentives	Households	
	No.	%
Policy provision to invest the group fund into pro-poor community development and its effective implementation	4	3
Support to sustain traditional forest-based occupation	3	3
Equal legal rights on decisions and benefits amongst all categories of users, if they contribute equally	2	2
A clear policy and guidelines to mobilise the CFUG fund	1	1
Implementation of programme to sensitise the rich and non-Dalit users about the rights of the poor and Dalit users in resource governance	1	1
Political commitment and support for formulation of pro-poor and inclusive CF policy/ guidelines	1	1
Normative Incentives		
Payment for environmental services acknowledging the contribution of community forests to environment and biodiversity conservation	19	17
Support of involved government offices for forest protection	4	3
Policy to develop community forests as a recreational parks	2	2

Material Incentives

A higher proportion of respondents point to material incentives that need to be changed (or added to), in order improve their effective participation in CF governance (Table 5.38). From the total number of households intending to improve their participation, 34% want opportunities for their capacity development on various aspects of CF governance and management, such as CF governance process and practices; empowerment of women and the poor and other disadvantaged groups, in relation to their roles and rights in resource governance; forest management; leadership skills; NTFPs identification and utilisation; and self-employment orientated skilled training. Such programmes should be targeted particularly to those users who do not presently participate, due to their lack of basic knowledge about CF governance or an understanding of their roles and rights within CF governance. This lack of basic knowledge on CF governance and lack of understanding about their roles and responsibilities in CF governance has resulted in low confidence amongst users, which has then contributed to the users' unwillingness to participate in CF governance. There are evidences that CFUGs in Nepal are provided with inadequate training and capacity

building support, most of which is captured by elite members of the groups, thus marginalising the poor, lower caste and other disadvantaged members from benefitting from such programmes (DFOLamjung, 2008; DFOTanahun, 2008; Timsina & Paudel, 2003a).

Similarly, 30 households, mostly the poor with higher opportunity costs of time, demand the inclusion of a policy provision for compensating their time spent participating in CFUG activities, with a wage/allowance, or equivalent subsidy in terms of fees or forest products (Table 5.38). Without such financial compensation, these ultra-poor users cannot afford to participate in CF governance. However, the majority of CFUGs in the Hills of Nepal lack adequate funds to financially compensate their users, even if policy measures force them to do so. Therefore, financial support for CFUGs, from the government or donor agencies, to assist in the implementation of group level income generating activities and self-employment orientated skilled training, is another important incentive identified by the participants, which would improve users' effective participation in CF governance. In recent times, CFUGs have been prioritising the implementation of income generating activities, e.g., management and utilisation of NTFPs, both at group level and users' level, for generating group funds, in addition to increasing the income of members. However, the availability of sufficient financial and technical resources to implement such programmes is always a problem.

Compulsory provisions for pro-poor livelihood improvement support, through CFUG funds mobilisation, is considered to be another important incentive, which could be provided by community forest management regimes in Nepal, to improve, in particular, the poor users' effective participation in CF governance. Although, the government has introduced poverty reduction, as an important objective for community forestry (Pokharel, 2008b), the strategies or programmes to achieve this objective are not clearly addressed within community forestry policies. The community forestry legislation, for example, has made a mandatory provision of spending at least 25% of CFUG funds on forest management activities, but it is silent about investing funds into pro-poor livelihood improvement activities. This lack of commitment has resulted in the investment of a proportionately larger portion of CFUG funds into pro-rich community infrastructure development (Pokharel, 2010). A compulsory provision in the community forestry policy for a certain proportion of CFUG funds to be invested in pro-poor livelihood improvement, or poverty reduction activities, would help meet the poverty reduction objective, in addition to improving the participation of poor members in resource governance and management.

Similarly, respondents express the need to exempt fees and to provide a subsidy for forest product prices, particularly to poor members, in order to improve their effective participation in CF governance and management. Although such practices have been observed in a few CFUGs (supported by donor-funding) the majority of CFUGs still lack such practices. The equitable distribution of forest products and other benefits and compensation for crop and livestock damage by wildlife, e.g., a crop and livestock insurance programme, are also highlighted by a few respondents. Since community forestry has indirectly encouraged forest users to look for alternative renewable energy sources, e.g., biogas, as a supplement for firewood deficit, a few respondents also emphasise the need for a more financial subsidy, particularly for the poor users, either from the government or the CFUGs, for the installation of renewable energy technologies in their households.

Social Incentives

A significant number of respondents (29%) highlight the need for a policy provision, which targets the compulsory inclusion of women and poor and lower caste users at decision-making levels. Effective support and monitoring of an inclusive policy, by forestry officials, is emphasised by the respondents, in order to improve the participation of women and poor and disadvantaged members. Furthermore, encouragement and the offer of responsibility with trust, in addition to the opportunity to be represented in decision-making positions, particularly for women and poor and disadvantaged members from within the group, is necessary to enhance their effective participation in CF governance. Measures to improve CFUG efficient governance, such as transparency in fund mobilisation and decision-making processes, a pro-poor community development policy and support to sustain traditional forest-based occupations, are also highlighted by respondents to be incentives that would stimulate participation of users in CF governance.

Normative Incentives

Respondents point towards the need for a clear policy of payment for environmental services, thus acknowledging the contribution of community forests to environmental and biodiversity conservation, in order to encourage them to continue their participation in producing public goods. Furthermore, support from involved government officers for forest protection, in addition to policy measures to develop community forests as

recreational parks, are also reported as important incentives by a few respondents, to enhance their participation in community forest management.

5.6.3 Reasons for Inability to Improve Participation following Changes in Incentives

The respondents who express their inability to improve their level of participation, even following changes in incentives, were asked why they were not able to change their level of participation. Their responses are summarised in Table 5.39. From a total of 85 households, who show their inability to change their level of participation, 31 households (36%) mention time constraints as a reason not to participate in such volunteer activities, due to their full time involvement in a job, business, household chores, social work or affiliation to other organisations. Almost a similar number of respondents express a low level of confidence to participate, due to their lack of adequate knowledge or experience regarding CF governance and management, as another reason for not being able to improve their present level of participation. These households have never been offered an opportunity to participate in a CF related training or empowerment programme.

Table 5.39: Reasons for not intending to improve participation even following changes in incentives

Reasons	No. of households
Busy in job/ business (lack of time for volunteer/ social work)	31 (36)
Lack of knowledge and experience/ exposure	30 (35)
Poverty (high opportunity costs of time)	21 (25)
Do not have an interest	10 (12)
Do not see further benefits or opportunities	8 (9)
Lack of manpower (old, disabled or single adult)	7 (8)
Not listened to, or not given any responsibility	5 (6)

Note: Figures in parenthesis are the percentage of households amongst the not intending households

Poverty or the high opportunity cost of time is identified by 21 households as another important reason for users' inability to increase their participation. It is interesting to note that 10 households are not interested to participate in community forest management, even with positive changes in incentives. Eight households did not see any future benefits or opportunities from CFUGs and hence they did not want to improve their participation. A lack of surplus manpower to participate is one reason for

the inability of households with a small family size to participate. Five poor and lower caste households were not interested to participate, since they have been ignored by the group, that is, they were neither listened to, nor given any responsibility. The factors constraining users' participation and their alleviation measures are discussed in the following section.

5.7 Factors Constraining Users' Participation and Alleviation Measures

In order to gain an understanding of the varied level of participation amongst member households, the respondents were asked if any factor was hindering their participation in the governance and management of community forests. A number of factors are reported by the respondents and measures are suggested to alleviate these constraints. The majority of households report more than one factor. One of the important factors they report, despite their interest to participate in such volunteer activities, is time constraints, due to their full-time involvement in jobs, businesses or other household chores. Since their involvement in these activities is linked with their livelihoods, it is difficult for them to participate and therefore compromise their livelihoods.

Low capabilities and hence, low confidence in their lack of community forest management related knowledge and experience is reported as another important factor hindering participation, particularly that of women, poor, lower caste and other disadvantaged members. Not all members have had the opportunity to improve their capacity on community forest governance and management for two main reasons: Firstly, each CFUG is provided with a very limited number of training programmes. Secondly, the training is frequently offered to groups and attended by executive committee members or other influential members and their relatives, for monetary benefits. Training participants generally receive a daily subsistence allowance whilst attending training. Improving the capabilities of users — and providing equal opportunities for all users to participate in capacity building training programmes — could build up users' confidence to participate in the governance of community forestry programmes. This recommendation has a policy implication that the Government of Nepal and/or the donor agencies, which support community forestry programmes in Nepal, should support CFUGs with an adequate provision for basic community forest governance and management related training. The DFO, meanwhile, should provide

the CFUGs with facilitation and strong monitoring support, to ensure equitable outcomes from training benefits, so that all users receive relevant training.

High opportunity costs of time are reported as another important factor for users' low level of participation, particularly by poor households. These poor households do not have any regular source of income but instead, they rely on their labour and time to produce household income for food. Therefore, they cannot afford to participate in CF governance and management. The majority of CFUGs do not have any provision for financial compensation to those who have high opportunity costs for participation in group activities. Furthermore, not all CFUGs can afford to implement pro-poor income/employment generation programmes to support poor users to sustain their livelihoods. In addition, the burden of high annual recurrent costs, e.g., membership fees, forest protection fees and high forest product prices discourage users, particularly poor users, to enhance their participation. Poor households have lower opportunity costs for labour, but they value cash, the result of which they are still coping with the provision of compulsory labour contribution within several CFUGs, for forest management activities. Providing poor users with financial compensation for participating in group activities, or offering income/employment generation opportunities, has the potential to enhance the participation of poor users.

As mentioned previously, forest products are the major benefits derived from being a member of a CFUG. Therefore, access to (and availability of) forest products has a significant impact on users' level of participation in CF governance. Restricted access to (and insufficient availability of) forest products has resulted in poor users facing acute shortages of firewood for least three to six months every year. This has been reported as another major factor hindering the participation of users, particularly those who are totally dependent on community forests for their day-to-day forest product needs. However, even allowing unrestricted access to forests may not solve this problem, because it could result in further degradation of resources. Availability of forest products is not really under the control of the CFUGs. Adopting equitable benefit (forest products) distribution practices, to promote distributional efficiencies within a CFUG, may help to reduce conflicts related to benefit distribution to a very large extent, whilst stimulating participation in forest management to improve resource conditions.

Furthermore, there exist inequitable benefit distribution practices that favour the rich and elite caste members. Frequently, members distribute forest products, irrespective of wealth, family size, level of dependency on community forests, or any other

consideration. For example, poor members, who do not have any trees on their very small landholding can gather only equal amounts of firewood as the rich members, who have many trees on their land. Another example of inequitable distribution practice is the high price of forest products. Setting a high price for forest products fulfills the needs and intentions of rich members, thus depriving poor members of getting necessary forest products, since they are not able to afford the price. Strengthening the poor and disadvantaged members bargaining power, through improving their governance and leadership capacity and empowering them to be represented in decision-making positions and processes, through the implementation of an inclusive policy, may promote equitable benefit distribution practices.

Similarly, the rich and elite caste domination in decision-making positions and processes has been identified as another hindrance to the participation of poor and lower caste users. These poor and lower caste users lack the confidence to attend CFUG meetings or they hesitate to speak up in front of a large group of people, due to their low socio-economic status. The rich and higher caste members hold an attitude that whatever the poor and lower caste people say is not relevant or correct and hence, the concerns of the poor and lower caste members are not usually heard or represented during decision-making. Furthermore, due to their low level of education, the poor and lower caste members are considered to be less competent for leadership positions and hence, they are not easily accepted into decision-making positions. Inclusive policy measures for compulsory inclusion of women, poor, lower caste and other disadvantaged members, together with strong monitoring support to enforce such an inclusive policy, can improve the situation and stimulate the poor and disadvantaged groups to enhance their participation. However, training and support is required for rich and high caste members to make them aware of the role of poor and disadvantaged groups in resource governance and management and to change their behaviour towards these poor and lower caste members.

A lack of transparency in decision-making and financial transactions has also de-motivated users to participate. The majority of CFUGs lack an effective mechanism to disseminate and discuss their financial operations and decisions made by the executive committee. This committee puts forward decisions to the general assembly for endorsement. Generally, the general assembly endorses these decisions and financial transactions without any questioning. An inclusive policy measure, as mentioned above, could be a measure to motivate users to participate. Furthermore, programmes to strengthen good governance within the group, such as participatory

governance assessment and public hearing and public auditing, could help to promote transparency within the group and make the decision-makers (executive committee) more accountable towards the general users. The DFO, local NGOs, or members of donor projects, can facilitate such activities within the groups.

A few other respondents report that their failure to actively participate is due to a lack of a role or responsibility within the group. One of the respondents expresses:

> I do not think I need to participate more. I do not have any role to perform or any responsibility to fulfill. The committee members make all the decisions. I show my presence in user group assembly and forest management when the committee members ask me to be present. (FGD/CFUG-24)

A low motivation, or low empowerment of users, from the relevant government and/or non-governmental agencies and from within the CFUGs themselves, is also reported as lacking in most CFUGs. There is poor support and motivation from the district forest office, which is the only government agency in the district supporting CFUGs to strengthen and implement their community forestry programme. Support from non-governmental agencies is better than that from government agencies, but their physical coverage is narrow and the project period is short. Similarly, there is less support from within the users: nobody appears to be concerned about who is participating and who is not participating. Both the DFO and relevant NGOs, or members of donor projects, can help CFUGs to design and implement programmes to motivate or empower their users and to make them aware that their participation is important within community forest management and development.

In addition, a few respondents express a number of negative consequences from the community forestry programme, as being constraints to their participation in CF governance. For example, the increased number of wildlife population, due to improved forest and habitat conditions, has resulted in crop and livestock damage. The respondents also suggest that a compensation programme, such as a crop and livestock insurance programme could address this issue. A landslide inside the forest has also de-motivated users to participate, because they have a fear that one day, their small patches of forests will be totally swept away by future landslides. Surprisingly, the production of less amounts of grass, as a result of fire control in the forests, is also reported as a factor for de-motivating a few households (who own a large number of livestock) from participating.

A few users, particularly poor and lower caste, complain about loss of their traditional forest-based occupations (e.g., potter, blacksmith, firewood seller, alcohol distiller), which is the only source of income for sustaining their livelihoods. Restrictions on free access to forests and inequitable forest product distribution rules/mechanisms have ignored the traditional dependence of such occupational castes on forests for their livelihoods. These occupational castes are prohibited from extracting forest products for their occupational needs, such as clay, charcoal, firewood and fruits, nuts and flowers, under community forestry regulations. Even where such forest products are sold, these poor users cannot afford to buy them. Hence, they are found to be de-motivated to participate in CF governance and management. They demand to either be given access to forest products, or for the government to find them alternative livelihood options.

Boundary conflicts between forests and private land and illegal harvesting of forest products from community forests are also reported as constraints by a few respondents. The DFO's role to resolve such conflicts and to stop the illegal harvesting should be vital, but the DFO is reported as not supporting the groups to solve these problems. The influence of party-politics is reported as being a major cause of these persisting conflicts. A few households are not participating because of the remote location of their forests, which makes forest product transportation difficult and/or inaccessible meeting locations are held far away from their settlements. However, a few respondents report that they do not participate effectively, since they do not require any forest products from the community forests, or they do not have any interest in participating in any of the CFUG activities.

5.8 Summary

This chapter has focused on identifying and explaining the existing level of participation of user group members in resource governance and their attitudes towards incentives for participation: and how changes in the incentives would affect their motives to participate in resource governance. This chapter has also reported the factors that constrain users' participation in resource governance and how these constraints could be alleviated.

Users' participation in CFUG governance has been observed in four main stages: user group meeting, decision-making, activity implementation and utilisation of resources or benefits. Five levels – very low, low, average, high and very high – were used to

measure users' level of participation. On average, the respondents show a lower degree of participation in decision-making and a greater degree of participation in activity implementation. The poor and lower caste users are involved in a low level of participation at user group meetings and decision-making, and they have lower access to benefits. The rich and higher caste users are involved in a high level of participation and they have a higher access to benefits. Similarly, the EC members participated more in meetings and decision-making and they derive more benefits than non-EC members, thus indicating that representation on an executive committee offers better access to decision-making levels, which then results in higher participation.

The characteristics of resources, the community or user group and the rules governing resource access and its use are vital in determining incentives for people's involvement in resource governance and management. Thus, an understanding of these key characteristics is important, in order to identify and analyse incentives. This study has used these attributes to identify and analyse the incentives provided by the community forest management regimes in Nepal.

User group members place a high importance on accessing forests and the availability of forest products, in addition to well-defined and enforced property rights, since they are the most important incentives to induce their participation. More poor and lower caste households consider access to forests and forest products important, but less of them report property rights as being important to them, in terms of improving their participation. Financial support to supplement household income is considered important mainly by the poor and lower caste households. However, social incentives, such as social cohesion and local community infrastructure development, are less popular amongst the respondents, particularly amongst the poor and lower castes. The reasons for this may be that social systems are dominated by Hindu religious-based socio-cultural norms. Similarly, CFUGs invest a greater part of their funds into community infrastructure development, but the poor and lower castes frequently receive only a small share of the benefit from such facilities, due to their poor access and the domination of rich and elite caste members, when making decisions about such facilities.

Creating additional incentives, by changing the rules governing resource access and use, can increase users' willingness to participate. The majority of respondent households are ready to improve their present level of participation, if they are provided with additional incentives. A higher proportion of poor and lower castes, in contrast to

other wealth and caste groups, are interested to improve their level of participation, following the creation of additional incentives. The additional incentives that they are seeking to create are mainly related to material incentives. The poor and lower caste households, however, demand a change in community forestry policy, in order to make it a pro-poor policy, with the provision of compulsory inclusion of poor and lower castes in decision-making positions and processes.

The low capabilities (and hence the low level of confidence) and a lack of prior knowledge and experience on common property resource governance, particularly in poor and lower caste households, in addition to the high opportunity costs of participation, are the two major factors that constrain users' improved participation. This situation has a policy implication that the government of Nepal and the donor communities, which support community forestry development in Nepal, should support CFUG members with training and empowerment support, so that they will not be deprived of participating in CF governance, due to their limited capacities. Similarly, mechanisms to compensate or reduce the costs of participation for poor users can enhance their participation. Economic empowerment of poor users, together with financial support to improve their livelihoods, exemption from annual recurrent fees, or subsidies on forest product prices, can incentivise them to increase their participation.

In the following chapter, the process and results of the statistical models, used to estimate the relationship between the incentives and participation, is presented.

CHAPTER SIX

RELATIONSHIP BETWEEN INCENTIVES AND PARTICIPATION

6.1 Introduction

In this chapter, the relationship between incentives and participation is estimated. The process and empirical results of the two-stage model, namely factor analysis and ordered probit model, used to estimate which incentives best address and ensure people's willingness and ability to participate in the governance and management of common property resources, are described. Finally, the empirical results of an alternative model, the partial least square regression, used to further analyse the relationship between incentives and participation indicators, are presented.

6.2 Relationship between Incentives and Participation: The Ordered Probit Model

This section explores the answers to the question: *Which incentives best address and ensure people's willingness and ability to participate in the governance and management of common property resources?* This study envisages that a participation decision is a function of incentives offered to an individual and it includes variables related to incentives. It is hypothesised that three types of incentives, namely, *material, social* and *normative*, are the principal variables affecting an individual's behaviour regarding participation in the governance and management of common property resources. An individual will have a higher probability of participation in common property resource governance and management, if s/he has a higher predisposition to each type of incentive (Knoke, 1988).

A two-stage model was constructed, in order to estimate the conditions under which a household participates in the governance of common property resources. Firstly, an index of participation was constructed, as a proxy for participation in the governance and management of common property resources, by using factor analysis on indicators of participation to identify different choice situations. Secondly, because the index of

participation is qualitative and discrete in nature, an ordered probit model was estimated, to identify the relationship between different incentives and level of participation of user group members. The remainder of this section describes the construction of the index of participation and the empirical results of the ordered probit model.

6.2.1 Constructing the Index of Participation

The index of participation, which is used as the dependent variable for investigating the relationship between the incentives and participation, was constructed by employing factor analysis out of a set of six indicators of participation that measures users' participation. Initially, this study considered analysing the relationship between users' level of participation and different incentives taking users' rating of their overall level of participation as the dependent variable in the ordered probit model. The overall level of participation is the users' reflection on their involvement in overall community forestry governance, namely, meetings, decision-making, implementation and benefit sharing. However, this idea was later discarded, after realisation of the fact that it is a subjective ranking of overall participation by the users and hence, it could not be considered as the dependent variable for an ordered probit model. In the context of common property resource governance, a member has various choice situations, where s/he can decide whether to participate or not: and some members may be involved very actively in implementation but still acquire less benefits, whilst others only reap the benefits without active participation (Lise, 2007). Hence, it was considered that, by the construction of a participation index (using factor analysis) to extract the common underlying dimensions of participation that would quantify participation, it would be in order to separate these different groups of people, in terms of their extent of participation.

The six indicators of participation in the governance and management of common property resources and the basic information on the selected variables are presented in Table 6.1. Considering the equal importance of each individual indicator of participation, they were given an equal weight within the index (see e.g., Atmiş *et al.*, 2007; Dolisca *et al.*, 2006; Kerapeletswe & Lovett, 2002).

Table 6.1: Descriptive statistics for the participation indicator variables

Name of variables	No. of observations	Mean	Std. Deviation	Minimum	Maximum
Membership length	200	11.41	3.45	1	15
EC representation	200	0.23	0.42	0	1
Participation at meetings	200	2.26	1.30	1	5
Participation in decision-making	200	1.92	1.23	1	5
Participation in implementation	200	2.96	0.87	1	5
Participation in overall benefit	200	2.25	0.86	1	5

Source: Field Survey, 2009.

