

**Sustainable Resource Utilization and Governance in Community Forests:
Reflection from Mountains of Nepal**

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Conference paper

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Local Terms

Bari	Non-irrigated land
Brahmin & Chhetri	The ethnic group so called upper level group of people in caste system
Dalit	So called untouchable castes of Nepal who are so called categorized under the discriminated group
Khet	Irrigated land
Khoriya	Shifting cultivation
Panchayat	Village council
Ropani	Piece of land equivalent to 0.499 ha
Tole	Hamlet

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Abbreviations and Acronyms

ANOVA	Analysis of Variance
CBS	Central Bureau of Statistics
CF	Community Forestry
CFUG	Community Forest User Group
CPR	Common property resource
DDC	District Development Committees
DFO	District Forest Office
DoF	Department of Forestry
FAO	Food and Agricultural Organization
FGD	Focus Group Discussion
GDP	Gross Domestic Production
HMG	His Majesty's Government
IG	Income Generation
IPA	Index of Perceived Availability
LFP	Livelihoods and Forestry Programmes
LSU	Livestock Unit
LRMP	Land Resource mapping Project
MPFS	Master Plan for the Forestry Sector
NCS	National Conservation Strategy
NGO	Non-governmental organizations
NTFP	Non-timber forest product
NUKCFP	Nepal UK Community Forestry Programme
OP&C	Operational Plan and Constitution
SPSS	Statistical Packages for Social Sciences
VDC	Village Development Committees
WWF	World Wildlife Fund

Abstract

Community forestry, with its behavioral principles of management with people's participation, has come into practice in Nepal, owing to failure of earlier system of managing forests without people's participation. In this concern, last two decades appealed to change policies, approaches, and methodologies to implement community forest program in Nepal. As result, forest protection by Community Forest Users Groups (CFUGs) over the last 14 years has amplified creation of resource that can now be mobilized for benefit whole community. Yet despite considerable resources, numerous programs focusing community participation, the entire concept is still debatable. It is also taking place in the resource utilization and question is that if it is on right approach or not. Equity in access to forest resource assets to all users without any bias is the expectation from the resource managers and planners. However, the CFUGs and supporting organizations are facing challenges to ensure sustainable utilization of the resources. It is responsibility of scholar to show that the process at grass root levels remains driven by the top, though projects and programs attempt to tackle the issues (elite capture, alienation of poor and marginal groups like women, insure livelihoods, limited economic benefits for remote areas, corruption). FUGs also tend to share forest resources based on equality rather than on needs, resulting in hardships for those marginalized groups who have disproportionate dependence of the forests for their livelihoods. These issues are serious in mountainous areas.

This paper is prepared based on studies from mid hill and high Himalaya areas of Nepal. The one-year study was conducted in fourteen community forests of two districts (Dolpa and Baglung). The areas under studies were sustainable resource utilization and community governance in forestry. The study analyses the forest condition, resource collection processes, forest product availability (quantity and quality), impacts on farming system, assessment on governance practice (representation of male and female in decision making processes, group conflict, transparency in decision making, accountability of the group members, true participation, future plans). The study further analyses the contribution of community forestry to local rural livelihoods on the basis of people's perception on natural, human, physical, social and financial capital formation due to the community forestry. Different sub hypotheses were set and tested from the strong statistical tools in each capital formation area to analyze the contribution of the community forestry. This study shows the status of the forest condition in people's perception and state of governance in resource utilization of the mountainous community forests. The paper aims to show the circumstances of the resource use and hopefully aware to the development programs in the forestry sector. It demonstrates what is needed to respond the local people keeping in the centre of livelihood pentagon. Finally, it finds out the key lessons in forest utilization practices and supports in sustainable livelihoods of the local people made by community forestry.