A factor analysis, which is a method of translating a large set of variables into a few independent choice variables with a minimum loss of information, describes variability amongst observed variables, in terms of fewer unobserved variables called factors. Although the principal component analysis or descriptive factor analysis has a similar aim to factor analysis, the principal component analysis produces indices that are uncorrelated: and this lack of correlation means that the indices are measuring different dimensions of the data. However, the factor analysis determines the number of common underlying dimensions, or factors, where each factor will represent an independent choice (Hair *et al.*, 2005; Lise, 2007; Manly, 2005). Therefore, the descriptive factor analysis is not used in this study to construct the index of participation. However, it was used as the initial or trial step towards the iterative factor analysis.

Although the maximum likelihood factor analysis is the most commonly used and statistically best procedure, it assumes normality on the given data and on the common factors and specific variates (Manly, 2005). However, the multivariate normality test result (See Remark below) shows that the six participation indicators variables do not follow a multivariate normal distribution, and hence this method cannot be used to construct the participation index in this study. On the other hand, **the iterated principal factor analysis**, which is another popular method, does not assume normality on data (Manly, 2005), and hence it becomes preferable to the maximum likelihood factor analysis and it has been used to construct the index of participation in this study.

Remark: Multivariate Normality Test of the Six Participation Indicator Variables

A number of tools, such as a Chi-square probability plot (Hwu et al., 2002), a histogram with normal curve super-imposed, skewness & kurtosis values and a statistical test for normality, the Shapiro-Wilks test (Friel, 2010; Royston, 1983), are used to test the multivariate normality of the six participation indicator variables. To obtain a Chi-square probability plot, the behaviour of the Mahalanobis type distances associated with each data point is examined. The hypothesis is that the data follows a normal distribution. Here, it is assumed that, if the data comes from a multivariate normal distribution, the distances follow a Chi-square distribution and the square root of these distances follows a normal distribution.

The results of the multivariate normality test of the six participation indicator variables are presented below. The test was carried out using SAS program (Meyers et al., 2009). Figure 6.1 shows the Chi-square probability plot of the distances (dsq = Mahalanobis type distances; chisq = chi-square quntiles). The results show that the points do not follow a straight line in the Chi-square probability plot, suggesting that the six participation indicator variables may not follow a multivariate normal distribution.

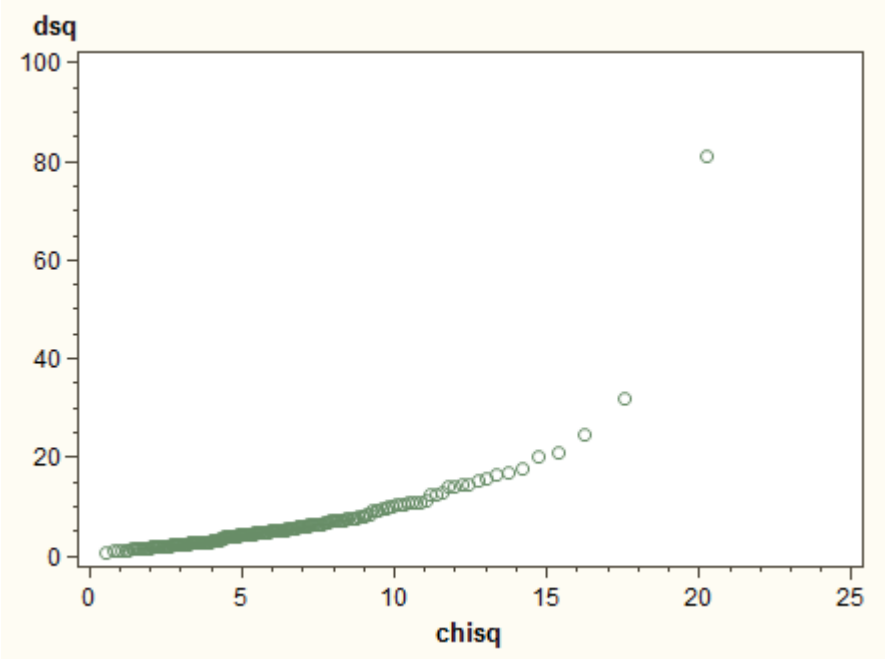


Figure 6.1: Chi-square probability plot for multivariate data

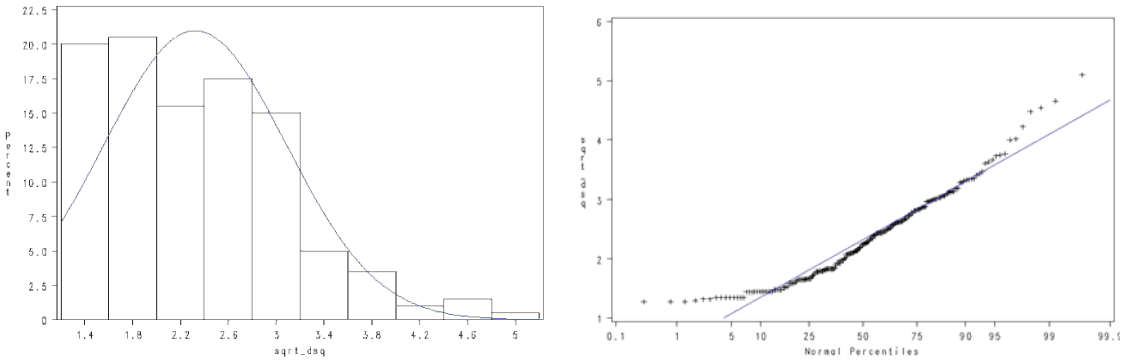
Similarly, the histogram with a normal curve of the square root-distances does not appear to be symmetrical (Figure 6.2 a). Moreover, the points on the normal probability plot do not fall close to the expected straight line (Figure 6.3 b): the skewness value is 0.82 and the Shapiro-Wilks tests (Table 6.2) indicate that evidence for the normality of the data is substantially poor (p-

value = 0.0001). Hence, it can be concluded that the six participation indicators variables do not follow a multivariate normal distribution.

Table 6.2: Test for multivariate normality

Skewness = 0.82243741			*Kurtosis = 0.57850116*	
Test	***Statistic***		***p Value***	
Shapiro-Wilk	***W***	*0.94113*	***Pr < W***	*<0.0001*

Figure 6.2: (a) Normality of square root (DSQ) data **(b) Normality of square root (DSQ) data**



Iterative Principal Factor Analysis

An iterated principal factor analysis was performed on the six participation indicator variables of each household, to construct the index of participation, in order to qualify and quantify users' level of participation in the governance of common property resources. In this analysis, the total number of variables, p = 6 and hence the maximum number of factors is

$$m = ½ (p-1) = ½ (6 – 1) = 2.5 \sim 2$$

The initial prior communalities were set at 1, to initiate the iterative process of principal factor analysis (Table 6.3). A general rule of thumb suggests that all factors with an eigenvalue larger than 1 (commonly known as Kaiser criterion) should be used in the analysis (Hair *et al.*, 2005; Kerapeletswe & Lovett, 2002; Lise, 2007; Manly, 2005). Here, the eigen-analysis of the correlation matrix has one eigenvalue greater than one and another being only marginally smaller than 1. This indicates that the general rule of thumb also suggests a two-factor solution: and the total variation in the data will be entirely explained by two common factors.

Table 6.3: Preliminary Eigenvalues

Initial Factor Method: Iterated Principal Factor Analysis
Prior Communality Estimates: 1
Preliminary Eigenvalues: Total = 6 Average = 1

	Eigenvalue	*Difference*	*Proportion*	*Cumulative*
1	3.54298101	2.55182427	0.5905	0.5905
2	0.99115674	0.32459152	0.1652	0.7557
3	0.66656522	0.27445400	0.1111	0.8668
4	0.39211122	0.06717596	0.0654	0.9321
5	0.32493526	0.24268469	0.0542	0.9863
6	0.08225056		0.0137	1

Moreover, the two-factor solution is also supported by the eigenvalues of the reduced correlation matrix, which suggests that, in an ideal principal factor analysis, the cumulative proportion of variance explained by the retained factors should be 1 (Hair *et al.*, 2005; Pett *et al.*, 2003). The eigenvalues of the reduced correlation matrix, factor loadings or pattern and final communality estimates, are shown in Table 6.4. In this analysis, the cumulative proportion explained by the retained factors (i.e., associated with the first two eigenvalues) is approximately 1 (it is, in fact, marginally greater than 1, i.e., 1.0001). This indicates that the total variation of the data is entirely explained by the first two factors: and the factor model fitted is reasonably appropriate.

Table 6.4: Eigenvalues of the Reduced Correlation Matrix, Factor Pattern and Communality Estimates

Eigenvalues of the Reduced Correlation Matrix: Total = 4.21348235 Average = 0.70224706

	Eigenvalue	*Difference*	*Proportion*	*Cumulative*
1	3.22643806	2.23913414	0.7657	0.7657
2	0.98730393	0.75950860	0.2343	1.0001

Factor Pattern

	Factor 1	*Factor 2*	*Final Communality Estimates*
Membership Length	0.1327	0.99018	0.9980628
EC Representation	0.69708	-0.0252	0.48655824
Participation at Meetings	0.91179	-0.05066	0.83392382
Participation in Decision-Making	0.93694	-0.04737	0.88010298
Participation in Implementation	0.67621	0.00636	0.45730175
Participation in Overall Benefits	0.74594	-0.03695	0.55779238
		Final Communality Estimates Total:	4.213742

Note: Numbers in bold face denote a dominating indicator (factor loading ≥ 0.5 or ≤ - 0.5).

Moreover, the participation indicator variables are highly correlated with one another, except for the membership length, with coefficients all significant at the 0.01 level (Table 6.5). This shows that the factor analysis points to two common factors, in which all elements of the participation index load. The highly correlated variables stay together, thus giving the first factor: and the not so correlated variable stays alone, to form the second factor (Table 6.4).

Table 6.5: Correlation amongst the participation indicator variables

Variables	Participation in Overall Benefit	Participation in Implementation	Participation in Decision-Making	Participation in Meeting	EC Representation	Membership Length
Participation in Overall Benefit	1	.655**	.644**	.657**	.484**	.057
Participation in Implementation	.655**	1	.563**	.589**	.440**	.096
Participation in Decision-Making	.644**	.563**	1	.906**	.719**	.080
Participation at Meetings	.657**	.589**	.906**	1	.624**	.072
EC Representation	.484**	.440**	.719**	.624**	1	.069
Membership Length	.057	.096	.080	.072	.069	1

** *Correlation is significant at the 0.01 level (2-tailed).*

As a rule of thumb, variables with **coefficient above 0.5** are considered as dominating factors (Lise, 2007; Manly, 2005). Considering the large and moderate loadings, it can be seen that the first factor, **Factor 1**, represents a combination of all indicators, except membership length. It has high positive loadings for rating of participation at meetings (0.91179) and participation in decision-making (0.93694). It also has a moderately positive loading on EC representation (0.69708), the rating of participation in implementation (0.67621) and overall benefits (0.74594). Since these attributes focus on users' presence and involvement in governance, Factor 1 can be labelled as **active participation** and this factor accounts for approximately 76.6% of common variance. The second common factor, **Factor 2**, which explains approximately 23.4% of the common variance, can be regarded as a membership length orientated effect that has a high factor loading of 0.99018. It can be seen that the variable *membership length* is almost entirely accounted for by Factor 2 alone. The loadings of the remainder of variables can be ignored. Since this variable implies length of membership, it is termed **passive participation**.

A varimax rotation was carried out and the rotated loadings are presented in Table 6.6. Factor rotation aims to make the factor loadings large or small, so that the output is more understandable and the new factors are easier to interpret (Hair *et al.*, 2005; Manly, 2005;

Polit, 2010). The rotated factor pattern reveals that **Factor 1** has high positive loadings for all the variables, except membership length, which has a high factor loading on **Factor 2**.

Table 6.6: Rotated Factor Pattern (Varimax Rotation)

Rotated Factor Pattern		
Variable	Active Participation	Passive Participation
Membership length	0.04807	0.99787
EC representation	0.6967	0.03413
Participation at meetings	0.91279	0.02701
Participation in decision-making	0.93758	0.03243
Participation in implementation	0.67322	0.06381
Participation in overall benefits	0.74638	0.02657
Variance explained by each factor	3.2102671	1.0034749

Note: Numbers in bold face denote a dominating indicator (factor loading ≥ 0.5 or ≤ - 0.5).

Although the above interpretation of factors and their loadings on variables is important in explaining how good is the fitted factor model, the ultimate measure of goodness of fit comes from how well the variation in each variable is explained by the fitted factor model (Pett *et al.*, 2003; Polit, 2010). Such a measure is provided by the final communality estimates, which are the ratio or percentage of variance, explained by the model. The final communality estimates of all the participation indicator variables here are reasonably high (4.213742/6 = 70%), thus indicating that most of the variance associated with the original variables can be accounted for by these two factors (Table 6.4).

Since the final communality estimates of the variables are unaffected by the factor rotation, they are not shown in Table 6.6. Although the final communality estimates of variables are unaffected by the factor rotation, the common variance explained by the rotated factors (*3.2102671/4.213742 ≈ 76.2% and 1.0034749/4.213742 ≈ 23.8%*) are slightly different to those of non-rotated ones (*3.2264381/4.213742 ≈ 76.6% and 0.9873039/4.213742 ≈ 23.4%*). The best explained variable is membership length with almost 99.8% of its variance explained, followed by participation in decision-making (with approximately 88% variance explained) and participation at meetings (with approximately 83.4% variance explained).

Construction of Participation Index

The participation index is constructed by using factor scores, which were computed directly by the factor analysis. A weighted factor score (F_{12}) was computed by taking a weighted sum of the factor scores: weights being the proportions of common variance explained by each factor. That is,

$$F_{12} = (0.766 * \text{Factor 1}) + (0.234 * \text{Factor 2})$$

These F_{12} factor scores were then normalised to take values between 0 and 1 by using the formula:

$$\text{Factor normalised} = \frac{\text{factor score} - \min(\text{factor score})}{\max(\text{factor score}) - \min(\text{factor score})}; \quad 0 \leq F_{12} \leq 1$$

The respondent households were then grouped by the participation index category, based on their normalised factor scores, such that the higher the factor score, the higher is the household participation index. Natural cut-off points of the normalised factor scores were used to define the participation index. Although the natural cut-offs between index 2 and 3, 3 and 4, and 4 and 5 are distinct, the break point between index 1 and 2 is marginal. The cut-off point between index 1 and 2 is, therefore, taken half-way between the scores. Table 6.7 shows the number of households grouped by participation index category. A total of 60 households have a very low participation index, whilst 27 households have a very high participation index. The table shows that more than 50% of total respondent households belong to below the average participation index. The observation from the field also suggests a similar situation and hence, this is a reason to accept this grouping of participation index.

Table 6.7: Respondent households grouped by participation index category

Very Low	Low	Average	High	Very High
60 (30)	52 (26)	29 (14.5)	32 (16)	27 (13.5)

Note: Percentages are in parenthesis.

Table 6.8 shows the participation index of the respondent households by wealth and caste group. In terms of wealth category, the highest proportion (44%) of rich households is above the average participation index, whilst the highest proportion of medium households (53%) and poor households (79%) are below the average

participation index. It is important to note that none of the poor households fall into the very high participation index. In terms of caste group, although the highest proportion of high caste households (44%) fall below the average participation index, a significantly higher proportion of them (37%) are above the average index amongst the three caste groups. However, the majority of Janajatis (65%) and lower caste (76%) households belong to below the average participation index. Again, none of the lower caste households belong to the very high participation index (Table 6.8). This result is also consistent with findings of the descriptive statistics that none of the poor and lower caste households has very high level of overall participation. This also justifies the grouping of the participation index, based on the natural cut-off points.

Table 6.8: Participation index of respondent households by wealth and caste

Participation Index	No. of HH	Wealth Category			Caste Group		
		Rich	Medium	Poor	High Caste	Janajatis	Lower Caste
Very low	60	12 (22)	32 (36)	16 (28)	29 (29)	23 (32.5)	8 (28)
Low	52	8 (14)	15 (17)	29 (51)	15 (15)	23 (32.5)	14 (48)
Average	29	11 (20)	11 (13)	7 (12)	19 (19)	8 (11)	2 (7)
High	32	10 (18)	17 (19)	5 (9)	18 (18)	9 (13)	5 (17)
Very High	27	14 (26)	13 (15)	0 (0)	19 (19)	8 (11)	0 (0)
Total	200	55 (100)	88 (100)	57 (100)	100 (100)	71 (100)	29 (100)

Note: Figures in parenthesis are percentage of households within wealth and caste group categories.

The participation index constructed through factor analysis is used in Section 6.2.2, as a dependent variable against the incentive variables to analyse the relationship between the users' level of participation and different incentives.

6.2.2 Relationship of Incentive Variables with Participation Index

The relationship, in terms of the degree and direction, between different incentive variables and participation index was measured by using correlation analysis, which is presented in Table 6.9. The result shows some incentive variables, such as social security, infrastructure and property rights, are found to be significantly associated with participation index (significant at 1% level), whilst the access variable is slightly correlated with the index (significant at 10% level).

Table 6.9: Correlations between participation index and incentive variables

	Pearson Correlation Coefficients (N = 200)						
	Index	Access	Income	Social Security	Infrastructure	Property Rights	Payment
Index	1						
Access	0.1175	1					
Income	-0.1594*	0.4086**	1				
Social Security	0.4443**	0.0381	-0.0264	1			
Infrastructure	0.2385**	0.0006	-0.0438	0.3766**	1		
Property Rights	0.4993**	0.0084	-0.2428**	0.4607**	0.3476**	1	
Payment	0.1409*	-0.0188	-0.1537*	0.2498**	0.2091**	0.4474**	1

** Significant at 5% level; ** significant at 1% level*

The Chi-square values were also estimated as a testing procedure, in order to test the association of incentive variables and the participation index. Chi-square value allows the making of decisions about whether there is a relationship between two or more variables. It measures the strength of that relationship, or the degree of association between the variables. However, even though a Chi-square test may show a statistical significance between two variables, the relationship between those variables may not be substantively important (Crewson, 2006). The Chi-square relationship between participation index and incentives are presented in Table 6.10. This shows that all the incentive variables, except 'access', have a significant association with the participation index.

Table 6.10: Chi-square relationship between participation index and incentives

Incentive Variables	Chi-square values	P-value
Access	14.0477	0.5952
Income	36.9835	0.0021
Social Security	57.6366	<0.0001
Infrastructure	37.6396	0.0017
Property Rights	104.0236	<0.0001
Payment	28.9777	0.0040

6.2.3 Tests for Multicollinearity

Multicollinearity is a statistical problem that occurs when two or more of the explanatory variables in a multiple regression are highly correlated (Gujarati & Porter, 2009; O'Brien,

2007). It affects the parameter estimates, by increasing the standard errors of the coefficients, or it results in wrong signs and a magnitude of regression coefficient estimates, which in turn affects the significance of some explanatory variables (Gujarati & Porter, 2009; O'Brien, 2007). Therefore, a test for multicollinearity of the explanatory variables was carried out, in order to check if the explanatory variables are highly correlated.

The literature suggest that, as a general rule of thumb, there will be a problem of multicollinearity in the model, if the variance inflation of one of the explanatory variables is greater than 5 (O'Brien, 2007), or the largest condition index in collinearity diagnostics is greater than 30 (Belsley *et al.*, 2004; M. Wissmann *et al.*, 2007). The results of the test are presented in Table 6.11 and 6.12, which show **negligible multicollinearity**. The test results show that the variance inflation of the incentives variables is less than 2 (Table 6.11) and the largest condition index is less than 25 (Table 6.12). Furthermore, none of the pair-wise correlations amongst the incentive variables are greater than 0.5 (Table 6.9).

Table 6.11: Tests for multicollinearity (variance inflation)

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Tolerance	*Variance Inflation*
Intercept	1	-1.0985	0.6796	-1.6200	0.1076	.	*0.0000*
Access	1	0.2849	0.1150	2.4800	0.0141	0.8202	*1.2192*
Income	1	-0.1813	0.0849	-2.1400	0.0340	0.7632	*1.3104*
Social Security	1	0.5071	0.1229	4.1300	<.0001	0.7269	*1.3757*
Infrastructure	1	0.0293	0.0999	0.2900	0.7699	0.8167	*1.2245*
Property Rights	1	0.5863	0.1144	5.1200	<.0001	0.6102	*1.6388*
Payment	1	-0.2434	0.1292	-1.8800	0.0610	0.7925	*1.2619*

Table 6.12: Tests for multicollinearity (condition index)

Number	Eigenvalue	*Condition Index*	Proportion of Variation						
			Intercept	Access	Income	Social Security	Infrastructure	Property Rights	Payment
1	6.6982	*1.0000*	0.0003	0.0005	0.0015	0.0012	0.0016	0.0006	0.0008
2	0.1282	*7.2287*	0.0006	0.0135	0.3517	0.0378	0.0674	0.0210	0.0082
3	0.0628	*10.3272*	0.0070	0.0102	0.0639	0.0027	0.7305	0.0388	0.1069
4	0.0499	*11.5858*	0.0066	0.0081	0.0287	0.8288	0.1791	0.0009	0.0713
5	0.0277	*15.5379*	0.0217	0.3733	0.3081	0.0036	0.0003	0.0263	0.5151
6	0.0220	*17.4539*	0.0150	0.1228	0.2387	0.1250	0.0073	0.8827	0.1633
7	0.0112	*24.4812*	0.9488	0.4715	0.0076	0.0008	0.0139	0.0296	0.1344

6.2.4 Ordered Probit Model: The Empirical Results

It is hypothesised in this study that an individual's decision, to participate in the governance of common property resources, depends on the type and level of incentives that s/he values and that matches with his/her corresponding motives. Given the ordinal nature of an individual's response (the dependent variable in this study), an ordered probit model was used to identify the relationship between different incentives and the corresponding level of participation of user group members in the governance of common property resources.

Table 6.13 reports the analysis of maximum likelihood parameter estimates for the ordered probit model. The Table presents the results of an ordered probit equation, where the dependent variable is ordered from 1 to 5. The model is highly statistically significant ($p < 0.0001$), with a Chi-square statistics of 66.45. This means that the explanatory power of the model used was statistically sound, in order to relate the explanatory variables to the dependent variable. The log likelihood (-277.77) also confirms that the model fits the data and it has good explanatory power. The coefficients of the intercepts, or the threshold parameters μ_2, μ_3 and μ_4, are also statistically significant (significant at 1% level), thus suggesting the positive ordinal relationship that μ_2, μ_3 and μ_4 are ordered as $0 < \mu_2 < \mu_3 < \mu_4$.

Table 6.13: The role of incentive related variables in users' level of participation

Parameter	DF	Estimate	Standard Error	95% Confidence Limits		Chi-Square	Pr > ChiSq
Intercept	1	2.1618	0.6339	0.9195	3.4042	11.63	0.0006
Access	1	0.2384	0.1088	0.4517	0.0251	4.80	0.0285
Income	1	-0.1628	0.0797	-0.0065	-0.3190	4.17	0.0411
Social Security	1	0.4366	0.1168	0.6655	0.2076	13.97	0.0002
Infrastructure	1	0.0226	0.0932	0.2053	-0.1601	0.06	0.8084
Property Rights	1	0.4761	0.1097	0.6910	0.2611	18.84	<.0001
Payment	1	-0.2476	0.1224	-0.0077	-0.4875	4.09	0.0431
Threshold Parameters							
Intercept2 (μ_2)	1	0.8096	0.0994	0.6147	1.0044	66.32	<.0001
Intercept3 (μ_3)	1	1.3556	0.1275	1.1057	1.6056	113.00	<.0001
Intercept4 (μ_4)	1	2.0934	0.1613	1.7773	2.4095	168.45	<.0001

Log Likelihood = -277.77; Likelihood Ratio Chi-squared (6 df)= 66.45; Prob (Chi-squared) = 0.000.

The results of the ordered probit analysis show that only five of the six incentive variables are statistically significant. However, none of the variables were removed from the model, on the basis of statistical non-significance, since all the variables are of

interest and expected to have some effect on users' level of participation. Although it was expected that all the incentives would have a positive relationship with the participation, two of the six variables had negative coefficients (Table 6.13).

Both the variables related to the material incentive are statistically significant. The access variable (access to forests and availability of forest products) is statistically significant (coefficient = 0.2384, p = 0.0285), showing an evidence that this incentive significantly affects users' level of participation. Increased access to forests and availability of forest products are expected to be an important incentive, in order to increase the users' level of participation in the governance and management of common property resources. Similarly, the income variable (financial support by CFUGs to supplement household income) is also statistically significant, but it has a negative sign (coefficient = - 0.1628, p = 0.0411). This indicates that the higher the financial support to the users, for their income generation activities, the lower the likelihood of their participation in the governance and management of their common resources. The negative sign of the income variable is an interesting result and it needs further discussion, because increased financial support for the users (for their income generating activities) were expected to be an important incentive, in order to increase their participation in resource governance.

Only one of the two variables related to the social incentive – social security, support and cohesion through local institution building – is statistically significant (coefficient = 0.4366, p = 0.0002). This indicates that the higher the social security and cohesion/ through local institution building amongst user households, the higher the likelihood of household participation in the programme. Another social incentive variable – infrastructure – is, however, statistically insignificant. The explanation for the statistical non-significance of this variable might be that, although major expenditure from group funds went to community infrastructure development activities, the benefits from this investment were mostly captured by economically advantaged elite members of the group (Kanel & Niraula, 2004; Pokharel, 2009). Hence, this could not serve as a strong incentive, particularly for poor and disadvantaged groups, to improve their participation in the governance and management of common property resources.

Similarly, both variables related to normative incentives are significant. The well-defined and assigned property rights over forest resources to the users variable is statistically significant (coefficient = 0.4761, p < 0.001). The statistical significance of this variable shows that well-defined and enforced property rights can be a strong

economic incentive for forest users to participate in the governance and management of community forestry programmes. Well-defined and enforced property rights over forest resources, for the users, increases the likelihood of users' participation in the programme. One of the implications of this result might be that well-defined and enforced property rights is one of the conditions for people's participation. When property rights over resources assigned to users is well-defined and enforced, the users are guaranteed custodianship of their resources, which results in increased level of participation.

The statistical significance of another normative incentive variable, the payment for environmental services variable (coefficient = - 0.2476, p = 0.0431), indicates that payment for environmental services is also a strong economic incentive for the users to participate in the programme, but the negative sign shows that the higher the payment, the lower the likelihood of participation. It is interesting to note that this result corresponds to the result of the financial support incentive, in the sense that both these variables have a negative sign and both variables are related to CFUG fund mobilisation/financial transactions. However, it was observed from the field that not all users had an adequate knowledge and awareness about the environmental values of their forests and the environmental benefits that the forests could generate, which might have also affected their responses about this incentive.

Marginal Effects

The marginal effects of the explanatory variables on predicted probability of different levels of participation is discussed in this section. Marginal effect measures the expected instantaneous change in the dependent variable, as a function of a change in a certain explanatory variable, whilst keeping all other categories constant (Gujarati, 1995). In other words, marginal effect is a measure of the instantaneous effect that a change in a particular explanatory variable has on the predicted probability of the dependent variable, when the other covariates are kept fixed. Thus, the marginal effect refers to change in the probability of response with a unit change in a given explanatory variable (Greene, 2008). Interpretation of marginal effects helps to answer questions such as: *Will an individual be more willing to participate if s/he receives incentives they value?*

The marginal effects of significant explanatory variables on predicted probability of different levels of participation are presented in Table 6.14. The results of these

marginal effects show that, for Y equal to 1 and 2, a unitary increase in one of the explanatory variables produces a negative variation in the probability of users' responses in that category, with the exception of income and payment, for which the sign is positive. Similarly, for Y equal to 3, 4 and 5, the signs of the marginal effect is positive everywhere, with the exception of income and payment, for which the sign is negative.

Table 6.14: Marginal effects of significant explanatory variables for ordered probability model

Variable	P (Y=1)	P (Y=2)	P (Y=3)	P (Y=4)	P (Y=5)
Access	-0.0669	-0.0109	0.0106	0.0268	0.0403
Income	0.0457	0.0075	-0.0072	-0.0183	-0.0275
SocialSecurity	-0.1224	-0.02	0.0194	0.0492	0.0738
PropertyRights	-0.1335	-0.0218	0.0212	0.0536	0.0805
Payment	0.0694	0.0113	-0.011	-0.0279	-0.0419

The figure below (Figure 6.3) shows the graphical representation of the marginal effects of incentive variables on probability of users' level of participation. The result shows that amongst the five categories, there is a small influence of all variables in the category Y = 3 (average level of participation), where the largest marginal effect is 2.1% of property rights variable (Table 6.14). This means that the probability of users' responses on their average level of participation would change insignificantly, whatever be the variation in one of the explanatory variables. However, there is a significant influence of all variables in the category Y = 1 (very low participation). In this category, the relevant marginal effects in the change of probabilities and (in particular) in relation to a unit change is observed as high in the property rights variable (-13.4%), followed by the social security variable (-12.2%).

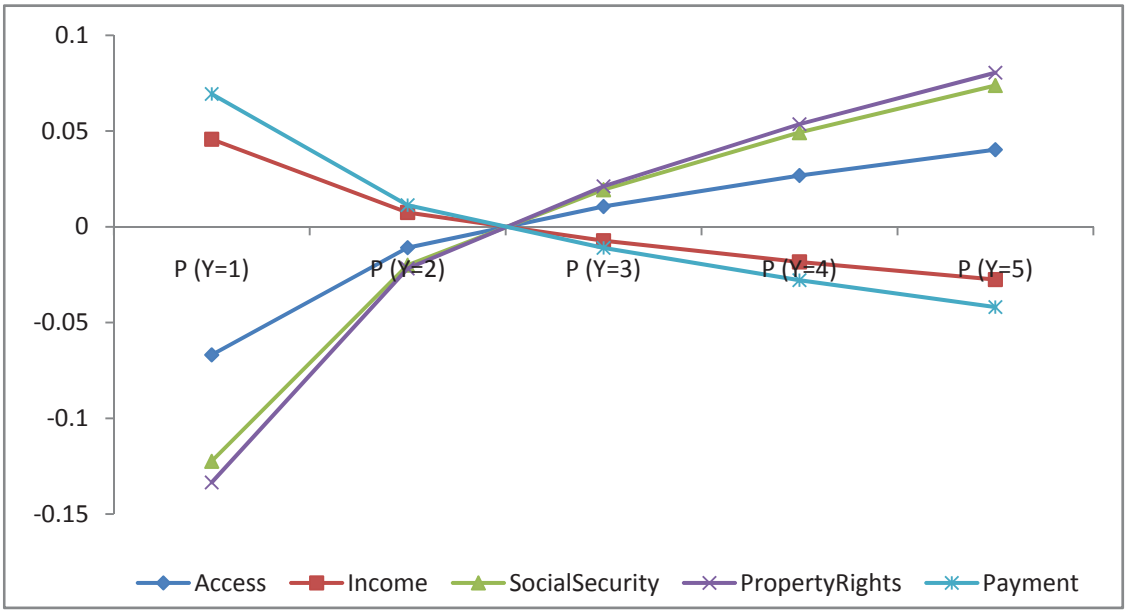


Figure 6.3: Marginal effects of significant incentive variables on probability of participation

Where marginal effects of individual variables are concerned, property rights have the largest marginal effects for all categories of Y, followed by social security. With one unit increase in property rights, the probability of expressing Y = 1 will decrease by 13.4%, whereas that of expressing Y = 4 and 5 will increase by 5.4% and 8%, respectively (Table 6.14). Similarly, with one unit increase in social security, the probability of expressing Y = 1 will decrease by 11.2%, whereas that of expressing Y = 4 and 5 will increase by 4.9% and 7.4%, respectively. The marginal effects of other explanatory variables can also be explained in similar ways.

6.3 Relationship between Incentives and Participation Indicators: The PLS Method

Although an ordered probit model was used to identify the relationship between different incentives and the corresponding level of participation of user group members in the governance of common property resources, it was unable to deal with multicollinearity that existed in the participation indicators and incentive variables. The use of possible alternative models was also explored for data analysis, but PLS regression was found to be more suitable amongst other multivariate methods: and hence the PLS method was used to further analyse the data.

The PLS regression method is a statistical tool designed to deal with multiple regression problems, where the number of observations is small and correlations between variables are high (Yang *et al.*, 2007). It aims to transform a set of correlated explanatory variables into a new set of uncorrelated variables, called PLS factors. PLS factors capture most of the information for the explanatory variables, which is useful for explaining and predicting the dependent variables: and it reduces the dimensionality of the regression, by using fewer PLS factors than the number of explanatory variables (Yang *et al.*, 2007).

In order to estimate the relationship between participation and incentives, participation indicators are used as the dependent variables (Y) and incentive variables are used as the explanatory variables (X) in this analysis. The outputs include the variation accounted for by PLS factors; cross-validation analysis; correlation loading plot; dependent variable weights; model effect loadings; regression parameter estimates; and regression parameter profile and variance importance plot. The empirical results of the PLS method are described in the following sections.

6.3.1 Variation Accounted for by the PLS Factors

Table 6.15 provides the SAS output of percent variation accounted for by PLS factors. The first six PLS factors include all the variance information of X and Y. By using 68.7% of information in the explanatory variables, the first three PLS factors explain 30.7% of variance in the participation indicators. The first PLS factor itself summarises 33.5% of information in the explanatory variable system and it explains 24.4% of variation in the response variable system.

Table 6.15: Percent variation accounted for by partial least squares factors

No of Extracted Factors	Model Effects		Dependent Variables	
	Current	Total	Current	Total
1	33.4917	33.4917	24.3519	24.3519
2	18.1334	51.6252	4.8789	29.2307
3	17.0608	68.6860	1.4791	30.7098
4	10.5405	79.2265	0.4065	31.1163
5	10.6072	89.8337	0.2368	31.3531
6	10.1663	100.0000	0.0511	31.4042

The cross validation method, which determines the number of PLS factors needed to optimise the predictive ability of the model, has retained only three factors (Figure 6.4). The plot of the proportion of variation explained (or R-square) makes it clear that there is an area of very little variation in the response variable, after three factors are included in the model. Therefore, the first three PLS factors are regarded as the most important PLS factors.

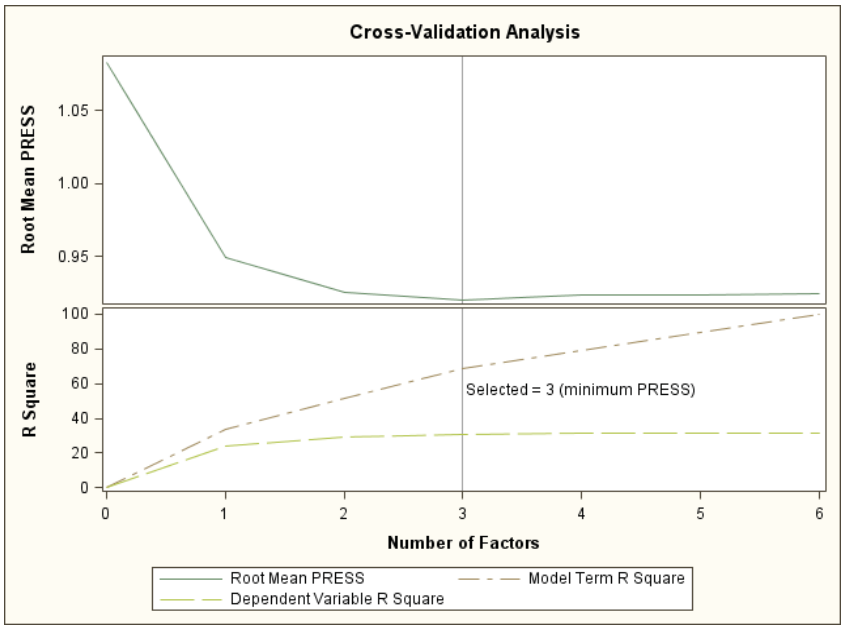


Figure 6.4: Cross-Validation Analysis

6.3.2 Correlation Loading Plot

The correlation loading plot (Figure 6.5) provides a compact summary of many features of the PLS model. For example, the loadings show how much variation in each variable

is accounted for by the first two factors, jointly by the distance of the corresponding point from the origin: and individually by the distance for the projections of this point onto the horizontal and vertical axes. That the dependent variables are only partially explained by this model is reflected in the fact that the points for most of the participation indicators are between a 25% - 50% circle. This case is also almost similar to the explanatory (incentive) variables.

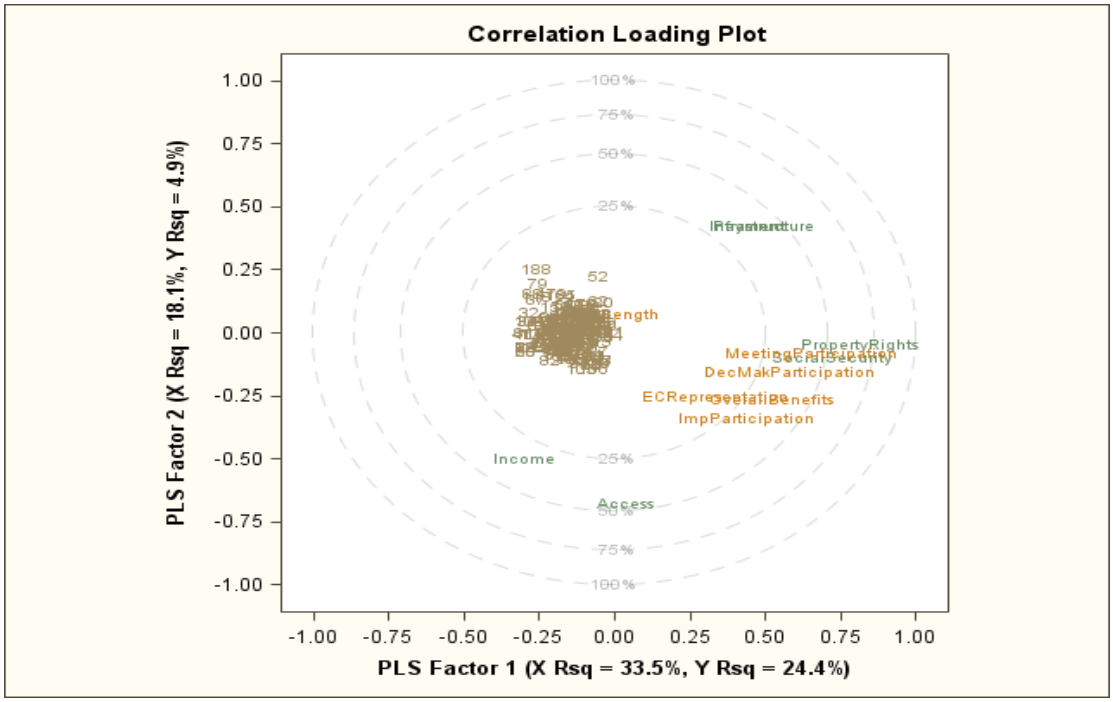


Figure 6.5: Correlation loading plot

Furthermore the plot also shows the correlation of PLS factors with the dependent and explanatory variables. It shows that the first PLS factor is positively correlated with the participation indicator variables, except membership length. It is also positively correlated with the incentive variables, except income. The first factor is highly positively correlated with two incentive variables (property rights and social security) and two participation indicator variables (participation at meetings and participation in decision-making). The second PLS factor, on the other hand, has a positive correlation only with one participation indicator variable, i.e., membership length, but a negative correlation with the remainder of the five indicators. Similarly, it has a positive correlation with only two incentive variables (infrastructure and payment) and high (but negative) correlation with another two incentive variables (access and income).

6.3.3 X-Scores versus Y-Scores Plot

The plot of the X-scores versus the Y-scores helps to explore how PLS chooses successive factors. For a suitable model, the first factor shows a high correlation between the X-scores and Y-scores, but the correlation decreases from one factor to the next (SAS, 1999). The plot of the X-scores versus the Y-scores, for the first three factors, is shown in Figure 6.6. The plot shows a high correlation between X- scores and Y-scores for the first factor, but sharply diminishing correlation after that factor.

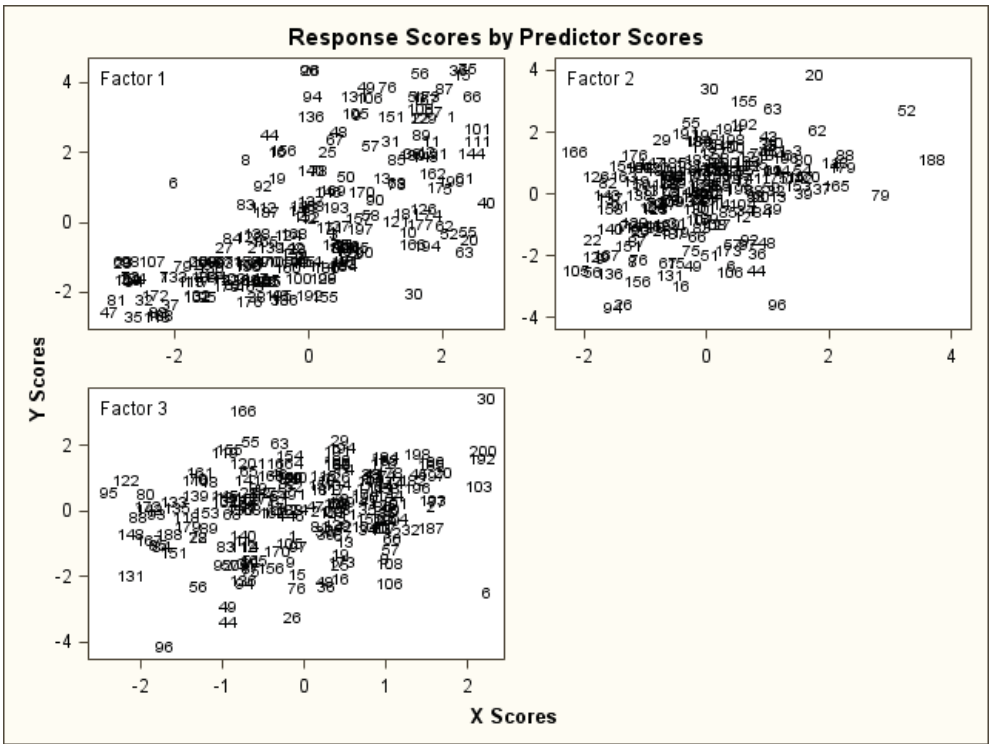


Figure 6.6: X-scores versus Y–scores plot

Table 6.16 provides the SAS output of the dependent variable weights of participation in each PLS factor. Here, only variables with at least 0.5 or just under 0.5 weights are considered for interpretation. Amongst the dependent variable weight of the first PLS factor, participation at meetings (0.5394) ranks the highest, followed by participation in decision-making (0.4891). This means that the first PLS factor mainly explains the variance information about participation at user group meetings.

Similarly, amongst the dependent variable weight of the second PLS factor, participation in implementation (-0.6317) ranks the highest, with a negative sign, followed by overall benefits (-0.4979), again with a negative sign. This means that the second PLS factor mainly explains the variance information about users' participation

in implementation and benefits. The third PLS factor, again, has its highest loading for participation in decision-making (-0.6238) and participation at meetings (-0.5911). However, the variance information about membership length and representation on a group executive committee is not well explained by any of these three PLS factors.