Keywords: *Community forestry, resource utilization, sustainable livelihoods, livelihood capitals, community governance,*

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Background

Sustainable utilization of resource is to assure the availability of resource for future use by utilizing resource only to such an extent that they do not get exhausted and could be differ in terms of space, time, culture, group of people and environment. The word openly associated with the socio economic of locals. Forests are one of the most important natural resources and assets for the locals to sustain their livelihoods. A complex set of ideas, principles and analytical tools that have been labeled the sustainable concerns with the local economic development (Robb 1999). The work of Chambers and Conway in the early 1990s built on sustainability research (MacKeigan and Govindaraj 2004). We believed that resource management programs are providing support to rural people (Brown *et al.* 2002). Therefore when we bring the resource utilization and livelihoods issues in one place then there is discussion about the sustainability (Carney 1999).

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Significant impact on resource utilization towards sustainable management of natural resources deserves special attention because basic resources of all human activities is expect to come from forest nearby and occurring so while keeping the environment productive and salvaged. The sustainability of Nepalese forest management would be the production of quality forest products that can feed us and to our next generations while keeping the forest alive, productive and enhancing the land cover area in future (Poudel 2004). That means a forest that will continue to manage natural resources and protect environment indefinitely, supports the livelihood, and keeps great value whilst keeping potentiality to produce the same for the generation to come (Gilmour *et al.* 2004).

Community forestry

History of forest management in Nepal

After the political changes in 1950, the government of Nepal introduced several legislative measures to conserve the forest resources. Nationalization of all forests by enforcing the Nationalization Act 1957 was an attempt to wrest up land from those who had supported the previous regime. This was only with many feudal land lords remaining in control of forest resources and the access to them however the exclusion of people from forest management in 1957 brought conflicts (Barlet and Malla 1992). The overall impact was negative to people. The deforestation and encroachment of the forestlands accelerated rapidly (Malla 2000). The increasing demand of the forest products and increasing pressure increasing demand created by rapid population growth was equated with deforestation, resulting landslide, and flooding along with environmental degradation (Acharya, 2001) and became clear that forest protection would not be effective unless the local people are involved. In late 1980s, Government brought Community Forestry (CF) policy (Malla *et al.* 2003). Early days focused on resources (Brown *et al.* 2002), so improved forest are widely observable (Dev *et al.* 2003).

Community forestry what is and why for?

Community forestry is a term [which is](#) used to describe the participation of communities in the management and use of forest resources. It is the process which seeks the control and management of forest resources by rural people who use them especially for domestic purposes and an integral part of their farming systems (Gilmour and Fisher. 1991). Community forestry, as its name implies, "community" and "forestry related activities" are

combined and communities take charges for themselves (Box 1). The Forest Act 1993 defines the community forestry as a part of national forest handed over to the forest user groups under specified rules and regulation of its development, conservation and utilization for collective benefit (HMG, 1993).

The program was initiated with the assumption that local communities will become active, understand the problems, motivated to find the best solutions, possess forest knowledge and maintain the conditions sustainable over time due to their interests (Adhikari 2004, Malla *et al.* 2003). The justifications are as follows:

1. Participatory resource management is appropriate solution reducing resource degradation.
2. Granting property rights over the commons will meet needs in terms of equitable and sustainable use of resources.

In resource dependent areas of developing countries, forest resource management has been considered as one of the most viable options for combining livelihoods, enhancement of local economic development and biodiversity conservation (Adhikari 2004). For instance, Adhikari (2002) notes the past decades have witnessed an increasing emphasis on community-based forest management, with transference of forest management responsibility into the hands of local communities. Kanel and Niraula (2004) state, sustainable management practices provide multiple goods and services to the people.

Box 1: The rationale of community forestry
CF management has been justified on grounds:
Proximity to the resource: those in closest contact with the forest are best-placed to ensure its effective husbandry.
Impact: those whose livelihoods impact most on the forest should be involved in its management.
Equity: forests should be managed so as to ensure adequate resource flows to rural populations.
Livelihoods: single-purpose industrial management may be incompatible with the livelihood needs
Capacity: forest-dwelling communities may be better forest managers than governments.
Biodiversity: multiple purpose management of forests by communities is likely to lead
Cost-effectiveness: local involvement in management may be an important way of cutting costs to the state.
Governance: community involvement introduces important checks and balances in relation to state services
Development philosophy: local participation, decentralization and subsidiary may all, in themselves, be considered as important ends of development.