Table 6.16: Dependent variable weights of participation indicators

Number of Extracted Factors	Membership Length	EC Representation	Meeting Participation	Decision-Making Participation	Implementation Participation	Overall Benefits
1	0.0665	0.3049	0.5394	0.4891	0.3940	0.4661
2	0.1376	-0.4726	-0.1551	-0.2946	-0.6317	-0.4979
3	0.0466	-0.1585	-0.5911	-0.6238	-0.4816	-0.0466

Table 6.17 provides the model effect loadings of incentive variables in each PLS factors. Again, only variables with at least 0.5 loadings are considered. As explained above, amongst the model effect loadings of the first PLS factor, property rights (0.6101) rank the highest, followed by social security (0.5458). Similarly, the second PLS factor has its highest loading for access variable (-0.6534) and the third PLS factor has its highest loading for income variable (0.7273).

Table 6.17: Model effect loadings of incentive variables in each PLS factors

Number of Extracted Factors	Access	Income	Social Security	Infrastructure	Property Rights	Payment
1	0.1097	-0.1246	0.5458	0.3829	0.6101	0.3946
2	-0.6534	-0.4800	-0.0984	0.4074	-0.0486	0.4058
3	0.4177	0.7273	0.0607	0.4038	-0.2880	0.2166

However, amongst the model effect weights of incentive variables in each PLS factors, property rights (0.7262) ranks the highest, followed by social security (0.5980) (Table 6.18). This means that the first PLS factor mainly explains the variance information about property rights and social security variables. Similarly, the second PLS factor is dominated by infrastructure (0.6273), followed by payment (0.5955). The income (0.7382) can be extracted from the third PLS factor.

Table 6.18: Model effect weights of incentive variables in each PLS factors

Number of Extracted Factors	Access	Income	Social Security	Infrastructure	Property Rights	Payment
1	0.2396	-0.1063	0.5980	0.2330	0.7262	0.2581
2	-0.4997	-0.3293	-0.0653	0.6273	-0.2425	0.5955
3	0.4004	0.7382	0.1208	0.3365	-0.3274	0.2697

6.3.4 Regression Parameter Profile and Variable Importance for Projection

Earlier, the correlation loading plot has drawn some inferences about the relationship between individual predictors and the dependent variables. However, a more direct indication of which predictors are most useful for predicting the dependent variable is given by the regression coefficient profile and the variable importance plot (SAS, 1999). Table 6.19 provides parameter estimates for centred and scaled data[41], which gives the importance each predictor has in the prediction of the response. It shows that property rights and social security have relatively higher coefficients to all the participation indicators, except for membership length. These relationships show that well-defined and enforced property rights and social security and cohesion through local institution building have a strong influence on users' level of participation. Furthermore, the access variable is positively correlated with the participation indicators, except for membership length, thus indicating that access to forests has a positive influence on users' level of participation.

Table 6.19: Parameter estimates for centred and scaled data

Incentives	Membership Length	EC Representation	Meeting Participation	Decision Making Participation	Implementation Participation	Overall Benefits
Intercept	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Access	-0.0244	0.1927	0.1243	0.1533	0.2404	0.2390
Income	-0.0187	0.0162	-0.1352	-0.1150	-0.0275	0.0265
Social Security	0.0174	0.2120	0.2929	0.2839	0.2761	0.2974
Infrastructure	0.0606	-0.1020	-0.0303	-0.0861	-0.1811	-0.0599
Property Rights	0.0022	0.3223	0.4617	0.4678	0.4645	0.4106
Payment	0.0582	-0.0822	-0.0013	-0.0546	-0.1483	-0.0388

[41] *The mean centred and scaled to unit variance data gives the same weight to variables in the analysis (Yang et al., 2007)*

However, membership length is barely influenced by any of the incentives, since all incentive variables have very low coefficients to membership length (Table 6.19). This is obvious because membership length simply means the number of years that a household has been a member of the group, irrespective of its involvement in the governance of that group. The graphical representation of the profiles of centred and scaled parameter estimates is given in Figure 6.7.

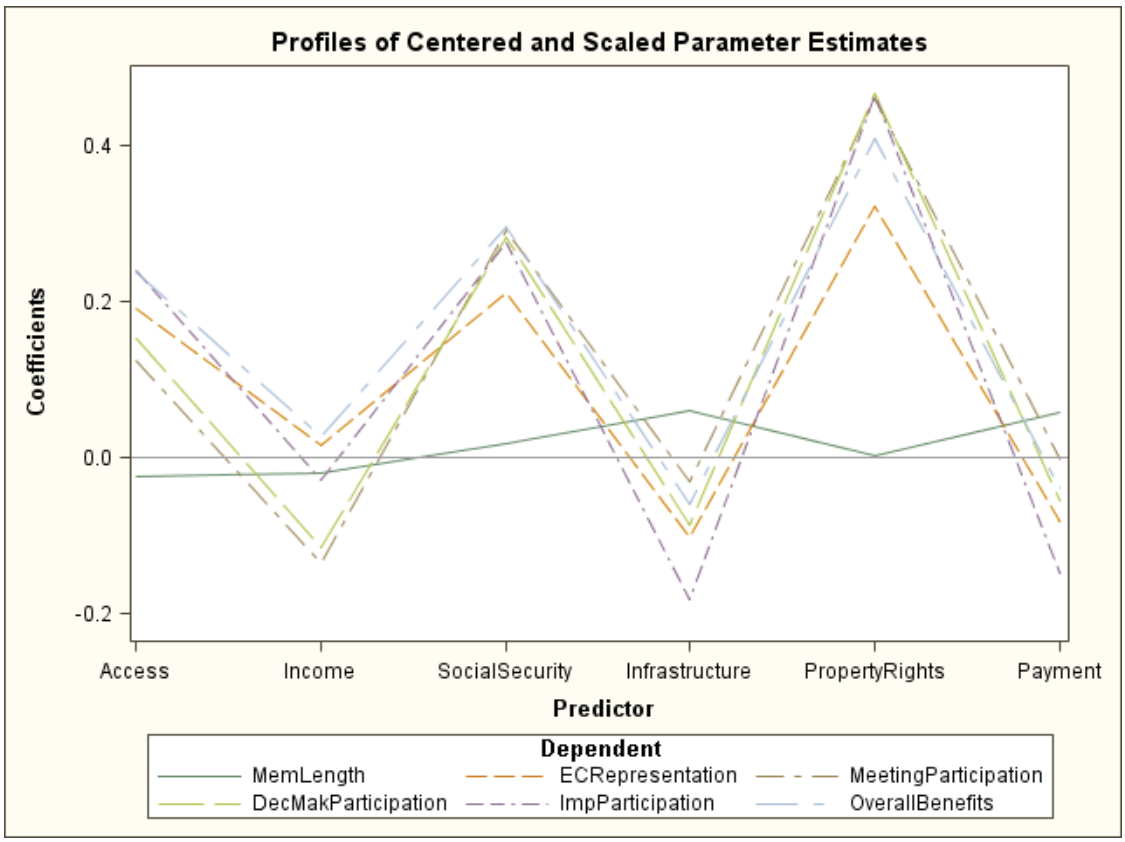


Figure 6.7: Regression parameter profile plot

The variable importance plot (Figure 6.8) reflects the contribution of each predictor in fitting the PLS model, for both dependent and explanatory variables. Wold, in Umetrics (1995), suggested that a predictor should have a relatively larger coefficient and a larger value of variable importance (more than 0.8), in order to make a contribution to the model. The figure shows that two predictors – social security and property rights – have a high variable importance, thus indicating their significance in improving users' participation, whilst the remaining four predictors have a lower variable importance, but they still make a significant contribution to the model.

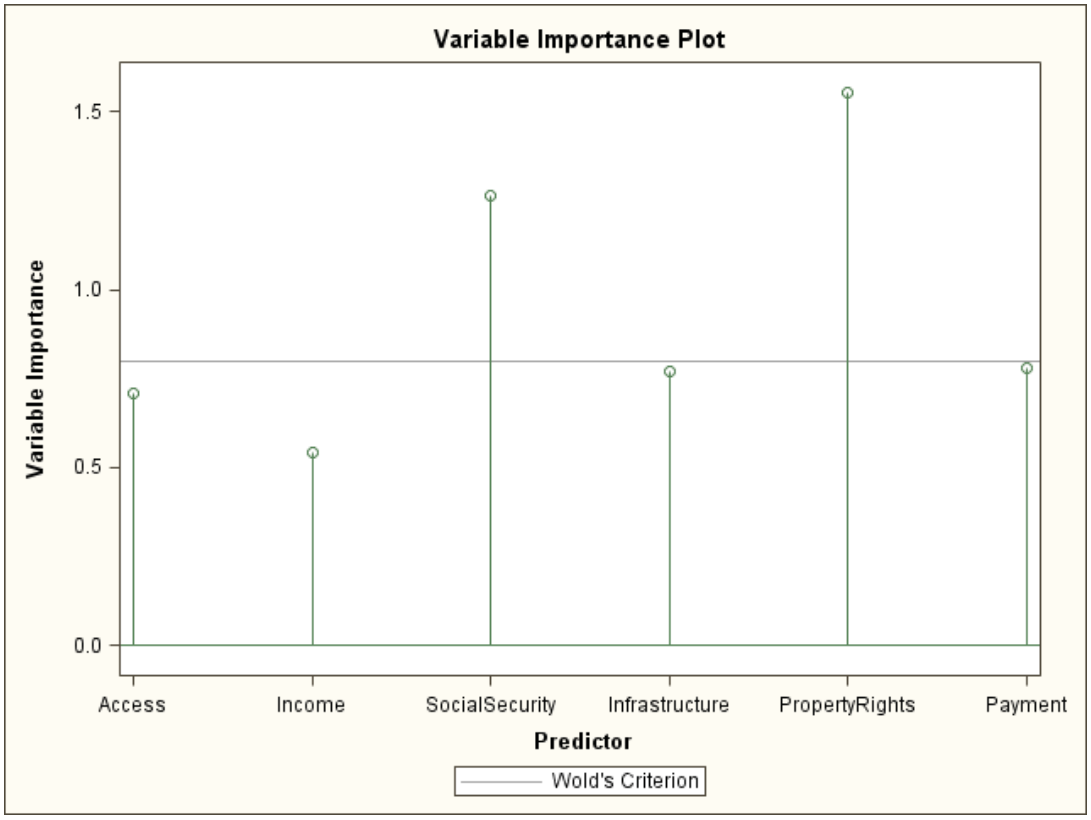


Figure 6.8: Variable importance plot

6.4 Summary

In this chapter, the relationship between incentives and participation is estimated. The process and results of the statistical models, which were used to estimate which incentives best address and ensure people's willingness and ability to participate in the governance and management of community property resources, have been described. A two-stage model was constructed to estimate the relationship between incentives and participation. An index of participation was constructed as a proxy for participation, by using factor analysis on indicators of participation to identify different choice situations. An ordered probit model was estimated to identify the relationship between different incentives and levels of participation.

The factor analysis pointed out two common factors in which all elements of the participation index were loaded. Once the factor scores were computed, they were used to construct the participation index, as a proxy for users' participation in the governance of common property resources. The participation index was constructed

and based on the normalised weighted sum of the factor scores of each respondent household and computed directly by the factor analysis. The weights used were the proportion of variation accounted for by each of the factors. The natural cut-off points of normalised factor scores were used to define the participation index. The respondent households were then grouped by the participation index, in such a way that the higher the normalised factor score, the higher is the household participation index.

The results of the ordered probit analysis show that only five of the six incentive variables are statistically significant. However, none of the variables were removed from the model on the basis of statistical non-significance. Increased access to forests and availability of forest products, in addition to social security and cohesion through local institutional building and well-defined and enforced property rights, show a strong positive relationship with levels of participation. Financial support to supplement household income and payment for environmental services resulted in a significant but negative relationship with levels of participation. Local community infrastructure development, however, shows an insignificant relationship with the level of participation. The property rights incentive has the largest marginal effects for all levels of participation, followed by the social security and cohesion incentives.

As an alternative (and for comparative purposes) a partial least square approach was also undertaken, in order to link the participation indicators to the various incentives. The PLS results show that property rights, social security and cohesion and access to forests and forest products are positively correlated with participation indicators. These incentives have a significant influence on participation in decision-making and participation in resource utilisation, or benefit sharing.

In the following chapter, the influence of incentives on the participation of users in the common property resource governance under the community forest management regimes, which are identified in Chapters Five and Six, are discussed in relation to the existing body of literature.

CHAPTER SEVEN

DISCUSSION

7.1 Introduction

In this chapter, the incentives that influence the participation of users in common property resource governance, under community forest management regimes, are discussed in relation to the existing body of knowledge. Firstly, the influence of socio-economic characteristics on participation in resource governance is discussed, in order to gain an understanding about how the incentives provided by community forest management regimes in Nepal are affected by these characteristics. Subsequently, the role of incentives to address and ensure users' willingness and ability to participation — and how changes in these incentives can affect users' motivation to participate in the governance and management of common property resources — are discussed.

7.2 Influence of Socio-Economic Characteristics on Participation in Resource Governance

A number of empirical studies have highlighted that users' decisions to participate are greatly influenced by the socio-economic characteristics of users (e.g., Agrawal & Gupta, 2005; Baland & Platteau, 1996; Faham *et al.*, 2008; Lise, 2000; Maskey *et al.*, 2006): and these socio-economic characteristics largely influence users' perceptions on incentives. More detailed explanations of the socio-economic characteristics of users have been presented in Chapter 5. The findings from this research also agree that socio-economic characteristics influence users' participation decisions and their level of participation. Furthermore, this research provides a detailed example of the interactions between these socio-economic characteristics and their influence on participation in common property resource governance.

Participation, in this study, does not simply mean membership, physical presence in meetings and sharing costs and receiving benefits: it means involvement of users and that people have a voice and (as a result) they can influence the group's decisions (to ensure that decisions are in their favour), in addition to having a strong influence on the

outcomes of those decisions. Participation in this study specifically focuses on the three components of participation, namely, *contribution to*, *benefiting from* and *involvement in decision-making.* Users' participation in community forest governance is observed in four main stages: user group assemblies, decision-making processes, operational plan implementation and utilization of resources or benefit distribution. Based on how users' participate, five levels of participation have been identified: very low, low, average, high and very high (see Section 5.3 for details).

On average, respondents show a greater degree of participation in forest management activity implementation and resource utilisation, than in decision-making. This finding is consistent with the findings of other similar studies (e.g., Khanal Chhetri, 2005; Maskey *et al.*, 2006). The data shows that the poor and lower caste users are involved in a low level of participation at user group meetings and decision-making: and they have a lower access to benefits. The rich and higher caste users are involved in high levels of participation and they have higher levels of access to benefits. Similarly, the EC members participate more at meetings and decision-making and they derive more benefits than the non-EC members, thus indicating that representation on an executive committee results in better access to decision-making levels, which then results in a higher participation of EC members in resource governance.

Although there is no significant variation amongst rich households in their level of participation in user group assemblies, the majority of households amongst the poor and medium class participate at a low level. In terms of caste groups, the majority of households amongst the lower caste and Janajatis participated at a low level of participation. Not surprisingly, none of the poor and lower caste households participate at a very high level. In general, EC members have a higher level of participation than non-EC members. This is an interesting result, which shows that even the user group meetings are dominated by the rich, higher caste and EC members, in terms of their participation and influence on such meetings.

The data points out that the majority of households do not participate in decision-making, mainly due to a lack of access to decision-making levels. Again, the majority of the rich and higher caste households dominate the participation and they have a great influence on decision-making forums. The majority of the households amongst other wealth and caste groups do not participate in decision-making. These findings that poor and lower caste users are involved in a low level of participation in decision-making also coincides with findings in the literature, which reveal that low participation

excludes lower socio-economic profile groups from decision-making processes and ultimately from benefits (e.g., Agrawal & Gupta, 2005; Maskey *et al.*, 2006). Similarly, majority of EC members participate at a higher level in decision making than non-EC members. This again supports the findings of the literature that users, who have better access to decision-making levels, through representation on executive committees, have a greater likelihood of participation (e.g., Agrawal & Gupta, 2005; Maskey *et al.*, 2006).

Altogether, almost all households participate in activity implementation, but their level of participation varies significantly. Labour contributions, cash contributions, monitoring, and technical and administrative support are the major forms of participation identified in activity implementation. Generally, EC members are involved in monitoring of implementation and providing technical and administrative support during the implementation. Amongst the wealth categories, a higher proportion amongst rich and medium households rate their participation as average, whilst a higher proportion of poor households rate their participation as low. Similarly, a higher proportion of the users rate their participation as average, throughout all caste groups. Although poor households have lower opportunity costs of labour, they value cash and they have a higher opportunity cost of time, which has resulted in their low level of participation.

The benefits from CFUGs are one of the strong incentives for users to participate in the governance of their common property resources. Almost 94 percent of respondents report deriving benefits from their CFUG, due to being a member of the group. Although the majority of households, across all wealth and caste groups, rate the benefits they receive as low or very low, a relatively higher percentage of rich and high castes report they receive a slightly higher level of benefits than the other wealth and caste groups. In terms of EC representation, a higher proportion of EC members rate the benefits they derived as high, while the majority of non-EC members report the level of benefits they receive as low. These findings match the findings of other similar studies, where executive committee members can influence decision-making outcomes, to maximise their own benefits from community forestry (Adhikari *et al.*, 2007; Bajracharya, 2008; Kanel, 2004; Kanel *et al.*, 2003).

From the above discussions, it can be summarised that wealth, caste and position in governance structures are key socio-economic characteristics that were found to have a significant influence on users' participation in resource governance and management. The findings of this research are relevant, in the context of similar research by other

scholars that also shows how wealthier high caste members tend to participate more in resource governance (e.g., Agrawal & Gupta, 2005; Bajracharya, 2008; Dolisca *et al.*, 2006; Dolisca *et al.*, 2009; Faham *et al.*, 2008; Lise, 2000; Maskey *et al.*, 2006). A number of scholars (Agrawal & Gupta, 2005; Dolisca *et al.*, 2006; Faham *et al.*, 2008; Lise, 2000; Maskey *et al.*, 2006) have highlighted the fact that these key socio-economic characteristics influence participation. Several other researchers (Agrawal, 2001; Bajracharya, 2008; Beck & Nesmith, 2001; Guijt & Shah, 1998) have further suggested that these characteristics are the basis for differential levels of power within and across social groups: and that power plays a significant role in participation. Following these propositions, it can be attributed that different levels of users' participation, in resource governance in the Hills of Nepal, is a result of their different levels of influence on CFUG governance structure and process, due to their differential levels of power, which determines their level of participation. Participation, in turn, results in them achieving access to resources and benefits: and vice versa (Figure 7.1).

In the Hills of Nepal, wealth, caste and social status are closely correlated with each other, where the majority of high castes are wealthy and they have a higher social status than the majority of lower castes, who are poor with a lower social status. The complex interactions of these three attributes are linked with the level of power, through which users influence the CFUG governance structure and processes, in order to participate in resource governance and management. The higher castes (due to their power) have a stronger representation within CFUG governance structures and processes and hence, they have a higher level of participation in resource governance, than the lower castes and ethnic groups. As argued by Maskey et al.(2006), this study agrees that forest benefits are dependent on the level of participation, particularly on decision-making: and vice versa. Benefits increase with an increase in levels of participation, which is one of the reasons for distributional inequity, where the majority of rich, high caste members have a higher level of participation and therefore they derive most of the benefits from community forests. However, Jumbe and Angelsen (2007) argued that rich, high caste people hold important positions in the governance structure, which compels them to participate in resource governance, in order to fulfil their obligations.

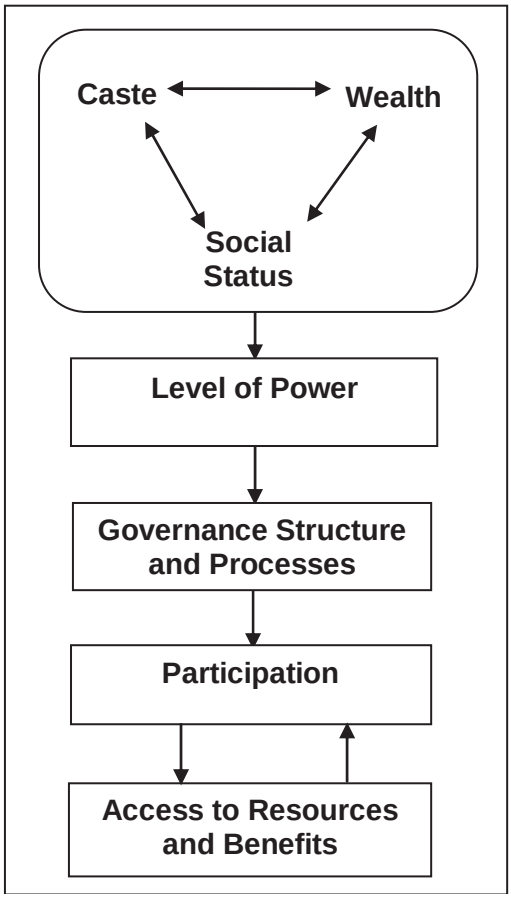


Figure 7.1: Linkages between socio-economic characteristics and participation

Moreover, the findings of this study suggest that there is a strong positive effect of affiliation or membership in other organisations on participation, which is consistent with Weinberger and Jutting (2001). However, as pointed out by Sharma (2004) and Chhetri (1999), the majority of lower castes and ethnic groups in the Hills of Nepal do not have membership in other local level organisations, due to which they lack prior knowledge and experience in resource governance and management. They also lack leadership capacity, since most of them are illiterate, compared to the rich, high castes. On the other hand, the wealthier higher castes have affiliations with a greater range of social organisations and a higher level of access to service providers (Agrawal & Gupta, 2005). Thus, they have prior knowledge and experience in collective action and a higher understanding, capacity and confidence to participate and take leadership for collective action in local resource governance and management, as suggested by Bista (1991), Woolcock (2001), Putna (2000).