Source: Brown (1999)

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Although these programs have succeeded in halting the ongoing trend of deforestation, empirical evidence on equity and distributional benefits from CF management is rather mixed (Adhikari 2002, b; Kumar 2002, Richards *et al.* 1999; Springate-Baginski *et al.*, 1999). On one hand, researchers have described the positive impacts on biophysical condition of forests, however, at the same time they have questioned the equity and welfare implications (Branney and Yadav 1998; Das 2000; Kumar 2002). Government and non government organizations (NGOs) facilitation made people aware to get knowledge and skill about resources management. However CF is providing high degree support to the communities, there is argument that if CF is providing equal benefits (Fisher 2000). People's participation is declining; rich are getting more benefits than poorer, and only three percent of the total expenditure is spent on pro-poor program (Kanel *et al.* 2003; Timsina 2002; Acharya 2001). Upreti (2000) notes need-based access to forest resources to the poorest increasing, Malla (2001) says wealthier appear to benefit more, but Brown (2002) hope long-term effects may expect to be beneficial. Organizations are integrating forest issues into poverty reduction strategies however; the human impact has considered an important factor in structuring the resources. Some CFUGs are regulating access in natural and financial resources (Aumeeruddy-Thomas *et al.* 2004, Bauer 2004). Hence, it is believed that CF is a good discipline to study the sustainability which has all social practices about management principles and practices that build on both scientific and local knowledge.

For Support to rural people and livelihoods improvement

Most rural people in Nepal depend on traditional agriculture and livestock for their livelihoods (HMG 1989) and the forest is a major component that plays a vital role in rural

livelihoods by providing income, construction materials, and animal feed (Gilmour *et al.* 2005). Based on an agro-based economy, Nepal has to develop and manage the existing forest resources to achieve the national goal of poverty reduction (HMG 2002). Nepal has been implementing CF programs to address the peoples' needs and to enhance the quality of natural resource. The forest management strategy ensures the participation of local people through CFUG that allow them to derive forest goods and services for their benefits (Collet *et al.* 1996).

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Forest based income is a major contribution to the livelihoods of rural people. CFUGs are operating the forest based micro enterprises. Income generation (IG) from forest products like timber, bamboo, medicinal plant, forest nursery, Non Timber Forest Products (NTFPs) is started. Potentiality of broom grass, cardamom, turmeric, and ginger in forests as a means of IG are explored, incorporated in operational plans and started to implement by some CFUGs (Upreti 2000). The strong debate on potential contribution of CFs on poverty reduction among the actors is started. CF approach is not only creating employment opportunities for local people but also greatly contributing to sensitize uses on the economic dimensions of forests to reduce poverty.

Malla (2000) found that the poor are able to get loan (without interest) for the income generation activities. Several women groups on agriculture, income generation, saving, non formal education and kitchen gardening are formed and working properly in addition to women CFUG. Upreti (2000) writes supporting to the process that the need-based access to forest resources to the poorest and disadvantaged group is increasing. Their voice, and interests and their involvement in decision-making process are increasing. While efforts at forest rehabilitation are anticipating have minimum level of effects on the livelihoods of the poor in the initial period, the long-term effects may expect to be more beneficial (Brown *et al.* 2002). Training and extension programs organized through CF have potential to increase the skill and knowledge of users and thus help them to select, design, and implement appropriate livelihoods strategy. (LFP 2003).

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For resource utilization and governance

Although not necessary in absolute terms, the existence of economic value from the products derived from managing the forest provides several important public benefits include economic (e.g., support for rural economies, value-added manufacturing, support for forest-based recreation); ecological (e.g., incentives to maintain undeveloped forest land, addressing invasive species, disincentive to high-grade forests, reducing reliance on fossil-fuel based products); and social (e.g., address wild land issues, provide settings for forest-based recreation, reduce reliance on foreign sources for energy). Therefore, it is time to revisit the resource utilization pattern in participatory forest management in light of the role it can and should play in sustainable forestry.

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Though there have been failures as well as successes, the forestry sector has considerably more experience with governance issues than do most others, and this experience has been garnered at all levels – local, national and international (FAO, 2002). Good governance as a precondition for resource utilization, this paper makes the case for community forestry arguing around four themes which are crucial dimensions of governance: people's participation; accountability of the leaders, transparency during the resource utilization and future vision of the CFUGs.

From a governance perspective, issues associated with mobilization of local people in whole process of planning, implementation and benefit sharing ensures lower unit costs, better quality work, greater transparency in fund utilization, and long-term sustainability (Kanel *et al.* 2004, Wagle *et al.* 2002, Adhikari *et al.* 2006, Sikor 2005). Community forestry aims natural resources are managed in a democratic way; that the performance of selected institutions is improved to meet the principles of good governance and participation; and in particular, the benefits derived from natural resources are dispersed in accountable and transparent ways to the local communities and that they, and other earned revenues are equitably distributed (Edmonds 2001, Varuhgese 2001, Odi 2002, Brown *et al.* 2002).

The new concept of CF envisions good governance practices supporting equity in access to and benefits from resources, specifically benefiting women and other disadvantaged people, increasing productivity of natural resources under local management that is transparent and accountable, supporting poverty reduction, rural development and local economic growth (Gluck 2000, Agrawal 2001, Adhikari *et al.* 2002, Sayer *et al.* 2004, Maskey *et al.* 2006).

For democracy

Many forest-based communities and the groups that comprise them are often conscious of the dilemmas and of the self-perpetuating nature of undemocratic control (Marchak 1983, Mitchell 2005). Nonetheless, rural people may feel helpless to do anything when faced with seemingly insurmountable power imbalances (Gaventa 1980). Community-managed forests have the potential to serve as democratic alternatives (Beckley and Reimer 1999; Bray 1991). Often local people are treated as an afterthought or as a hindrance to forestry development, or are assumed to be incapable of properly governing forest resources yet local people can contribute important sources of knowledge and experience (Berkes 1999). Democracy in forest would appear governance offer at least the potential for democratic decision-making. Poor managerial practices and corruption can affect any level of governance, and forestry practices are no exception. Community forestry could represent the democratic system in which interested citizens are integrated into more equitable and participatory decision making. Therefore, this is a time to discuss about the governance and accountability, and technical capacities of CFUGs, to ensure forest resource sustainability and biodiversity conservation. Priority selection by rural people will strengthen their capacity to get benefit and financial outcome within their own groups, communities, and helps to share lessons learned and best practices. In particular, the issues of governance, leadership, inclusiveness, trust and the priority are the subjects to be discussed in this generation. Political system in Nepal hindering the community forestry practices. Therefore the forthcoming researchers have to think [about](#) these issues.

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Research Settings

Nepal, the country

Nepal is a small landlocked country, roughly rectangular in shape, with a land area of 147,181 km². It is situated in between two big countries, namely China in the north and India in the east, west, and south. The country stretches east to west with an average length of 885 km between 80°4'E to 88°12'E and average width of 193 km between 26°22'N to 30°27'N. Administratively, Nepal is divided into 5 development regions, 14 zones, 75 districts, 58 municipalities, and 3913 village development committees (CBS, 2003; Fig. 1). Ecologically, Nepal is divided into three main regions: the Mountains, the Hills, and the Terai region (CBS, 2003a). The population of Nepal is estimated at 22.3 million with an annual growth rate of

2.3% (CBS, 2003a). Nepal is very diverse in ethnic, linguistic, and cultural features. A total of 83% of the population live in the rural area (CBS, 2003a). Agriculture is the mainstay of the national economy of Nepal, which provides livelihood for about 90% of the population. This sector contributes 39.60% of the Gross Domestic Product (GDP) in 2002-2003 (CBS, 2003b). The major resources in the country are people, land, and water (Basnyat, 1995). About 18% of the country's land is cultivated, of which 53% lies in the Terai region (LRMP, 1986). About 43% of farms are less than 0.5 ha in size where as only 11% farms are 2 ha or more (CBS, 2003a). About 43% of the population lives below the poverty line.