This research has identified poor capacities and bargaining power, as being one of the significant hindrances to improving users' participation in common property resource governance. Differential capabilities lead to differential levels of participation. The poor and lower castes suffer more frequently from poor capabilities (in relation to resource governance) and weak bargaining power for their rights, as suggested by Agarwal (2001) and Platteau (2004). Wealthy high caste members, on the other hand, have better capabilities, in relation to resource governance, since they receive more training and capacity building support than the poor and disadvantaged groups, due to their linkages with government forestry staff (Agrawal & Gupta, 2005). Johnson (2004) and Beck and Nesmith (2001) argued that the capacities people hold determine their power: and power enables them to improve their participation. Thus, in the case of community forest management regimes in the Hills of Nepal, wealthy high caste members have better capabilities and hence more power (Bajracharya, 2008): and thus higher levels of participation. The influence of various incentives on users' level of participation is discussed in detail in the following section.

7.3 Influence of Incentives on Participation

Incentives, in this study, are defined as those mechanisms that positively impact on an individual's attitudes and behaviours, in order to motivate them to offer their active participation in collective arrangements for improved governance and management of their common property resources. There are many differences in users' responses to different incentives. The differences in these incentive variables provide a measure of variation within the community, in terms of their participation in common property resource governance. From the literature review in Chapter 3, participation in the governance and management of common property resources is the outcome of different types of incentives that face resource users, within varied social and economic circumstances that are structured by the interactions of the physical attributes of resources, the characteristics of the community or user group and the set of institutional arrangements used (Oakerson, 1986; Ostrom, 1990; Tang, 1991; Thomson & Freudenberger, 1997). The findings from this research are consistent with the literature that different types of incentives facing resource users influence users' willingness to participate in common property resource governance and management. Furthermore, this research provides a detailed analysis of the influence of incentives on users' participation decisions.

In the context of the community forestry programme in Nepal, six incentives, namely, access to forests and availability of forest products; financial support to supplement household income; social security and cohesion through local institutional building; local community infrastructure development; well-defined and enforced property rights; and payments for environmental services, were evaluated to analyse the influence of these incentives on users' level of participation in community forest governance and management. The selection of these incentives has been based on the extensive literature on organisational incentives in collective action and community-based resource management: and it includes potential inducements or opportunities for augmenting rural livelihoods under the community forest management regimes in Nepal, which could impact on individuals' attitude and behaviour to positively motivate them towards active participation in resource governance. These incentives were finalised after the incorporation of the users' insights into the incentives provided by the community forest management regimes in Nepal, which were gathered from key informant interviews and focus group discussions, whilst pre-testing the survey questionnaire during the preliminary field visit. This section discusses the results, with respect to possible causes and consequences of the influence of these incentives on users' willingness to participate in the governance and management of community forests

The descriptive statistics show that, from the six incentives, two incentives: access to forests and availability of forest products, and well-defined/enforced property rights assigned to users over forest resources are rated as the most important incentives by the majority of respondents. Just over half the respondents consider financial support as important, or very important, whereas almost half the respondents are neutral about payment for environmental services, to improve their participation decision. However, a higher number of respondents rate both social incentives as less important incentives.

Influence of Access to Forests and Forest Products on Participation

Lachapelle *et.al.,* (2004) argued that access to forests means wealth, power and prestige in the local community and it is also a means of livelihoods for users. The ordered probit results show a significant association of participation with access to forests and availability of forest products, and it carried a positive coefficient with it. This indicates that access to forests and resources play an important role in a household's decision about whether to participate or not in CF governance. The households, who are allowed better access to forests and a sufficient amount of forest

products for their needs, are more likely to enhance their participation in resource governance. This finding of a positive correlation between access to forests/availability of forest products and participation is consistent with Lise (2000), Agrawal and Gupta (2005), Adhikari et al. (2007) and Aryal and Angelsen (2006), which suggests that the level of resources, in terms of size, quality and availability, enhances users' participation in resource governance and management. Adhikari et al. (2007) highlighted that people will continue to adapt and support a forest management system, if it does not have an adverse effect on their livelihoods, due to changes in forest accessibility and forest product availability. They would be more willing to actively participate in managing a forest, if the forest produces what the community needs, not just at the present time but also in the future.

The statistical analysis results suggest that higher access to forests and forest products increases the likelihood of a high and very high level of participation. Congruent with this study's findings, Agrawal and Gupta (2005, p. 1109) reveal that, when firewood availability increases, the probability of participation increases by 22.6%. Aryal and Angelsen (2006) argued that the probability of participation increases with the size of community forests, that is, a one hectare increase in community forest area increases the probability of participation by 2.5%. A large forest area ensures the availability of forest products, thus creating greater positive incentives for users to participate in its management.

The PLS method further shows that access to forests and the availability of forest products have a positive influence on all aspects of participation, e.g., representation on an executive committee; participation at meetings; participation in decision-making; participation in activity implementation; and participation in overall benefits. This study shows that a higher proportion of poor and lower caste households consider this incentive to be more important than other wealth and caste groups. The reason for this situation is that poor and lower caste households depend solely on community forests for their forest product needs, which has also been suggested by Baland and Platteau (1999), Adhikari et. al., (2004).

Recent literature on common property resource management indicates that access to (and availability of) resources is one of the major determinants of users' participation in resource governance, particularly that of poor users, whose dependency over forest resources is high (Baland & Platteau, 1996; Reddy, 1999). In the context of the Hills in Nepal, one reason for users' participation is that access to forests and forest products

is linked with people's dependence on forest resources for sustaining their livelihoods. Hence, high forest dependence stimulates users' participation in forest resource management, as suggested by Lise (2000). However, Jumbe and Angelsen (2007) highlighted that forest dependence has a contrasting effect on participation, depending on the location. Forest dependence increases the incentives for participation in remote areas, where markets for forest products are lacking, whereas incentives for participation are reduced in areas located close to urban areas, where markets for forest products are well-established. In the Hills of Nepal, the market for forest products is not well-established, which leads to positive relationships between forest dependence and participation. Similarly, as suggested by Jumbe and Angelsen (2007), higher forest product prices reduce the incentive for poor members, who cannot afford the higher prices, to participate. Frequently, rich members, who dominate decision-making positions, set a high forest product price, in order to limit poor people's access to forest products. Setting a high price for forest products fulfills the needs and intentions of rich members, thus depriving poor members of getting necessary forest products, since they are not able to afford the price.

Restrictive operational rules, for example, opening a forest for forest product collection only once a year, or restriction on the extraction of certain forest products (e.g., timber, fodder, grazing), all limit users' access to the forests. In general, the rich members, who do not depend on community forests for their forest product needs (but who dominate the decision-making positions and processes) exert a strong influence over the formulation of such rules. The poor members, on the other hand, depend on community forests for their basic forest product needs, but they seldom have access to the formulation of such rules. The operational rules, thus, often ignore the needs of poor users and therefore they face restrictive access to forest resources, despite the legal property rights assigned to them over the forest resources. Edmonds (2002) and Winrock (2002) suggest that, except for a few instances, the availability of forest products has not increased at household level in many community forests. Furthermore, as argued by Winrock (2002), in the Hills of Nepal, the traditional dependence of the occupational castes on firewood, to sustain their livelihoods, has generally been ignored within current forest management and product distribution practices. As a result, the users lost their real access to common property resources. For example, this current study shows that about one-quarter of households collect even less than 25 percent of their annual firewood demand from community forests. The poor users, who in general do not have any or sometimes very small landholdings, do not have sufficient trees on their own land to supplement the deficit and hence, they generally

experience an acute firewood crisis for at least three to four months every year. Such restricted access to forests and the insufficient availability of forest products have provided poor and disadvantaged groups (particularly the occupational castes) with low incentives to participate in resource governance and management.

The findings of a positive effect of access to forests and forest products on participation are also consistent with Jumbe and Angelsen (2007), Byron and Arnold (1999) and Angelsen and Wunder (2003), who linked access to forests with the gap-filling or safety-net role of forests, to support the livelihoods of food insecure poor households. In the Hills of Nepal, users participate in CF governance and management mainly to maximise their access to forest products and as suggested by Maskey et al. (2006) participation in forest-tending operations gives users the right to acquire forest products. However, this study highlights that, when access to forests is restricted and the availability of forest products is insufficient to fulfil their demands, despite their participation in forest-tending operations, users decide not to participate, or show their passive participation. This perception of resource users having less opportunities for gaining future benefits from community forest management has also hindered the improvement of users' participation in resource management.

However, even if a CFUG allows its users more access to forests, the availability of sufficient amounts of forest products for all users, as per their demands, is not actually under the control of the group. It takes time and requires management efforts, to reach this stage. This study agrees with Agarwal (2001) that not all CFUGs produce sufficient tangible benefits, including forest products, to fulfil all the demands of the users: and the supply of benefits is not necessarily guaranteed to the poor and marginalised users in the group, due to prevailing distributional inequalities and institutional inefficiencies. As a result, the poorer households are facing more restricted access to forests and forest products, than wealthier households. A poor user expresses that the control over community forest resources has been transferred from *Pradhanpancha* or DFO to user group under the community forestry program. But in reality, the same people who used to control forests in the past are still controlling the forests by holding key positions in executive committees. So, there is not much difference to the poor and disadvantaged groups in terms of resource access in the past and present. This finding is also consistent with Adhikari et al. (2004). Protection of access rights and fair distribution practices of resources and benefits could promote distributional efficiencies and solve the problem of the insufficient availability of forest products, to some extent.

Some scholars suggest that representation of the poor and disadvantaged groups within decision-making structures, or greater accountability of decision-makers, promotes equity in benefit sharing (Adhikari *et al.*, 2004; Nightingale, 2002), whilst others argue that equitable benefit distribution will only be achieved when greater participation of the poor and disadvantaged groups, in resource governance, is secured (Agrawal & Gupta, 2005; Maskey *et al.*, 2006). However, the statistical and qualitative findings of this current study suggest that, in the case of community forest management regimes in the Hills of Nepal, access to resources and benefits is the key influential incentive determining participation of resource users in resource governance. Greater participation of poor and disadvantaged users, whose livelihoods are dependent on forests, but who do not have other alternative sources of forest products, can only be achieved when their access rights to resources is secured.

Influence of Property Rights on Participation

A well-defined and enforced property right is a key incentive that influences resource users' participation in resource governance and management. Meinzen-Dick and Knox (2001), Agrawal and Ostrom (2001), and Schlager and Ostrom (1992) also described this as being a key incentive that had a great influence on users' participation decisions. The secure property rights show a highly significant association with participation: and it carries a positive coefficient with it in the ordered probit regression analysis. This implies that well-defined and enforced property rights can be a strong economic incentive for forest users to decide on their willingness to participate in the governance of common property resources. Secured and enforced property rights guarantee the users' custodianship of their resources, which are considered to be one of the conditions for effective participation of resource users in resource management.

This finding is consistent with the theory of property rights (Agrawal & Ostrom, 2001; Arnold, 1998; Meinzen-Dick & Knox, 2001), which suggests that well-defined and enforced property rights give users authority and control over the resources, thus allowing them a feeling of ownership. Hence, it creates incentives for them to contribute to a common property resource and to improve resource conditions, through efficient management and equitable accessibility to the resources (Agrawal & Ostrom, 2001; Arnold, 1998; Meinzen-Dick & Knox, 2001). The transfer of rights, from the state to the users is a coherent approach that establishes an effective incentive structure. State recognition of users' rights increases tenure security, which, in turn, creates greater incentives for users to participate. It is argued that different bundles of property rights

have a differential influence on users' investment and participation in common property resource governance and management (Schlager & Ostrom, 1992). Agrawal and Ostrom (2001) argued that the nature of property rights assigned to CFUGs in Nepal, by the forest legislation, is close to that of proprietors. The three types of legal rights – rights to withdraw, rights to manage and rights to exclude - are granted to local groups with some limitations, but the rights to alienate or transfer are not granted to these groups (Agrawal & Ostrom, 2001; Schlager & Ostrom, 1992).

Congruent with the above proposition, the findings of this research, in the Western Middle Hills of Nepal, agree that the users, as proprietors, are reasonably assured that they can capture the benefits from participation in resource management, which provides them with a strong positive incentive to participate in resource governance. However, as argued by Agrawal and Ostrom (2001), the community forest users do not have full control and rights over the forest resources, due to their lack of legal rights to sell, or lease withdrawal, management and exclusion rights. The property rights of forest users can thus, be easily limited by the government, due to the absence of users' influence over constitutional level rights. When resource users feel that they have no stake in the resource, they may have scant incentive to protect and manage the resource. Secure tenure and fully assigned property rights are inclined to give local users greater leverage in accessing financial transfers, by influencing the distribution of risks, costs and benefits of forest management (Heimo, 2010; Meinzen-Dick & Knox, 2001). Certainty of tenure over forests for user groups and the assignment and vesting of full property rights over the forests to groups, together with adequate support to interpret and enforce these rights, in order to allow CFUGs to act as autonomous and corporate institutions, could help to ensure users' ownership over the forests, thus minimising policy related uncertainty, which could then stimulate users' participation in (and contribution to) forest management.

This study's findings highlight that fully assigned property rights are involved in a high and very high level of participation and they are less likely to be involved in very low or low level of participation. The statistical analysis (PLS method) further shows a positive correlation between property rights and all aspects of participation indicators. Secure property rights have a higher positive likelihood of improving participation in decision-making, activity implementation and group meetings, in addition to overall benefits. This implies that assigning full property rights (including rights to alienate or transfer), vested to user groups over community forests, increase the likelihood of participation by user households, in all aspects of community forest governance and management.

The descriptive data shows that a higher number of poor and lower caste households consider property rights as being less important to stimulate their participation, compared to other wealth and caste groups. One possible reason for such a finding is that the distribution of property rights amongst households of different wealth and caste groups was not equal, as also highlighted by Maskey et al. (2006) and Bajracharya (2008). The members of a CFUG are legally entitled to equal legal rights over forest resources for its management and utilisation, by drawing-up the operating rules, through gaining access to decision-making and resource benefits. However, these legal rights of poor and disadvantaged members are restricted by the elite (rich, high caste) members, due to poor people's limited power, poor capacities and confidence to bargain with these elite members, as also suggested by Agarwal (2001) and Platteau (2004), which have further limited their access to legal rights. The wealthy elite caste members, due to their power as a result of socio-cultural norms, greater capacities and direct access to state functionaries, dominate the decision-making positions and processes and they utilise the legal rights to set and enforce the rules and manage forest resources. Thus, they have greater access to forests and benefits. The rich and elite caste members exercise their power over poor and disadvantaged users, as if they were the forest officer's representatives and they only allow poor users to extract resources at their behest. The poor and lower castes are using the limited rights granted by the rules set and enforced by the rich and elite caste members. For example, several users, mostly poor and occupational castes, are severely affected by restrictions on grazing and fodder collection, or bans on making charcoal. These poor and occupational caste users are totally dependent on the forests for sustaining their traditional occupations and livelihoods. Such restricting rules, however, are of very little value to the well-off users, since they are less dependent on the forests, due to their alternative resources.

Theory suggests that assigning property rights over forests to user groups give users incentives to contribute to common property resource management to improve the resources (Agrawal & Ostrom, 2001; Meinzen-Dick & Knox, 2001). However, this study on community forest management regimes in the Hills of Nepal, where CFUGs are socially and economically heterogonous (in general) and discriminatory socio-cultural norms prevail, argues that assigning property rights collectively to the group does not protect the rights of poor and disadvantaged members, but instead it deprives them of receiving their share of benefits from the forests. The theory of property rights also suggests that a common property regime works well, if the group is homogeneous

(Agrawal & Ostrom, 2001) and that discriminatory socio-cultural norms do not exist in a more socially homogenous group. Moreover, secure property rights vested in each and every member of a group provide incentives for them to manage their forest resources successfully (Heltberg, 2002; Khan, 1998; Tachibana *et al.*, 2001). Congruent with these propositions, the formation of a socially homogenous group of poor and lower caste members within a CFUG; the proportional allocation of the productive part of community forests to this sub-groups; and also assigning and enforcing legal rights to this sub-group over the allocated forests, through long-term lease or permanent rights, can guarantee access rights to poor and disadvantaged groups for resources and benefits. This could enhance and increase their participation in resource governance. However, there is only a very small amount written in the literature about assigning property rights to sub-groups. An example of pro-poor forest land allocation can be found in Vietnam, where forests are allocated to poor households by assigning ownership-type rights over the forest, with the objectives of reducing deforestation and improving the livelihoods of forest-dependent people (e.g., Dinh *et al.*, 2004; Sikor & Thanh, 2007). However, the objectives for pro-poor forest land allocation in Vietnam are different from the objectives for community forestry programmes in Nepal.

Influence of Social Security and Cohesion on Participation

Social security and cohesion, through local institutional building, have a high degree of association with participation and they carry a positive coefficient with it in the ordered probit regression analysis. This indicates that households, who perceive social security and cohesion as important, are more likely to have a higher level of participation, if community forestry regimes in Nepal promote enhanced social security and cohesion amongst social groups. In other words, the more enhanced the social cohesion, the higher the likelihood of participation. This finding also matches with the results of some other studies, which have shown a positive and statistically significant correlation between the level of solidarity and the level of users' participation (Faham *et al.*, 2008; Reza *et al.*, 2009). Jumbe and Angelsen (2007) also suggested, along the same lines, that tribal cohesion is vital for inducing greater participation.

Social cohesion is a key factor of resource governance that determines a community's ability and willingness to establish common goals and work together for a collective action (Kassahun, 2010; Thomson & Freudenberger, 1997) and hence, it stimulates participation. Social cohesion is important in the context of socially and economically heterogeneous societies, as found in the Hills of Nepal, where weaker social harmony

and cohesion exists between wealth and caste groups, due to the prevailing discriminatory socio-cultural norms. These discriminatory socio-cultural norms and their influence on participation have been elaborated upon in detail in the previous section. The statistical results reveal that enhanced social security and cohesion is involved in a high or very high level of participation. Similarly, the PLS result show that social security and cohesion is more likely to have a strong positive influence on all aspects of participation, i.e., participation in overall benefits, meetings, decision-making, activity implementation and representation on an executive committee. This result suggests that promoting social security and cohesion, through institutionalising the social inclusion policy within the group, is more likely to enhance the participation of poor and disadvantaged groups in decision-making processes.

However, this finding in this research supports the claim of Meinzen-Dick and Knox (2001) that people decide to participate in resource management, as a result of the opportunity to strengthen social security and cohesion, which could then contribute to greater livelihood security. Such social capital has been recognised as one of the most important assets for poor households. The extent of community participation depends on the social capital that exists within the community, which guides the effectiveness of collective actions in forest security and benefit sharing (Djamhuri, 2008). Moreover, White and Runge (1995) reported the participation of landless households in watershed management activities in Haiti, as an example of their effort to form stronger relationships with wealthy landlords and with the expectation of gaining support for their livelihood security in risk situations. In the case of the Hills of Nepal, the livelihoods of poor people are heavily dependent on wealthy people, due to the very limited opportunities for income and employment in most of rural parts of the Hills region. The poor households supply labour to the wealthy households, in order to sustain their livelihoods. This fear of livelihood insecurity has also forced the poor and disadvantaged groups to participate, if they were asked to do so by the wealthy members.

Kanel and Dahal (2008) suggest that the community forestry process has increased social cohesion and support, through local institutional building and enhancement of the social capital of the powerless poor, lower caste and other disadvantaged groups, who have been excluded from mainstream social and political processes. This current study highlights that social recognition, particularly of the poor and lower caste members, by nominating them as members of an executive committee could be seen as a substantial achievement towards social harmony and cohesion, thus bringing all

caste and wealth class users together under the same institutional set-up. However, a higher proportion of poor and lower caste households consider social security and cohesion as being less important to stimulate their participation. This indicates that community forestry interventions, at least in the areas covered by this study, have not promoted social cohesion.

Lise (2000) highlighted that social cohesion is easier to attain in more homogenous groups, in terms of caste and religion. However, in the Hills of Nepal, CFUGs (in general) are heterogeneous in terms of wealth and caste, and discriminatory socio-cultural practices are deep-rooted. Thus, attaining social cohesion is not easy in CFUGs in the Hills of Nepal: and this would have influenced the responses relating to this incentive. Thus, there is a need for further research, in order to examine whether community forest management regimes in Nepal have actually increased social cohesion amongst the users in different social groups.

Influence of Financial Support on Participation

This study has revealed that financial support to supplement household income shows a high degree of association with participation, but it carries a negative coefficient with it in the regression analysis. It implies that providing financial support to users, to supplement household income, gives users the incentive to reduce their participation in the governance of their common property resources. Nevertheless, the negative relationship of financial support and the level of participation was not expected, although Aryal and Angelsen (2006) and Weinberger and Jutting (2001) also pointed out the negative relationship between household income and participation. The qualitative data highlights that the majority of poor and lower caste members perceive financial support as important for improving their participation, whilst the majority of rich and medium class members do not see it as an important inducement to enhance their participation. One of the reasons for this negative relationship, as also suggested by Weinberger and Jutting (2001), is that involvement in income-earning activities increases the opportunity costs of participation, and higher opportunity costs of participation decrease the likelihood of participation. Participation may only begin to increase once the income generating activities have been established, for a longer period.

Another reason that may account for such a finding is that the CFUG fund mobilisation mechanism is non-transparent and it is considered to be pro-elite. The elite committee

members hold control over the group funds and they decide how and where to invest these funds. Many users did not even know how much money is in their group fund: and where this money is invested, or who has borrowed the money. These (rich, elite caste) committee members are reluctant to lend money to the poor. They presume that the poor would not use the money for the same purpose for which the loan has been taken. They believe that the poor would rather spend the money buying household commodities, rather than investing it in income generating activities, thus making it difficult to repay the loan. However, on the other hand, the poor complain that only the powerful members have access to the group's funds. This finding is congruent with Pokharel (2008c), who has highlighted that although 13% of poor households, compared with 10% of non-poor households, receive financial support from CFUG funds, in the form of soft-loans, the poor received only 26% of the total amount, whilst the remaining 74% is disbursed to non-poor households. In the same way, Platteau (2004, p. 242) argues that the elite capture of financial resources is a serious problem in community-based development, unless "the poor are not empowered enough to withstand the pressures and influences of the local elite." Furthermore, very few users have relevant self-employment orientated skills for utilising this support in an income-generating project. Moreover, the fianancial support offered to a poor household, is also a very small amount with which to start a income-generating project, as also suggested by Pokharel (2009).

Further data analysis (PLS method) has revealed that such financial support has a positive association with representation on executive committees and participation in overall benefits, but it has a negative association with participation at meetings, decision-making and activity implementation. This again suggests that financial support is less likely to incentivise users to improve their effective participation in decision-making.

Grogger (1998), Jumbe and Angelsen (2007) and Wirth (2003) suggest that an individual decides not to participate in group activities, if his/her wage from their labour is higher than the marginal return from participation. As pointed out by Adhikari (2005) and Kanel and Dahal (2008), this study has found that CFUGs in the Hills of Nepal do not provide any monetary compensation, or wages, to poor users for participating in group activities. Thus, this lack of financial compensation for participating in group activities does not incentivise poor users to participate in group activities. The findings of this research coincide with the literature (Jumbe & Angelsen, 2007; Maskey *et al.*, 2006) which state that one of the major factors hindering poor and disadvantaged

groups from participation in resource governance and management is the high opportunity costs of participation. Poor households in the Hills of Nepal cannot afford to participate, because of their higher opportunity costs of participation, due to a reliance on their labour and time to produce household income for food.

As suggested by Meinzen-Dick and Knox (2001), participation in common property resource management inevitably increases the time and costs that resource users must bear, such as opportunity costs of contributing labour; transaction costs of organising collective action; and costs of participating in management activities. This increase in time and transaction costs will have an adverse effect on the livelihoods of poor users. Hence, this study highlights the need for providing financial reparation to poor members for compensating their costs of participation. Some examples of financial compensations are an exemption of annual recurrent fees; paying wages for participating in group activities; and exemption or subsidy on forest product prices. However, the exact impact of financial support to household income supplement on participation — and an appropriate mechanism for compensating poor users' costs of participation — needs further investigation.

Influence of Community Infrastructure Development on Participation

The Chi-square test shows a significant association of local community infrastructure development with participation. However, the ordered probit regression analysis shows an insignificant influence of this variable on overall participation. This implies that community infrastructure improvement does not provide users with an incentive to improve their effective participation in community forest governance. This finding corresponds to the descriptive data that investment of CFUG funds, into local community infrastructure development, is not a strong incentive to improve participation of users in resource governance and management. The majority of poor and lower caste households consider local community infrastructure as being less important to improve their participation. Further data analysis (PLS relationships) also shows a negative and insignificant influence of this incentive on all aspects of participation.

Two reasons that may account for such a finding are firstly (and very importantly), rich and elite caste members frequently derive larger benefits from investment in local community infrastructure, whilst poor and lower castes hardly make any benefit out of it. Secondly, not all CFUGs in the Hills of Nepal have invested in local community infrastructure development, due to a lack of sufficient group funds. Thus, several users

have not yet realised the potential benefits of community infrastructure development, which might also have been reflected in their responses relating to this incentive.

As highlighted by Pokharel (2010), CFUGs have generated substantial income from the sale of forest products, membership fees, fines and renting out their community hall and utensils. They spent these incomes on activities, such as forest management and development; pro-poor programmes; income-generating activities; community infrastructure development; capacity building of members; and other office expenses. This investment in community infrastructure constitutes the major expenditure of the CFUGs, with the main focus being construction and maintenance of local drinking water systems, roads, school buildings, small irrigation systems, temples and community halls. However, mostly the rich and elite caste members benefit from such investments. For example, poor household in the rural Hills region of Nepal cannot afford to send their children to school and hence, they may not see investment in schools as being beneficial for their household. Similarly, investment in irrigation systems is more beneficial to those who have land holdings. This finding is also consistent with other studies which have revealed that CFUGs invest a greater part of their funds into community infrastructure development activities but due to their domination in the decision making positions, it is generally the rich and elite members who benefit from such facilities (Kanel *et al.*, 2003; Kanel & Niraula, 2004; Pokharel, 2010). The disadvantaged groups are less likely to influence the decisions in their favour, as also suggested by Pokharel (2010) and Kanel and Dahal (2008), due to the low number of poor, lower castes and other disadvantaged groups in decision-making positions. Moreover, they do not put forward their views or oppose decisions made by the rich and elite caste groups, due to the wealthy-dependent socio-economic structure in the rural Hills of Nepal.

The finding of this study is consistent with Smith (1994) and Pokharel (2010) that community infrastructure development support has not been very successful in improving users' participation in common property resources. In the case of a Bolivian reforestation project, a range of community infrastructure supports, such as road construction and construction of other communal facilities, were used as incentives to stimulate participation of the local community in communal forestry project (Smith, 1994). However, this situation often led to conflicts between the community and the project, due to more demands for roads, rather than focusing on forestry activities. However, Wickramasinghe & Senaratne (2009) have suggested that support for community facilities, e.g. improvement of rural roads to link to markets, help to

generate alternative income sources, to compensate for the costs of participation, thus creating incentives for participation of users in community forestry programmes.

Influence of Payment for Environmental Values and Services on Participation

Payments for environmental values and services have a high degree of association with participation, but they carry a negative coefficient with it, in the ordered probit regression analysis. This finding indicates that households, who consider this incentive as important, are more likely to lower their level of participation. This study finding highlights that payments for environmental services are involved in a low level of participation. Further data analysis (PLS method) shows a weak and negative influence of this incentive on all aspects of users' participation. This implies that payments for environmental services do not induce any behavioural change amongst users, in any aspect of participation. The descriptive data shows that a very low proportion of poor and lower caste households, compared with other wealth and caste groups, consider payments for environmental services as being an important incentive, in terms of making participation decisions.

Forests create externalities and environmental services. Engel et al.(2008), Pagiola et al. (2005) and Wunder (2005) suggest that devising a mechanism for capturing the beneficial externalities and public services for their producers — and at the same time creating effective markets for biodiversity and other environmental values and services — could provide incentives for users to increase their participation in the programme. Local communities, who are managing community forests, have to be compensated for their efforts, in order to strengthen their commitment to managing the forests and to safeguard their livelihoods. Such incentives are expected to motivate local communities to participate actively in forest management (Zahabu *et al.*, 2005). However, the current community forestry related policy, legislation and programmes have not adequately recognised the contribution of CFUGs to producing such ecological services (Khatri, 2009). Moreover, the mechanism for capturing environmental services and benefits, for the producers, is also lacking in Nepal.

Meinzen-Dick and Knox (2001) argued that environmental protection also provides incentives for people to participate in resource governance. Even for poor households, environmental conservation is important. Concern for the environment was one of the main motivations behind organising forest users to protect forests in Nepal, by forming an informal forest protection/management committee, even before the initiation of the

community forestry programme in Nepal. Petheram and Campbell (2010) suggested that such payments should go straight to the households, without involving too many levels of organisation. However, in the case of community forestry in Nepal, the mechanism for transferring these payments to CFUGs is still not clear, due to a lack of a policy for payments related to environmental services. However, in the case of the Kulekhani Watershed Area in Nepal, where payments for environmental services were pioneered for the transferring of hydroelectricity revenue to local communities, the mechanism for payments was channelled through the central government, to the local government and then on to local communities, in the form of conservation and development projects — but not directly to households — with the main focus being on rural electrification and road construction (Khatri, 2009; Upadhyaya, 2007).

This mechanism has ignored local resource management institutions, such as CFUGs and it has failed to provide incentives for resource managers to participate in producing such environmental services (Khatri, 2009). A similar payment mechanism can be expected in the context of community forestry regimes too. However, none of the CFUGs in the study area have reported receiving such payments, to date. Moreover, users do not have an adequate understanding about the environmental values of their forests and the environmental benefits that the forests could generate. These factors are believed to have made a significant contribution to the result shown for the negative influence of this incentive on users' level of participation. Another reason for this negative evidence is explained by the qualitative data, where more than half the households perceive this incentive as being neutral, or less important for improving their participation.

Upadhyaya (2007) highlighted that producing environmental services involves costs to local communities, as resource managers. Therefore, those people crafting appropriate policy measures, to institutionalise payments for environmental services in the community forestry regimes in Nepal, should also consider the interests and capabilities of poor users. Furthermore, a well-defined property right is a necessary condition for the development of a market for environmental services. Huang and Upadhyaya (2007) argued that state ownership of forests creates a problem, when developing forest-based payments for an environmental services mechanism. Therefore, identifying the major environmental services and devising appropriate payment schemes, which can provide incentives to CFUGs to participate in resource governance and management — and to continue producing these environmental services — is an area of future research.

7.4 Summary

In this chapter, the incentives that influence participation of users in common property resource governance, under the community forest management regimes, have been discussed. This study, in the Hills of Nepal, found higher levels of participation of resource users in implementation and utilisation, than in decision-making. The socio-economic characteristics, which are the basis for differential levels of power, within and across social groups, greatly influence users' participation decisions and level of participation. The wealthy and elite caste households, due to their power as a result of socio-cultural norms and linkages with government offices, have a better representation within CFUG governance structures and processes and hence, they have a higher level of participation in resource governance and a greater access to resources and benefits, than poor, lower castes and ethnic groups. The participation and access to resources of poor and lower caste members is also limited by their poor capabilities and bargaining power.

There are many differences between users' preferences for different incentives, which provide measures of variation in their level of participation within the community. Their access to forests and forest products show a significant positive association with their level of participation, indicating that a household with better access to resources (including their availability) is more likely to participate in resource governance. However, the access of poor and disadvantaged members to resources and benefits is low, compared to that of wealthy elite caste members. Moreover, the unequal distribution of legal property rights, as a consequence of power inequality, has resulted in control of participation in the group and access to resources being held by wealthy and elite caste members. The rules set and enforced by these wealthy and elite caste members (in their favour) have limited the real access of poor and disadvantaged members to resources and benefits.

Similarly, the influence of property rights on participation is significant and positive. Property rights give users the authority and control over the resources and they allow the users to have a feeling of ownership. Three types of legal rights are granted to local groups (with some limitations) but these user groups do not have full control and rights over forest resources, due to a lack of rights for alienation or transfer. Assigning full property rights (vested in groups) over forests, together with adequate support to interpret and enforce these rights, will allow CFUGs to act as autonomous and

corporate institutions, and guarantee users' participation and investment in community forest development.

This study shows that social security and cohesion have a positive and high degree of association with participation. However, attaining social cohesion in the Hills of Nepal, where CFUGs in general are heterogeneous and the discriminatory socio-cultural norms are deep-rooted, is an immense challenge. This research highlights that poor households cannot afford to participate because of their higher opportunity costs of participation, due to a reliance on their labour and time to produce household income for food. Thus, providing financial support to compensate their costs of participation could enhance their participation. However, in an opposite finding (to prior expectation) this study has found a significant, but negative, relationship between financial support and the level of participation, indicating that financial support to users, in order to supplement household income, offers an incentive to reduce their participation. Therefore, the impact of financial support on participation needs further research.

Moreover, a non-significant relationship, between community infrastructure improvement and participation, indicates that community infrastructure does not provide users with an incentive to improve their participation. A reason that may account for such a finding is that wealthy and elite caste members frequently derive benefits from such infrastructure, whilst the poor hardly gain any benefit. The payments for environmental services and mechanisms for compensating local communities, for their efforts to produce environmental goods and services, show a significant but negative relationship with the level of participation. The current forest policy in Nepal has not adequately recognised the contribution of CFUGs in producing ecological services.

In conclusion, this chapter provides a greater understanding of the influence of various incentives, to address and ensure users' willingness and ability to participate in the governance and management of common property resources. The following chapter provides the conclusion and policy implications and methodological reflections, in addition to suggestions relating to on the key area for future research.

CHAPTER EIGHT

CONCLUSIONS AND POLICY IMPLICATIONS

8.1 Introduction

This research aims to explore the issue of low participation in the governance of common property resources — and in particular the role of incentives. This study begins by asking the following question: *What incentives are most likely to enhance the effective participation of local users in the governance and management of common property resources?* The theoretical argument, which underpins participation in governance of common property resources, assumes that the incentive system is regarded as the principal variable affecting an individual's behaviour, in regards to participation in the governance and management of community-based resources, and that differences in users' involvement are a function of organisational incentives (Agrawal & Ostrom, 2001; Cleaver, 1998; Hanna, 1995a; Knoke, 1988; Ostrom & Gardner, 1993; Puffer & Meindl, 1992). This research envisages that the decision to participate is a function of incentives offered to an individual — and the more diverse incentives offered to the users, the more willing they will be to participate and contribute. However, in practice, not all incentives have a positive influence on participation. There are many challenges to improving the participation of local user communities in community-based resource governance.

In this research, the link between incentives and level of participation in the governance of common property resources, in order to explore how incentives affect users' motives to participate in governance of common property resources, were analysed by estimating models of users' discrete choice between participating, or refraining from participating. This study has adopted a mixed method of both quantitative and qualitative approaches to data analysis. The quantitative approach constructs and analyses the statistical models on participation indicators and incentive variables, whilst the qualitative approach provides a greater understanding about the institutional settings and overall governance and management performances of CFUGs. The empirical evidence for level of participation as a function of incentives is obtained by using an ordered probit model. As an alternative (and for comparative purposes) a partial least square approach is also undertaken, to link the participation indicators to

the various incentives. The incentive approach, which is based on theories from several disciplines, such as social exchange theory; rational choice theory; resource mobilisation theory; institutional theory; and theory of groups, in addition to a benefit and cost framework, has provided the theoretical foundation for this study.

To examine the research questions and objectives within a concrete setting, this study has been focused on members of CFUGs, who are the major data sources. In order to understand the role of incentives in improving local users' participation in the governance of community forestry, the researcher also drew on the perspectives of forestry and community development professionals, both at national and local levels. The empirical analysis on the roles of incentives, on the level of participation in governance of community-based resource management, is based on survey data from Nepal. Fieldwork was carried out during mid-November 2008 to February 2009. Mixed methods of both quantitative and qualitative approaches were applied to the data collection and analysis.

This chapter presents the conclusions of the research. The implications and recommendations on these research findings are important for the Government of Nepal/Department of Forests, donor agencies and other governance structures that are being promoted today, as decentralised institutions, in general. The research findings suggest that the government of Nepal needs to be more focused on providing the incentives that users' value, with due consideration to the costs of their participation, in order to promote their effective participation in governance and management of community forest resources during policy/strategy formulation and implementation. Finally, reflections on the research methodology and directions for further research are provided, towards the end of the chapter.

8.2 Summary and Conclusions

In this study of community forestry management regimes in the Hills of Nepal, access to resources and benefits and enforcement of legal property rights are identified as the key influential incentives that determines the effective participation of resource users in resource governance. Access to resources and enforcement of property rights also has great influence on the outcomes of other incentives. Some scholars have argued that equitable benefit distribution will only be achieved when greater participation of poor and disadvantaged groups in resource governance is secured (Agrawal & Gupta, 2005;

Maskey *et al.*, 2006). However, the current study argues that, in the case of community forest management regimes in the Hills of Nepal, access to resources and benefits is the key influential incentive that determines the effective participation of resource users in resource governance. The active participation of poor and disadvantaged groups can only be achieved when their access rights to resources and benefits are secured. Even in the case of poor, lower caste households being provided with incentives, without protecting their access rights to resources and benefits, there can be no guarantee of their actual share of the benefits and also their active participation in decision-making. The prevailing power inequality, as a result of socio-cultural norms and unequal distribution of legal property rights amongst social groups, due to rich and elite caste domination in CFUG governance structure and processes, limits the access of poor and disadvantaged groups to resources and benefits. Thus, protecting the access rights of poor and disadvantaged members to resources and benefits must explicitly be considered, in the design and implementation of community forest management regimes, in order for these regimes to be successful in achieving meaningful participation of poor and disadvantaged groups.

This study has revealed that people with different social, economic and institutional characteristics face the same incentives — but differently. This complex interaction of incentives facing resource users results in different levels of participation. This study has found that competition for resources, in the past, which resulted in over-exploitation of resources and forest degradation, has created a strong incentive for customary users to organise themselves to protect and manage their forests as community forests. However, the incentive structure, in the case of community forestry in Nepal, is such that membership should be sufficient to gain access to the forests and for user groups to derive benefits from those forests. A user household holding membership of a CFUG would not be punished, if members of that household do not participate in CF governance. Although such a rule has added to the incentives that protect the rights of users, it has also reduced the incentive for users to participate.

Similarly, people's dependence on particular resources and the importance of those resources for their livelihood strategies also determines the incentive structures. People with a high dependence on the resources would have a strong incentive to participate in resource management. This is directly linked to the economic well-being of users. For example, poor people frequently and heavily depend on forests, more than rich people, for their livelihoods. Hence, these poor users may face different incentives and they have different participation choices than the well-off users. The

model suggests that access to forests and availability of forest products has a significantly positive impact, when explaining the level of participation. This implies that households, who have better access to forests and who extract sufficient amounts of forest products from the forests, are more willing to improve their participation. However, not all CFUGs have yet produced sufficient forest products to fulfil the needs and demands of their users. In many cases, the distribution of benefits is not necessarily guaranteed to a CFUG's poor and disadvantaged users, due to existing distributional inequalities and institutional inefficiencies. There are discriminatory practices that restrict access to resources and benefit distribution practices favouring the rich and elite caste members, since they dominate the decision-making positions and processes. Such an inequitable access to benefits is more likely to reduce the incentive for users to participate in CF governance and management.

This study has explored the reasons why a community forestry approach was chosen to modify the incentives to change people's behaviour of over-exploiting resources and to improve resource governance, by making them the custodians of the forests and giving them common property rights over the resources. These custodianships and property rights, in turn, have provided the users with a stronger incentive to participate in resource governance and management. This study has demonstrated that the nature of property rights assigned to CFUGs, over CF resources, have provided users with improved access to (and benefits from) CFs, which has incentivised them to manage the resources. The data shows very strong evidence that property rights have had a significantly positive impact on the level of participation. This finding indicates that well-defined full property rights are a strong economic incentive for user group members to decide on their willingness to participate in resource governance. However, users do not have full control and rights over forest resources, due to their lack of legal rights, in relation to selling, leasing, withdrawing and managing the land, in addition to exclusion rights. The three types of legal rights — rights to withdraw, rights to manage and rights to exclude — are granted to local groups with some limitations, but the rights to alienate or transfer are not granted to these groups (Agrawal & Ostrom, 2001; Schlager & Ostrom, 1992). The property rights of forest users can, therefore, be easily limited by the government, due to the absence of users' influence over constitutional level rights, as argued by Agrawal and Ostrom (2001). Therefore, assigning full property rights to CFUGs over the forests and supporting them to interpret/enforce these rights could further stimulate their participation in CF governance. Full property rights give users the authority and control over resources, thus giving them a feeling of ownership, which is

considered to be one of the conditions for users' effective participation and thus, it further increases the likelihood of their participation in the programme.

The level of participation and access to forests and benefits is also influenced by the actual legal rights enjoyed by social groups. This study has shown that the distribution of property rights is not equal amongst different wealth and caste groups. Although CF legislation in Nepal has provided equal property rights to user group members, highly influential rich and high caste members, due to their direct access to state functionaries, utilise these legal rights to set and enforce the rules to manage forest resources and hence, they have greater access to forests and benefits. The local elites exercise their power over general users, as if they were the forest officer's representatives and they only allow poor and disadvantaged users to extract resources at their behest. The poor and disadvantaged members, on the other hand, only utilise those legal rights that are granted to them by elite members and hence they have a low access to forests and benefits. Whilst property rights have been transferred to CFUGs, the strengthening of these rights does not give any advantages to the poor, because the control of participation in group and forest access lies with wealthy and elite caste members. Thus, having legal rights does not necessarily reflect their participation in resource governance and access to resources where the institutions do not support their rights, unless they are empowered sufficiently to withstand the domination of the local elite (Platteau, 2004). Actual participation and access is determined by resource governance processes, and the capacities and bargaining power of social groups. Providing legal rights to poor and disadvantaged groups, without building their capacities and bargaining power, does not improve their active participation in resource governance and hence, their access to resources.

This study has revealed that communities with different characteristics create different incentives that affect how users participate in managing resources. Social cohesion and the willingness to strive for common goals is one key incentive that determines a user group's ability to manage their resources. The social structure of the group, such as family structure, gender relationships and wealth class and caste systems, affects its cohesiveness and interests regarding participation in resource governance. The results related to social security and cohesion have a strong positive effect on the level of participation. This implies that the better the social cohesion, the higher the likelihood of participation. Social cohesion, which is a key factor of resource governance, determines a community's ability and willingness to establish common goals and work together for a collective action, and hence, stimulate participation.

Nevertheless, achieving better social cohesion in socially and economically heterogeneous societies, as found in the Hills of Nepal, where discriminatory socio-cultural norms are deeply rooted, is another issue which requires further research, in order to examine whether a community forestry regime in Nepal is actually successful in promoting social cohesion amongst users from different social groups.