Dolpa district

Dolpa is a high mountain/Himalayan district lies in the mid western development region of Nepal situated in the south eastern side of Karnali zone. The geographical position of the district is between latitude 28^o24' N to 28^o 43'N and longitude 82^o24'E to 83^o 38' E. It covers total area 7,932.3 Sq km. which is the 5.38% of total country area (DDC, 2003). Tributaries of the Karnali River drain the major portion of Dolpa district. It is in 1525 to 7625 m in altitude. It occupies by only 1.18% of cultivated land, 31.48% of grass land, 7.59% of forest land, other rocks, drainage system, and snowy area 59.29 % and remaining 0.46% is the shrub land. Maximum temperature recorded is 22^o centigrade in summer season and minus (-) 10^o centigrade in wintry weather. Average recorded rainfall is 245 mm/ year (DDC 2003).



Figure 1-The study area

Baglung district

Baglung district lies in mid-hills of western development region of Nepal. The geographical position of the district is between latitude 28^o15' N to 28^o37'N and Longitude 82^o00'E to 83^o 36' E. The district is characterized by the fragile mountain topography ranging altitude from 583 m to 4690 m from the sea level. It covers 1841.29 square kilometer. The climate in the district is humid warm temperate to humid cool temperate with the range of mean annual temperature of 12 to 18^o C respectively. The district receives mean annual rainfall of 2200 mm (DDC, Baglung). The district has total 98046 ha. Forest land of which, coniferous forest is of 16486.10 ha (16.81%); hard wood forest 50757.40 (51.77%); Mixed forest 23186.20 (23.64%); Shrub land 7565.30 ha (7.71%) and other forest land 51.00 (0.05). Up to the Fiscal Year, 059/060 total 2158.96 ha forest has been hand over to 322 CFUGs for 37674 households (DFO, 2004).

Villages

Tripurakot and Raha: The research was conducted in all parts of two (Tripurakot VDC and Raha) Village Development Committee (VDC) lying in the bufferzone of Shey Phoksundo

National Park. Both selected sample VDCs fall along the park boundaries near to the park headquarters. Comparatively, Tripurakot is more resourceful than Raha from the point of view of human and forest resources. The residents of these VDC are facing relatively more problems related to forest resources.

Binhukot, Painupata and Righa: The empirical observations for this district were collected from three CFs from three VDCs. The selection of study sites and households (HHs) were done by multistage sample design to identify CFUGs as well as the households units. CFUGs from three regions (the focal point for each region was the distances from district headquarter 5km, 20Km, and 40Km) were collected with household membership number and forest area from the District Forest Office (DFO) records.

Materials and methods

The research was undertaken from September 2003 to August 2004. Socio-economic observations were collected through wealth ranking, interviews, questionnaire survey, observations and Focus Group Discussions (FGD). Two-stage sampling was carried out of which one was for CFUGs and another for households. Households were selected based on ethnicity/caste, accessibility/remoteness, age of user groups, resource status. Household interview was carried out for total 144 households (15% of total CFUGs members) on the basis of wealth ranking. Altogether 13 focus group discussions were organized. The primary databases analyzed were based on resource availability, benefit sharing, participation, contribution to livelihood and found by group discussions, perception analysis by Likert technique and self-administered questionnaire. CF's benefits distribution and index of perceived availability (IPA) of forest products calculated; forest products collection processes analyzed; impacts in forest management assessed. The data recorded from questionnaire survey, FGD, and key informant interview were coded, categorized and fed for processing and analysis using SPSS (Statistical Packages for Social Science ver.-10.0) and MS Excel software. Descriptive statistics, frequency distribution, mean, standard deviation, percentage were widely used to describe the variables. Scaling, indexing, correlation coefficient, and cross tabulation analyses were carried out to find the relationship and connection among the variables. Chi-square test and ANOVA with Post hoc tests were used as inferential statistics.

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Results and discussion

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Dolpa

Socio economy

Total 64 households were involved in questionnaire survey (21.9% rich, 39.1% medium and 39.1% poor), ethnic majorities 60.0% and minorities 40.0%; 55% male and 45% female. Average family size was 7.68 with minimum 3, maximum 20, having median 7, range 17, and standard deviation 3.58. There is no correlation of household size with caste and wealth ranks (mean = 8.23, st. deviation = 3.19, Pearson's' correlation = -.231 and $P = 0.366$ for ethnic group and correlation = -.114 and $P = 0.371$ for wealth rank) both has negative, insignificant and weaker correlation with hypothesis. Respondents less than 15 year were 3.10%, middle-aged 59.4% and more than 50 year 37.5%. Of which 45 (70.31%) were illiterate and 17 (26.56%) literate from informal and governmental institutions.

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Naturally rich families had high amount of cultivated land (mean = 7.14 Ropani and std. dev. = 9.35), and medium and poor had less (mean = 4.12 and std. dev. = 6.579). Major caste had more (mean = 8.58 and std. dev. = 11.34) than minor (mean = 4.74 and std. dev. = 3.84). Animal number also played role to classify the respondents as wealth, medium and poor, so the Livestock Unit (LSU) were calculated (medium households had an average 6.834 LSU with std. dev. 3.072 and appeared higher than rich and poor classed families). The overall socio-economy shows large family size people are dependent on forest land and their livestock.

Resource Utilization

Control of elites on decision making assessed and found that people did not perceive it as severe problem (32% majority, and 37% minority). Minor group blamed that they are not well facilitated at the benefit sharing time (39% disagreed) while majority group said there is no difference between the users to get equal benefit (32%). Topic discussed on the meetings found 29.7% were about social development, 21.9% on women and dalit empowerment, 18.8% on training participation, 17.2% for forest management and 12.5% for savings and credits. About soil fertility; people said it has been increased (strongly agree, rich=32.4%, medium=43.2% and poor 24.7%), increased compost production due to availability of leaf litter (strongly agree, rich=31.2%, medium=37.3% and poor=16.2%). Nevertheless, equitable access of the poorest on forest benefits still needs to be strategically promoted further to achieve the desired level of objective (Timsina 2002). Other indicators are illustrated in sub headings.

Forest products availability

Perceptions about forest resource availability (if it easy to collect after the handover of forest) assessed and tested differently to the wealth ranks and ethnic groups for fuel wood, timber, agricultural implements, grass, leaf litter, bedding materials, and NTFPs. from rich for agricultural implements and for leaf litter were in favor. Poor agreed to more availability of NTFPs and getting timber had became problem after the CF. The perception on forest products collection process assessed in terms of differences in time and ease majority responses were strongly agreed. ANOVA performed to assess the responses whether they vary to the wellbeing or not (**Table 1**). Overall responses is presented below (**Figure 2**) illustrates how people responded to the availability of forest product after the CF.

Table 1- Results of responses study performed to assess whether the wellbeing status and ethic group of the people vary on forest product availability or not in 95% confidence interval, Dolpa, Nepal

	Parameter estimate (\pm SE)	Responses of well being status		Responses of ethnic groups	
		F _{2, 61} Value	P-value	F _(1, 61) value	P-value
Fuelwood	3.250 \pm 0.183	0.421	0.068	21.058	0.000*
Timber	2.828 \pm 0.197	4.275	0.018*	4.482	0.038*
Ag. implements	2.093 \pm 0.140	0.341	0.713	0.364	0.549
Grass	3.640 \pm 0.170	6.916	0.002*	1.765	0.189
Leaflitter	2.760 \pm 0.176	1.384	0.006*	2.655	0.008*
NTFPs	3.040 \pm 0.168	0.155	0.003*	0.623	0.033*

* P<0.05, significant

From the table 1, perceptions (of different well being classes) on fuelwood, grass, leaf litter, NTFPs and agricultural implements are in favor of the CF but people are not satisfied

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concerning the timber availability. It may be due to either the unavailability of timber in the forest because of immature forest or the new rules in the operational plans.

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The reason behind this was the awareness about the value of fodder and the rotational grazing system.