This study has found that socio-cultural norms, which prevail in the Hills of Nepal, have played an important role in shaping incentives to participate in CF governance and management. The Hills of Nepal are dominated by Hindu religious-based socio-cultural norms, which are associated with unequal power relationships amongst users from different wealth and caste groups, and these norms have a significant influence on users' participation in resource governance. The complex interactions of wealth, caste, gender and social status determine the level of power through which users influence CFUG governance structure and processes. The rich and higher castes, due to their power, have better representation within CFUG governance structure and processes and hence, they face strong incentives to increase their participation. Conversely, this situation has created a strong disincentive for poor, lower caste and other disadvantaged groups to participate effectively in resource governance.

This study highlights that the institutional arrangements for community forestry in Nepal are caught up in a vicious cycle of bureaucratic inefficiency and moral hazard problems. Forest bureaucracy and political interests still control policy processes. This bureaucratic inefficiency has resulted in the forging of alliances between forest officials and local elites, thus creating barriers to the poor and disadvantaged members to participate in resource governance. Highly influential users, who are generally rich and high caste with higher social status, have higher access to (and support from) forest officials and hence, they are more likely to participate. Support from government authorities to poor and disadvantaged groups, in order to improve their active participation in decision-making structures is inadequate, due to their low level of access to state functionaries. These poor and disadvantaged groups lack encouragement and trust and the opportunity to be represented in decision-making structures — even from within their own CFUGs.

This study suggests that representation within decision-making structures cannot solely guarantee the effective participation and influence of poor and disadvantaged groups on decision-making processes. Observation from the field has revealed that the representation of women and poor and lower caste members has been increased at

decision-making levels (i.e., executive committees) in a few CFUGs, as a result of facilitation by NGOs/donor-funded projects. However, their participation is still passive and they do not have any influence on decision-making processes. The prevailing socio-cultural norms, the poor capabilities of users in resource governance and management and a weak bargaining power for their rights, have constrained their interactive participation. A lack of prior knowledge and experience, relating to common property resource governance and management, has also resulted in a lack of confidence amongst users, to participate in resource governance. Representation within decision-making structures, backed up with support for building and enhancing users' capabilities and bargaining power, could secure the active participation of poor and disadvantaged groups in resource governance.

This study has identified the high opportunity costs of participation, as a major factor that hinders participation for the majority of poor members. The poor households, who do not have a regular income but instead rely on their labour and time to produce household income for food, are unable to participate in resource governance, despite their interest to participate. Financial compensation to participate in CFUG activities could have the potential to enhance the participation of such poor users. Such financial compensation can be offered in the form of financial support to supplement household income for improving poor user households' livelihoods, or participation allowances or other subsidies, e.g., exemption from fees or a subsidy on forest product prices. The statistical results suggest that financial support, to supplement the household incomes of poor members and to improve their livelihoods, has strong but negative implications for participation in resource governance. Providing financial support to users is more likely to give them an incentive to reduce their participation in resource governance. This relationship is probably a result of pro-rich and non-transparent fund mobilisation practices. Frequently, rich members hold control over CFUG funds. The poor, in general, do not have access to (or influence over) fund mobilisation decisions, which results in the poor receiving only about one-quarter of the total funds (Pokharel, 2008c). Similarly, financial support, for a household level livelihoods improvement project, requires more time for people to contribute to the project. Nevertheless, the exact impact of financial support to household level livelihood improvement, on participation, needs further research.

Community forest management provides public goods and services, which have a low feasibility of exclusion and a joint nature of consumption. Community forest management has proven to be successful in conserving biodiversity, in terms of

species and gene conservation and ecosystem conservation, at the same time also generating other environmental values. Since it is nearly impossible to exclude non-members from enjoying these public goods and services, non-members also enjoy the benefits, without making any effort to participate in resource management. The production of public goods and the problem of free-riders have resulted in a much weaker incentive for users to participate in resource management, because they do not want others to free-ride on their efforts. However, markets are missing for environmental goods and services. There is no market to internalise the externalities created by forest management activities. Forest management activities in the Hills of Nepal create unidirectional externalities that would have both positive and negative impacts on farmers and user groups downstream. However, it is difficult for downstream people to encourage upstream people to internalise these externalities, or for upstream people to market this value of long-term efficient forest management to downstream people, due to a lack of markets. The establishment of appropriate mechanisms to compensate producers for these services, e.g., payment for environmental services, could serve to reinforce the participation of users in conserving environmental resources and (in turn) safeguard their livelihoods.

The statistical result related to payments for environmental services also has a direct implication on participation. The results highlight that payments for environmental services have a negative relationship with the level of participation. This implies that payments for environmental services are more likely to reduce the participation of users in resource governance, i.e., providing payments to CFUGs for the environmental services they produce is more likely to create incentives to reduce their participation. This relationship is probably a result of the consequences of users' inadequate understanding about their potential for producing such environmental goods and services, and the benefits that their forests could generate. Therefore, it requires further research to identify major environmental services that community forests could generate, in addition to devising appropriate policy measures to institutionalise payments for environmental services in community forestry regimes in Nepal.

This study has found an insignificant relationship between community infrastructure development and the level of participation, that is, local community infrastructure improvement is less likely to influence the level of participation of users in resource governance. This finding indicates that, despite the fact that CFUGs spend a substantial amount of their funds on local community infrastructure development, it is

less probable that such investments will provide users, particularly poor and disadvantaged groups, with an incentive for improving their participation in resource governance and management. A possible reason for this insignificant relationship is that rich and elite caste members frequently derive most of the benefits from investments in local community infrastructure improvement. The poor users do not usually share these benefits. Furthermore, not all CFUGs in the Hills of Nepal have invested in local community infrastructure improvement. Therefore, the users are still not quite aware of the potential benefits from these investments, in terms of changing their participation behaviour.

Overall, this study's findings conclude that the present incentive structures and institutional arrangements, for resource governance and management under the community forestry programme in Nepal, are insufficient to achieve people's effective participation in different socio-economic, cultural and institutional settings. The community forestry institutions, both at national and local levels, have failed to recognise the distribution and operation of power amongst different types of resource users within CFUGs, who have different socio-economic status, knowledge and understanding, perspectives and values, motives and objectives. Moreover, there have been few initiatives to increase the number of women and poor and lower caste in decision-making positions and community forestry interventions, at least in the areas covered by this study. But, these few initiatives have not taken into account the issue of the different categories of resource users, when making decisions about resource governance and management. Although the community forestry policy advocates for equality and opportunities, in all aspects of resource governance, from decision-making to costs and benefit sharing, it has so far been unable to achieve equitable outcomes. Too often the rich and elite castes are found to be privileged in both capturing the decision-making positions and extracting benefits from the forests — but the costs are shared *equally* between both rich and poor users. Despite the huge potential of the community forestry programme to significantly improve the livelihoods of poor households in the Hills of Nepal, it is unlikely to be achieved without the increased participation of poor, lower caste and other disadvantaged groups.

8.3 Implications of the Findings and Recommendations

The findings of this study have implications for the Nepal Government and donor agencies supporting community forestry programmes in Nepal, in addition to other

governance structures that are being promoted today as decentralised institutions, in general. The results of this study point to a number of important policy-relevant findings, which have direct implications for effective participation of CFUG members, particularly poor and disadvantaged groups within the community forestry regime. However, using policy measures, to ensure the transition of user households in participation levels moves from very low to very high, is not practical for all the variables. For example, even if a CFUG allows its users more access to forests, the availability of forest products are not really under the control of the group. Nevertheless, some of the outcomes may reasonably be improved through policy measures.

This study suggests that the community forestry policy has a great potential to achieve the effective participation of the resource users in its governance and management. However, a broader modification in the incentive structure, as an effort to change the behaviour of users and improve governance, may be required, in order to ensure that users feel more secure about recouping the benefits of their involvement. Creating additional incentives, by changing the rules governing resource access and use, could increase users' willingness to participate. There is a need to address policy-related issues, to ensure the policies are pro-poor. The community forestry policy needs to explicitly address the issue of power inequality that has characteristically limited the participation of poor and disadvantaged groups in resource governance, and their access to resources and benefits. However, changing the unequal power relationships quickly is not possible, due to the socio-cultural context of Nepal. Developing community forestry policy, therefore, needs to consider specific challenges (e.g., degree of heterogeneity) and structural changes to the system of social relationships (e.g., socio-cultural norms), through which inequalities are reproduced.

One of the most important policy measures, to stimulate the participation of poor and disadvantaged users, is strengthening their rights, in order to provide them with fair access to resources and benefits. However, under the present incentive structures and institutional arrangements, it is difficult to protect their access rights to resources and benefits, due to several constraining factors, such as discriminatory socio-cultural norms, local elite's domination within CFUG governance structures and processes and the poor users' lack of capacities and bargaining power.

Theory suggests that a common property regime works efficiently, if the group is homogeneous (Agrawal & Ostrom, 2001), and discriminatory socio-cultural norms do not exist in a more socially homogenous group. Moreover, secure property rights,

vested in each and every member of a group, provide incentives for them for manage their forest resources successfully (Heltberg, 2002; Khan, 1998; Tachibana *et al.*, 2001). Literatures suggest that assigning property rights over the forests, to user groups, gives users incentives to contribute to common property and improve the resource (Agrawal & Ostrom, 2001; Meinzen-Dick & Knox, 2001). However, this study on community forest management regimes in the Hills of Nepal, where CFUGs are generally socially and economically heterogonous and discriminatory socio-cultural norms prevail, argues that assigning property rights to the user group does not protect the rights of poor and disadvantaged sub-groups, but instead it deprives them of obtaining their share of benefits from the forests. This study further argues that allocating property rights to a homogenous sub-group, formed from the socially marginalised members, would guarantee their access rights to resources and benefits. Thus, this study suggests that a proportionate allocation of the most productive part of community forests be made to a sub-group of socially homogenous poor and disadvantaged members, within a CFUG, in addition to assigning and enforcing their legal rights and access to the allocated forests, through long-term leases or permanent rights, in order to guarantee their greater access and participation in resource benefits and governance.

This study also suggests that the government organisations responsible for community forestry programme implementation need to address a number of specific issues, in order to secure the meaningful participation of poor and disadvantaged groups in resource governance and management. One important policy implication is that the state should be aware that it might be very difficult to secure the participation of poor, lower caste and other disadvantaged groups in resource governance, merely through their participation in groups. Relevant government organisations (DoF, DFO) and even donor agencies should consider whether this can be achieved through facilitating more inclusive practices within existing policies — or perhaps it requires more targeted policy measures, to increase the participation of poor, lower castes and other disadvantaged groups. These policy measures may even require a deliberate focus on providing and guaranteeing the inclusion of poor and disadvantaged groups in CFUG governance structures and processes. The representation of poor and disadvantaged groups in decision-making structures, as suggested by Nightingale (2002) and Adhikari et al. (2004), for example, where poor and disadvantaged members can make decisions about access to resources and benefits, would promote their access to resources and benefits, and at the same time, enhance their participation in resource governance.

In addition, this study highlights the need for effective policy enforcement and monitoring support, by involved government authorities, to assist CFUGs to institutionalise their social inclusion policy within the group, in order to ensure that the active participation of poor and disadvantaged groups in the governance structures and processes is not constrained by socio-cultural norms; their limited capacities and bargaining powers; or domination by local elites. Moreover, government forestry staff members need to be well orientated regarding their agendas and the implementation of strategies related to an inclusion policy. The bureaucrats and government forestry staff members, who may benefit from the status quo that maintains their power, authority and ability to control resources, may otherwise not facilitate this effective enforcement of an inclusion policy. The DFOs may also need to consider changing their implementation strategies, if needed, in order to respond to monitoring outcomes. Furthermore, providing training and support to rich, high caste members, to help them change their attitudes and behaviour towards poor, low caste groups, may further help to secure the expected outcomes of an inclusion policy. Ultimately, these measures will help to improve social cohesion within communities and hence, the poor, low caste users' meaningful participation.

This research suggests that donor agencies, which support community forestry programme implementation in Nepal, can play a significant role in building and enhancing the capabilities of users and also improving the bargaining power of poor and disadvantaged groups. Improving these capabilities should focus on empowering users on their rights and responsibilities; advancing their knowledge base on resource governance and management; and improving their literacy skills and leadership capacities. Networking of CFUGs with other government agencies, NGOs and donor projects can provide more opportunities for their members to be trained and enhance their capabilities. Similarly, improving users' bargaining power should lay emphasis on improving their ability to bargain with the state over the formulation of pro-poor policies and also with local bureaucracy over the implementation of these policies, or with their CFUGs over the formulation and/or enforcement of pro-poor operational rules and norms that govern resource use and social behaviour (Agarwal, 2001). Support or pressure from external agents, such as NGOs, donors and key individuals, can significantly enhance the bargaining power of poor and disadvantaged groups.

This study highlights that, if the active participation of poor and disadvantaged groups is a policy goal, measures such as compensating or reducing the costs of participation should be considered. This study has revealed that many poor members are unable to

participate, due to the high opportunity costs of participation. These costs of participation may be compensated for, by providing financial support to supplement household incomes for improving livelihoods; paying allowances for participating in group activities; and/or providing subsidies on fees or forest product prices. Although this study has highlighted a negative relationship between financial support and participation, the economic empowerment of poor and disadvantaged groups is the key to increasing their influence in resource governance, which in turn leads to more equitable sharing of benefits from forest management. Economic empowerment of poor users can be ensured, by formulating pro-poor livelihood improvement plans at group level, in addition to household level. The DFOs, NGOs and/or donor-projects should support CFUGs to facilitate the design and implementation of household-level livelihood interventions, taking into account existing traditional skills at household level, the local availability of raw materials and the existing/potential market linkages. A realistic livelihood development intervention should be underpinned by community support for pro-poor programmes, such as the special allocation of CF land to the poor for income generation activities; the incorporation of raw material needs into their CF operational plans; the provision of no-interest loans; and concessions on forest produce and schooling facilities for the children of poor users. CFUG funds should contribute to the implementation of this plan, which could be further complemented through support from government line agencies, local government bodies (VDCs/DDCs) and other donor and service providing agencies.

In the case of CFUGs, this study argues that, if the active participation of poor and disadvantaged members is to be secured, the user group funds investment in local community infrastructure development should not be prioritised until (and unless) the active participation of poor and disadvantaged groups in decision-making about such investments is ensured. Exclusion of poor and disadvantaged households from decision-making about local community infrastructure development has resulted in inequitable outcomes. It has largely benefitted rich and elite caste members, whilst the poor do not usually share in these benefits. This study highlights the need to clarify relevant policies and legislation, in order to prioritise pro-poor community infrastructure projects and the minimum (or maximum) proportion of CFUG funds, which could be invested in such projects, could produce equitable outcomes, in terms of sharing the benefits from such projects.

Despite its focus on community forest management in Nepal, this study can contribute to the broader on-going debate of achieving the meaningful participation of poor and

disadvantaged members in common property resource governance, in general — from an incentive perspective. There has been scarce investigation undertaken on the impact of incentives on people's willingness and ability to participate in common property resource management. Indeed, the results from this study stress the important role of incentives on improving the active participation of resource users in resource governance and management, and it has provided descriptions of precisely what incentives influence users' willingness and ability to participate. Yet, power inequality, due to socio-cultural norms, together with poor capabilities and weak bargaining power, could undermine the meaningful participation of poor and disadvantaged groups in common property resource governance and management, unless the community forestry institutions are strengthened, in order to be able to deal with the issues of inequitable access and restricted opportunities at the local level.

8.4 Methodological Reflection

This section presents a reflection on the research methodology, in order to assess its appropriateness, to evaluate the challenges it has presented and to suggest areas for improvement in addressing this type of research problem. This study demonstrates that the integration of both quantitative and qualitative data has been useful for interpreting the incentives for community participation in the governance and management of common property resources. Whilst most studies in the past, which have examined the participation of users in the governance of common property resources, have been focused mainly on quantitative methods, this study has adopted a mixed method of both quantitative and qualitative approaches to data analysis and (as a result) it exhibits the usefulness of using mixed methods. The quantitative approach constructs and analyses the statistical models on participation indicators and incentive variables, whilst the qualitative approach provides a greater understanding about the institutional settings and overall governance and management performances of CFUGs. This study highlights that consideration of only a quantitative method may not have been sufficient for a successful analysis of the problem.

This study was conducted as a large pilot study consisting of forty CFUGs in two districts in Nepal and it covered a sample of 200 households during a limited time period in the field (due to financial constraints). The empirical results from this small sample size and a lack of survey data from other groups may not reflect the variability in other CFUGs, located in other parts of the country. Since this study has highlighted

that different categories of users, in terms of wealth, caste and position in decision-making structures, have different level of participation and face the same incentive differently, this study draws attention to the need for the allocation of a larger sample size from CFUGs, throughout the country. A larger sample size, with an appropriate sampling design (e.g., stratified random sampling design) could assist with a wider interpretation and comparison of results, amongst extended numbers of social groups and other relevant categories.

Translation of raw data into English was another difficult task faced by the researcher, since English is a second language for the researcher and the data has been collected in languages other than English. Careful and repeated readings of the original data and interpretations were required, in order to maintain the original meanings of the data within the translation. However, data needs to be translated personally by a researcher, who was involved in data collection in the field and who has an in-depth understanding of the collected data. This stipulation will ensure that data is interpreted accurately and that there is consistency in the translation.

The majority of studies on participation in common property resources are confined to one analytical model, and they focus on factor analysis, where factors are formed and based only on the predictors. In a case where a dependent variable, for example, a participation index, is constructed as a proxy for participation by using factor analysis, it gives a subjective decision ranking which probably does not correspond to the users' actual level of participation. Therefore, an alternative analytical model, which explains and predicts a set of dependent variables from a set of predictors, is necessary to overcome the bias in estimation, due to the subjective decision ranking. This study, by using the partial least squares regression method, has explored the importance of each predictor, i.e., incentives, in the prediction of the responses, i.e., participation indicators. A combination of both models enabled the estimation of not only the influence of each incentive on participation in resource governance, but also the influence of individual incentives on each of the participation indicators was explored. This study thus highlights the need to explore alternative models for data analysis, depending upon the suitability of the model for the data.

Nevertheless, overall, the research methodology worked satisfactorily and it enabled the researcher to achieve the objectives that were set for this research. In the following section, future research areas, which could be extended from this study, are highlighted.

8.5 Directions for Future Research

This study could be extended in four major areas: (1) assigning full property rights to user groups; (2) equitable distribution of benefits amongst users; (3) measuring social cohesion and support amongst CFUG members for collective actions; and (4) identifying major environmental services and designing appropriate payment schemes.

Assigning full property rights to user groups over community forests should be simple in principle. However, it is difficult in practice, since the state does not want to lose its residual rights over forest resources. Moreover, implementation of these rights, after the assignment, could be jeopardised by prevailing social stratification; elite-forest official alliances; the absence of a well-functioning market; and inadequate attention and/or implementation skills by forest officials. Therefore, research is required to identify the best possible ways of assigning full property rights, in addition to their effective implementation.

One of the underlying conditions, for the effective participation of poor and disadvantaged members in a common property regime, is the equitable distribution of benefits amongst users. However, very few studies have examined the benefit distribution pattern within a CFUG in Nepal, and these studies have generally been confined to a small number of CFUGs (e.g., Adhikari *et al.*, 2004). Therefore, further research is required on the pattern of benefit distribution from community forests, at household level, to ensure the success of a common property regime in achieving the effective participation of poor and disadvantaged groups. This is also one of the tools for empowering the poor and disadvantaged members, in order to enhance their participation in resource governance. In this context, it is important to conduct a detailed study to identify alliances and the nature of the influence of elites, in benefit distribution within the community forestry programme in Nepal.

The literature suggests that the community forestry process has increased social cohesion and support, through local institutional building, thus enhancing the social capital of the powerless, poor, lower caste and other disadvantaged groups, who are excluded from mainstream social and political processes. However, a study to identify to what extent the community forestry regime in Nepal has promoted social cohesion, amongst different social groups within a CFUG, is still lacking. Therefore, further research is required to examine whether the community forestry regime in Nepal is actually succeeding in promoting social cohesion amongst users from different social

groups within communities. It is important to identify the level of social cohesion promoted and its implications on the governance of common property resources.

Producing and implementing environmental services involves costs to local communities. Policy-makers developing appropriate policy measures to institutionalise payments for environmental services within the community forestry regimes in Nepal, should consider the interests and capabilities of the poor users. Therefore, identifying major environmental services and devising appropriate payment schemes, which can provide incentives for CFUGs to participate in resource governance and management — and to continue producing environmental services — is an area for future research.

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ANNEXES

Annex 1: Questionnaire for Household Survey

Incentives for Community Participation in the Governance and Management of Common Property Resources: The Case of Community Forestry in Nepal

MASSEY UNIVERSITY
Institute of Natural Resources, PN 433
Private Bag 11 222, Palmerston North, New Zealand

QUESTIONNAIRE FOR HOUSEHOLD SURVEY

		Household ID:	
Interviewer:		Name of the CFUG:	
Date of Interview:		Address: District:	
Start time:	End time:	Village:	Ward No.
Data checked by:		VDC/Municipality:	
Data entry by:		Wealth-ranking category: **Rich/ Medium/ Poor** *(please circle the appropriate one)*	

PART A: HOUSEHOLD CHARACTERISTICS

(A household comprises people living together in the same house, eating from the same pot and members are more or less permanently available at home for at least 6 months in a year)

			For coding
1	Gender of the Household Head *(1 = Male, 2 = Female)*	.....	
2	Age of the Household Head	.....	
3	Number of male members	.....	
4	Number of female members	.....	
5	Number of children (below 16 yrs of age)	.....	
6	Which ethnic group do you belong to? *(1 = High caste; 2 = Janajati; 3 = Dalit or lower caste)*	.....	
7	What are the major sources of household income?		
	.....		
	.....		