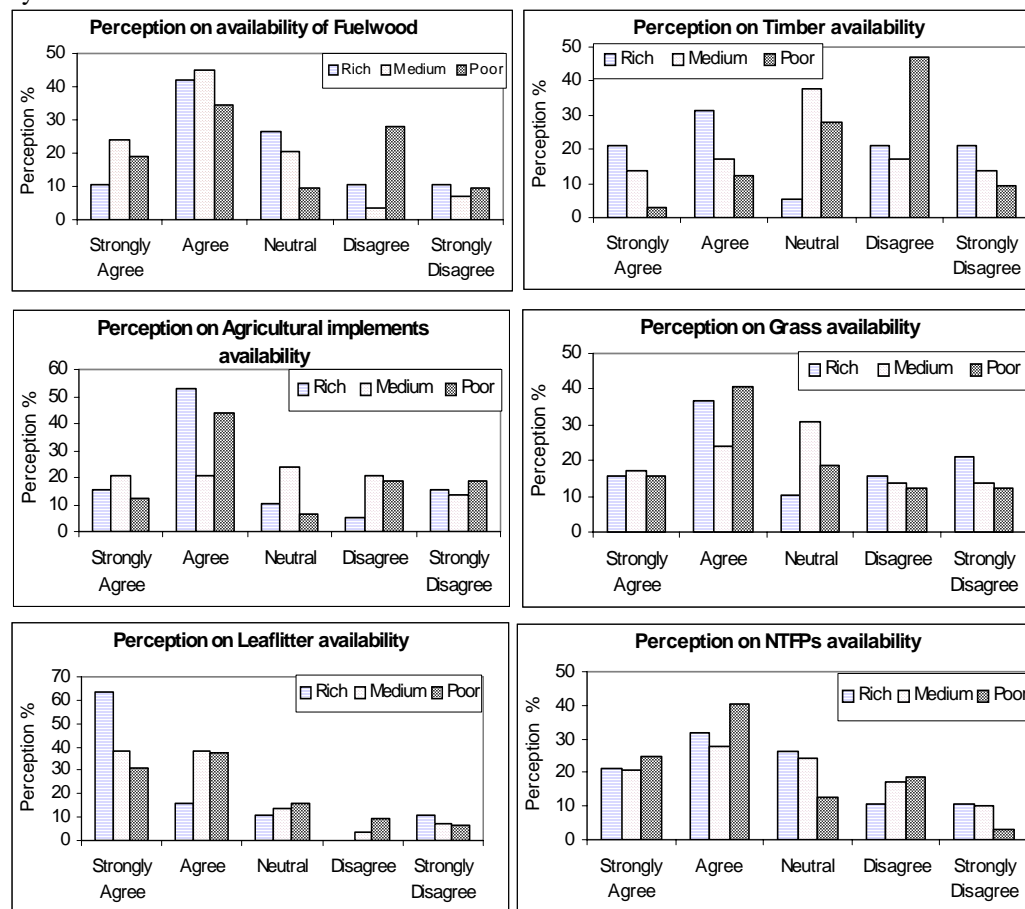
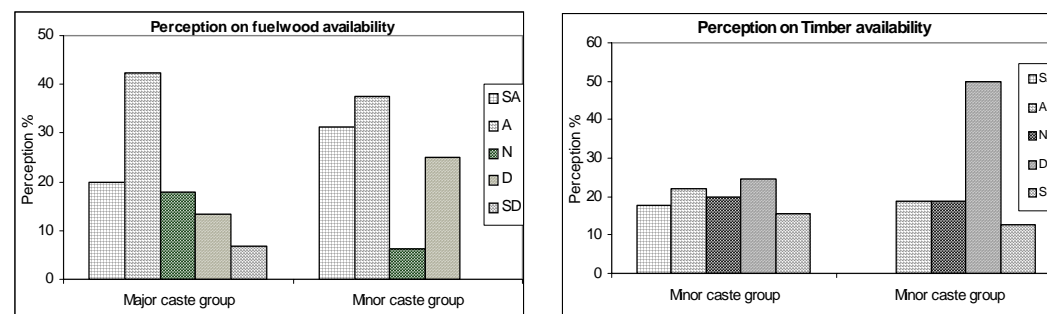


Figure 2: Responses of different wellbeing people on forest product availability after CF

After formally hand over, the restriction imposed upon use severely impacted on the resource availability and livelihoods of those people who have no alternatives to fulfill the needs by their means (naturally in poor and minor castes). In case of fuel wood, timber, agricultural implements, grass, leaf litter, NTFPs availability responses from the ethnic groups showed that they all have the similar responses in the agreement to the increase (Figure 3).