PART B. INDICATORS OF PARTICIPATION

8	How long have you been the member of this CFUG? (in years)	.....	
9	Are any members of your household represented in the Executive Committee (EC)? (1 = Yes; 2 = No)	.....	
10	If yes, who? *(1 = household head; 2 = other male; 3 = other female)*	.....	
11	In which position?	.....	
12	Do you or any of your household members hold membership in any other group or organization? *(1 = Yes; 2 = No)*	.....	
13	If yes, what position in which group(s) or organization(s)?		
	.....		
	.....		
14	Overall, how do you rate your level of participation in the governance and management of community-based forest resources?	.....	

Participation in Meeting/ Decision Making			
15	How often are the user group meetings held?	.....	
16	How often do you attend the user group meetings?	.....	
17	How often are the Executive Committee (EC) meetings held?	.....	
18	How often do you attend the EC meetings?	.....	
19	Who participates most in the meetings from your household?	.....	
20	How do you participate?		
21	How do you rate your level of participation in the meetings in terms of contributing to the meeting?	.....	
22	What are the major decisions made by your group regarding governance and management of community-based forest resources?		
	.....		
	.....		
	.....		
23	Do you participate in the decision making? (1 = Yes; 2 = No)	.....	
24	If yes, how do you participate?		
	.....		
	.....		
	.....		
25	How do you rate your level of participation in decision making?	.....	
26	If No, why?		
	.....		
	.....		
	.....		
Level of participation in implementation			
27	What are the major activities implemented by the group?		
	.....		
	.....		
	.....		
28	Do you participate in the activity implementation? (1 = Yes; 2 = No)	.....	
29	If Yes, how do you participate?		
	.....		
	.....		
	.....		

30	How do you rate your level of participation in the implementation?	.....	
31	If No, why?		
	.....		
	.....		
	.....		
	PART C. INCENTIVES FOR PARTICIPATION		
Level of Benefits			
32	What are the major benefits that you derive being a member? How do you rate the benefits you receive?		
	.....	.....	
	.....	.....	
	.....	.....	
	.....	.....	
33	How often do you access the forest? *(1 = daily, 2 = weekly; 3 = monthly; 4 = six monthly; 5 = yearly; 6 = never)*	.....	
34	What products do you collect and what is the level of your demand fulfilled? Please list the products from most important to least important	*(months)*	
	.....	.....	
	.....	.....	
	.....	.....	
	.....	.....	
35	What other things motivate you to participate in the management and decision-making regarding the governance of community forest?		
	.....		
	.....		
	.....		
	.....		
	.....		
	.....		
How important is each of the followings to your participation in the community forest? ***Please respond in the following manner:*** *5 = very important; 4 = important; 3 = neutral; 2 = less important; 1 = not important at all*			
36	Access to forests and availability of forest products	.....	
37	Support to household income generation	.....	
38	Social security, support & cohesion through local institution building	.....	
39	Investment in local community infrastructure and development	.....	
40	Well-defined & assigned property rights over forest resources to the users	.....	
41	Payment for environmental services	.....	

	PART D. FACTORS HINDERING PARTICIPATION IN CFUG GOVERNANCE		
42	What factors hinder or discourage you to participate in the governance & management of CF?		
	…… …… …… …… ……		
	PART G. CHANGE IN LEVEL OF PARTICIPATION DUE TO CHANGES IN THE INCENTIVES		
43	Would you like to improve your level of participation? (1 = Yes; 2 = No)	……	
44	If yes, what activity would you like to participate more in?		
	…… …… ……		
45	If no, why?		
	…… …… ……		
46	What incentives need to be changed or added for you to participate more in?		
	…… …… ……		
	THANK YOU FOR YOUR PARTICIPATION!!		

Annex 2: Information about the Selected CFUGs for the study[42]

SN	Name of CFUGs	Location	Handed over Year	Area (ha.)	No. of Households	Status
Tanahun District						
1	Baghmare	Ghansikuwa	2051	39.5	85	Average
2	Ahaldanda	Bandipur	2050	154.0	144	Active
3	Kokcha	Bimalnagar	2062	41.5	189	Average
4	Chhapeli	Chhap	2050	50.5	262	Average
5	Bashudev Pahara	Ghansikuwa	2051	42.5	111	Average
6	Goje	Nahala	056	75.3	127	Passive
7	Chandisthan	Bhansar	058	35.8	135	Average
8	Majuwa Okhle	Bhanu	052	47.0	256	Active
9	Kalikhoria	Aambu	053	49.0	65	Passive
10	Yampa	Yampa	051	37.0	247	Average
11	Akala	Vyas Municipality-1	2050	35.3	162	Average
12	Mangaligaira	Vyas Municipality-5	2052	24.5	133	Average
13	Baghbhanjyang	Damauli	2050	30.4	170	Average
14	Maduwa	Jamune	2050	121.0	211	Active
15	Andheri	Chowk Chisapani	2051	34.5	75	Average
16	Thuloban Aamdanda	Barbhanjyang	051	112.8	185	Average
17	Panchase	Khairenitar	058	11.3	358	Average
18	Aklepakha	Dhorphirdi	052	35.0	106	Active
19	Taldanda	Dulegaunda	050	74.0	222	Average
20	Jogidanda	Manapang	2060	30.7	91	Passive
Lamjung District						
21	Kusunde	Bhoteodhar	2053	18.5	67	Average
22	Raniswanra Sakharpakha	Archalbot	2052	54.2	126	Average
23	Jugepani	Bharte	2050	57.2	111	Average
24	Patlepani	Udipur	2058	88.5	83	Average
25	Laligurans	Bhulbhule	2055	110.6	101	Passive
26	Devisthan	Devisthan, Bhulbhule	2060	91.3	80	Active
27	Khasur	Bajhakhet	2050	337.2	182	Passive
28	Bhotechaur	Chandisthan	2052	19.6	117	Average
29	Suryamukhi Bastale	Gaunsahar	2052	26.4	196	Average
30	Kirepani	Gaunsahar	2052	44.8	200	Average
31	Chautari	Duradanda	2050	26.6	37	Passive
32	Kalleri	Parewadanda	2061	6.2	69	Average
33	Simhar	Parewadanda	2057	33.0	196	Average
34	Karange	Sundarbazar	2053	10.0	58	Average
35	Champani Thadikhoria	Tarku	2050	30.8	40	Average
36	Satipatal	Chiti	2059	46.6	215	Passive
37	Mulabari	Baglungpani	2055	203.3	136	Average
38	Shanti	Beshisahar	2057	59.8	303	Average
39	Salphedi	Dhamilikuwa	2050	21.1	76	Passive
40	Kaprechaur	Bhalayakharka	2052	54.2	104	Passive

[42] Data were from the official record of DFO Tanahun and DFO Lamjung

Annex 3: Field Visit Schedule

SN	Activities	Week															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Travel to Nepal, Familiarization																
2	Secondary information collection																
3	Formal and informal discussions with government officials, forestry-sector donor agencies/projects, relevant I/NGOs																
4	Final selection of study area and communication to the involved CFUGs, DFO, Projects,I/NGOs																
5	Local researcher recruitment/training																
6	Final planning and preparation of field visit and communication																
7	Primary data collection																
	Pre-testing of survey questionnaire																
	Questionnaire finalization, translation into Nepali and printing																
	Household survey																
	Key informants interview, focus group discussions, observations, case studies																
	Final checking of questionnaire and coding																
8	Share the initial findings with local experts from government officials, forestry-sector donor agencies/projects, relevant I/NGOs to get feedback																
9	Remaining secondary information collection																
10	Visit to Family and Friends																
11	Travel back to Massey																

Annex 4: The Ethical Reports (Information Sheets, Participant Consent Form and Confidentiality Agreement)

Annex 4. 1 Information Sheet for an Individual Household

Massey University

Institute of Natural Resources, PN 433

Massey University, Palmerston North

You are kindly invited to participate in the research project entitled "Incentives for Community Participation in the Governance and Management of Common Property Resources: The Case of Community Forestry in Nepal". This research aims to examine whether the community forest management regimes in Nepal has actually provided communities with sufficient incentives to make them willing, and economically able, to involve themselves in the governance of common property resources and understand the role of incentives in achieving effective participation of all sections of the communities in having their voices and influence in the group's decisions and strong influence on outcomes of the decisions. The research is expected to be completed by November 2011.

The researcher, Sunit Adhikari, is a doctoral student at the Institute of Natural Resources, Massey University, New Zealand. This research project is conducted in order to fulfil one of the requirements for the Doctor of Philosophy degree in international rural development. The researcher is under the supervision of Dr. Tanira Kingi, Dr Terry Kelly, who are affiliated with the Institute of Natural Resources and Dr Siva Ganesh, who is affiliated with the Institute of Fundamental Sciences.

Since the focus of this research is to determine the incentive conditions under which the users are most likely to participate in common property resource governance, please be aware that the CFUGs for this research have been selected from the registered CFUGs that have been managing handed over community forest at least five years before this study. The total sample size for the household survey is fixed at 200 user households. So, a total of five respondents will be interviewed from each group as per the research sampling design. The respondents are selected randomly from the list of the member households in the respective CFUG constitution.

You are kindly requested to participate voluntarily in the interview for not more than 2 hours. You are requested to provide information on your socio-economic characteristics such as household demography, wealth and income, social position or institutional membership, and dependency over forest resources. You are further requested to provide information on your level of participation in various group activities, your views on and attitude to the incentives offered by your CFUG, and your costs of participation in different group activities. At the end of the interview, you will be given the opportunity to edit, retract, or add to any of the comments you have made.

You are under no obligation to accept this invitation. If you decide to participate, you have the rights to:

- decline to answer any particular question;
- withdraw from the study at any time;
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.

The information provided by you will be used for analysis and interpretation to answer the research questions. A summary of key findings (in Nepali) will be communicated to your group after the completion of the research.

If you have any query with regard to this research, please contact the researcher or his supervisors in the address below:

Researcher's address in New Zealand
Institute of Natural Resources, PN 433
College of Sciences, Massey University
Private bag 11 222, Palmerston North
Tel.: +64 6 356 9099 ext. 7190
Fax: +64 6 356 5680
Email: S.Adhikari@massey.ac.nz

Supervisors' address in New Zealand		
Dr Tanira Kingi	Dr Terry Kelly	Dr Siva Ganesh
Institute of Natural Resources, PN 433	Institute of Natural Resources, PN 433	Institute of Fundamental Sciences
College of Sciences, Massey University	College of Sciences, Massey University	College of Sciences, Massey University
Private bag 11 222, Palmerston North	Private bag 11 222, Palmerston North	Private bag 11 222, Palmerston North
Tel.: +64 6 350 5234	Tel.: +64 6 350 5799 ext. 5517	Tel.: 64 6 (06) 356-9099 Ext 2463
Fax: +64 6 356 5680	Fax: +64 6 356 5680	Fax: +64 6 358 5682
Email: T.Kingi@massey.ac.nz	Email: T.C.Kelly@massey.ac.nz	Email: s.ganesh@massey.ac.nz

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher named above is responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher, please contact Professor Sylvia Rumball, Assistant to the Vice-Chancellor (Research Ethics), telephone 06 350 5249, e-mail humanethics@massey.ac.nz..

Annex 4. 2 Information Sheet for Key Informant (CFUG)

Massey University

Institute of Natural Resources, PN 433

Massey University, Palmerston North

You are kindly invited to participate in the research project entitled "Incentives for Community Participation in the Governance and Management of Common Property Resources: The Case of Community Forestry in Nepal". This research aims to examine whether the community forest management regimes in Nepal has actually provided communities with sufficient incentives to make them willing, and economically able, to involve themselves in the governance of common property resources and understand the role of incentives in achieving effective participation of all sections of the communities in having their voices and influence in the group's decisions and strong influence on outcomes of the decisions. The research is expected to be completed by November 2011.

The researcher, Sunit Adhikari, is a doctoral student at the Institute of Natural Resources, Massey University, New Zealand. This research project is conducted in order to fulfil one of the requirements for the Doctor of Philosophy degree in international rural development. The researcher is under the supervision of Dr. Tanira Kingi, Dr Terry Kelly, who are affiliated with the Institute of Natural Resources and Dr Siva Ganesh, who is affiliated with Institute of Fundamental Sciences.

Please be aware that the CFUGs for this research have been selected from the registered CFUGs that have been managing handed over community forest at least five years before this study. The key informants for this research have been selected from the group members who can provide information regarding overall governance and management practices and performances of the user group and those include present and ex-members of executive committee, locally respected/knowledgeable personalities in the community and local leaders. A total of about 30 key informants will be interviewed. The key informants are selected randomly.

You are kindly requested to participate voluntarily in the interview for not more than 2 hours. You are requested to provide information on overall governance and management practices and performances of the user group, specifically users' participation in the group activities and decision making processes. You are further requested to provide information on level of users' participation in various group activities, incentives offered by the group to promote effective participation of all sections of the communities, and the costs of participation in different group activities. At the end of the interview, you will be given the opportunity to edit, retract, or add to any of the comments you have made.

You are under no obligation to accept this invitation. If you decide to participate, you have the rights to:

- decline to answer any particular question;
- withdraw from the study at any time;
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.

The information provided by you will be used for analysis and interpretation to answer the research questions. A summary of key findings (in Nepali) will be communicated to your group after the completion of the research.

If you have any query with regard to this research, please contact the researcher or his supervisors in the address below:

Researcher's address in New Zealand
Institute of Natural Resources, PN 433
College of Sciences, Massey University
Private bag 11 222, Palmerston North
Tel.: +64 6 356 9099 ext. 7190
Fax: +64 6 356 5680
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Supervisors' address in New Zealand		
Dr Tanira Kingi	Dr Terry Kelly	Dr Siva Ganesh
Institute of Natural Resources, PN 433	Institute of Natural Resources, PN 433	Institute of Fundamental Sciences
College of Sciences, Massey University	College of Sciences, Massey University	College of Sciences, Massey University
Private bag 11 222, Palmerston North	Private bag 11 222, Palmerston North	Private bag 11 222, Palmerston North
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Fax: +64 6 356 5680	Fax: +64 6 356 5680	Fax: +64 6 358 5682
Email: T.Kingi@massey.ac.nz	Email: T.C.Kelly@massey.ac.nz	Email: s.ganesh@massey.ac.nz

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher named above is responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher, please contact Professor Sylvia Rumball, Assistant to the Vice-Chancellor (Research Ethics), telephone 06 350 5249, email humanethics@massey.ac.nz..

Annex 4. 3 Information Sheet for Key Informant (Government Agency/NGO)

Institute of Natural Resources, PN 433
Massey University, Palmerston North

You are kindly invited to participate in the research project entitled "Incentives for Community Participation in the Governance and Management of Common Property Resources: The Case of Community Forestry in Nepal". This research aims to examine whether the community forest management regimes in Nepal has actually provided communities with sufficient incentives to make them willing, and economically able, to involve themselves in the governance of common property resources and understand the role of incentives in achieving effective participation of all sections of the communities in having their voices and influence in the group's decisions and strong influence on outcomes of the decisions. The research is expected to be completed by November 2011.

The researcher, Sunit Adhikari, is a doctoral student at the Institute of Natural Resources, Massey University, New Zealand. This research project is conducted in order to fulfil one of the requirements for the Doctor of Philosophy degree in international rural development. The researcher is under the supervision of Dr. Tanira Kingi, Dr Terry Kelly, who are affiliated with the Institute of Natural Resources and Dr Siva Ganesh, who is affiliated with the Institute of Fundamental Sciences.

Please be aware that the staffs of the agencies have been selected based on the criteria such as the relevant experience and skills. The purpose is to interview relevant staff having experiences and skills on overall governance and management practices and performances of CFUGs.

You are kindly requested to participate voluntarily in the interview for not more than 2 hours. You are requested to provide information on overall existing level of participation of different sections of CFUG members, specifically in terms of wealth, caste and gender, in the governance and management of community-based forest resources; the types, nature and extent of incentives provided by the community forest management regimes in Nepal that impact on the participation of local users, particularly of the poor and marginalized groups in the existing policy framework and incentive structures that are intended to promote local users' participation. You are further requested to provide information on the roles and mechanisms of your organization on improving participation of all sections of the users in decision making process of the CFUGs. At the end of the interview, you will be given the opportunity to edit, retract, or add to any of the comments you have made.

You are under no obligation to accept this invitation. If you decide to participate, you have the rights to:

- decline to answer any particular question;
- withdraw from the study at any time;
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.

The information provided by you will be used for analysis and interpretation to answer the research questions. A summary of key findings (in Nepali) will be communicated to your group after the completion of the research.

If you have any query with regard to this research, please contact the researcher or his supervisors in the address below:

Researcher's address in New Zealand
Institute of Natural Resources, PN 433
College of Sciences, Massey University
Private bag 11 222, Palmerston North
Tel.: +64 6 356 9099 ext. 7190
Fax: +64 6 356 5680
Email: S.Adhikari@massey.ac.nz

Supervisors' address in New Zealand		
Dr Tanira Kingi	Dr Terry Kelly	Dr Siva Ganesh
Institute of Natural Resources, PN 433	Institute of Natural Resources, PN 433	Institute of Fundamental Sciences
College of Sciences, Massey University	College of Sciences, Massey University	College of Sciences, Massey University
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Email: T.Kingi@massey.ac.nz	Email: T.C.Kelly@massey.ac.nz	Email: s.ganesh@massey.ac.nz

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher named above is responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher, please contact Professor Sylvia Rumball, Assistant to the Vice-Chancellor (Research Ethics), telephone 06 350 5249, e-mail humanethics@massey.ac.nz..

Annex 4. 4 Information Sheet for Focus Group Discussion

Massey University

Institute of Natural Resources, PN 433

Massey University, Palmerston North

Your organization is kindly invited to participate in the research project entitled "Incentives for Community Participation in the Governance and Management of Common Property Resources: The Case of Community Forestry in Nepal". This research aims to examine whether the community forest management regimes in Nepal has actually provided communities with sufficient incentives to make them willing, and economically able, to involve themselves in the governance of common property resources and understand the role of incentives in achieving effective participation of all sections of the communities in having their voices and influence in the group's decisions and strong influence on outcomes of the decisions. The research is expected to be completed by November 2011.

The researcher, Sunit Adhikari, is a doctoral student at the Institute of Natural Resources, Massey University, New Zealand. This research project is conducted in order to fulfil one of the requirements for the Doctor of Philosophy degree in international rural development. The researcher is under the supervision of Dr. Tanira Kingi, Dr Terry Kelly, who are affiliated with the Institute of Natural Resources and Dr Siva Ganesh, who is affiliated with the Institute of Fundamental Sciences.

Please be aware that the CFUGs for this research have been selected from the registered CFUGs that have been managing handed over community forest at least five years before this study. The focus group discussions will be conducted separately with general users, executive committee members, women groups, any task-specific sub-committees, poor and marginalized groups, and other special interest groups in order to enhance the quality of information collected by providing enabling environment to express their views and concerns in their small group, who may not be able to do that in a large group. A total of 6-10 members can participate in a group discussion.

Members of your organization are kindly requested to participate voluntarily in the interview for not more than 2 hours. The participants are requested to provide information on overall governance and management practices and performances of the user group, specifically participation of different sections of the group in the group activities and decision making processes. The participants are further requested to provide information on incentives offered by the group to encourage participation of different sections of the communities, and the costs of participation in different group activities. At the end of the interview, you will be given the opportunity to edit, retract, or add to any of the comments you have made.

You are under no obligation to accept this invitation. If you decide to participate, you have the rights to:

- decline to answer any particular question;
- withdraw from the study at any time;
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.

The information provided will be used for analysis and interpretation to answer the research questions. A summary of key findings (in Nepali) will be communicated to your group after the completion of the research.

If you have any query with regard to this research, please contact the researcher or his supervisors in the address below:

Researcher's address in New Zealand
Institute of Natural Resources, PN 433
College of Sciences, Massey University
Private bag 11 222, Palmerston North
Tel.: +64 6 356 9099 ext. 7190
Fax: +64 6 356 5680
Email: S.Adhikari@massey.ac.nz

Supervisors' address in New Zealand		
Dr Tanira Kingi	Dr Terry Kelly	Dr Siva Ganesh
Institute of Natural Resources, PN 433	Institute of Natural Resources, PN 433	Institute of Fundamental Sciences
College of Sciences, Massey University	College of Sciences, Massey University	College of Sciences, Massey University
Private bag 11 222, Palmerston North	Private bag 11 222, Palmerston North	Private bag 11 222, Palmerston North
Tel.: +64 6 350 5234	Tel.: +64 6 350 5799 ext. 5517	Tel.: 64 6 (06) 356-9099 Ext 2463
Fax: +64 6 356 5680	Fax: +64 6 356 5680	Fax: +64 6 358 5682
Email: T.Kingi@massey.ac.nz	Email: T.C.Kelly@massey.ac.nz	Email: s.ganesh@massey.ac.nz

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher named above is responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher, please contact Professor Sylvia Rumball, Assistant to the Vice-Chancellor (Research Ethics), telephone 06 350 5249, email humanethics@massey.ac.nz..

Annex 4. 5 Participant Consent Form

Massey University

Institute of Natural Resources, PN 433

College of Sciences, Massey University

Palmerston North, New Zealand

This consent form will be held for a period of five (5) years

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree to not disclose anything discussed in the Focus Group.

I agree to participate in this study under the conditions set out in the Information Sheet.

Signature: ..... Date: .....

Full Name .....

Annex 4. 6 Confidentiality Agreement

MASSEY UNIVERSITY

Institute of Natural Resources, PN 433
College of Sciences, Massey University
Palmerston North, New Zealand

CONFIDENTIALITY AGREEMENT

I …… agree to keep confidential all information concerning the project "Incentives for Community Participation in the Governance and Management of Common Property Resources: The Case of Community Forestry in Nepal".

I will not retain or copy any information involving the project.

Signature: ..... Date: .....