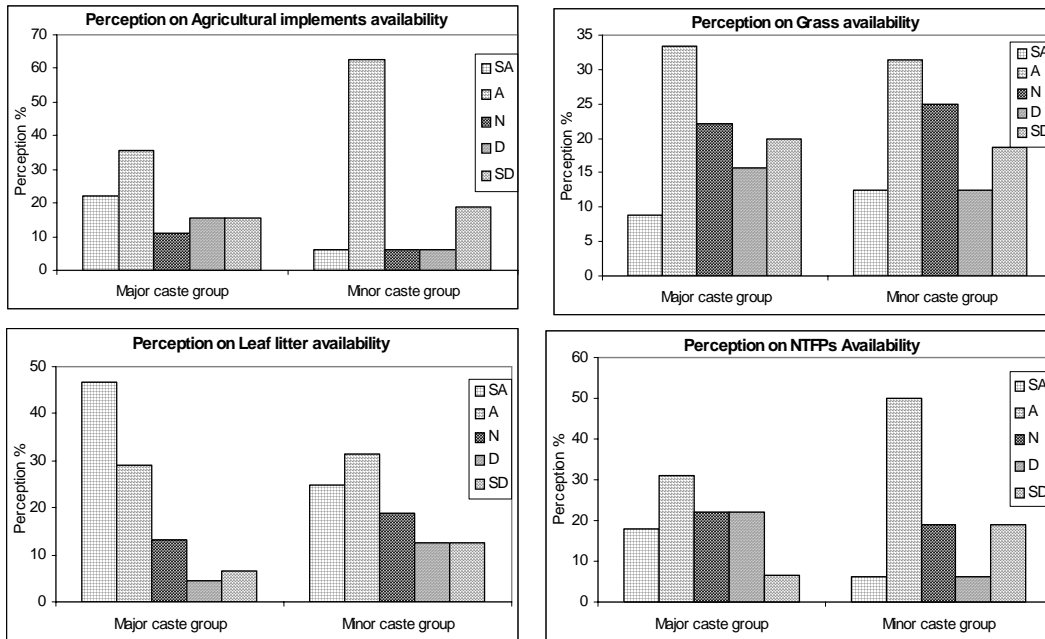


Figure 3: Responses of ethnic groups on forest product availability after CF

Fodder availability in community forest was assessed by the sub-hypothesis “fodder is more available after CF than before”. The responses on the statement were rated on a five point Likert scale. Most (30% users) of the community forests had maintained the tree fodder quality after taking the responsibility of the management. It is due to the awareness about the value of fodder. Studied CF also agreed that fodder quality also increased, and it might be due to the grazing control in the forest and grazing area.

Index of perceived availability (IPA) of forest products

An index of perceived availability showed a general tendency toward being neutral. **Table 2** shows indexes between 0.530 and 1.036 levels tending towards agreement. A similar trend was obtained in poor families with the forest products. Hence, to conclude that one group was more agreed than others is not feasible. Relevant is that availability kept of various ethnic groups and wealth ranks agreed at about the same level.

Table 2- Index of perceived availability (IPA) of the forest products

Forest products	Majority Caste group	Minority caste group	Rich	Medium	Poor
Timber	0.599 (2)	0.700(1)	0.530 (3)	0.657 (2)	0.735 (1)
Fuel wood	0.882 (1)	0.841(2)	0.832 (3)	0.892 (2)	0.893 (1)
Agri. Impl.	0.696 (2)	0.875(1)	0.645 (3)	0.691 (2)	0.728 (1)
Green Grasses	0.802 (2)	0.803(1)	0.836 (2)	0.874 (1)	0.757 (3)
Bedding materials	0.845 (2)	1.036(1)	0.853 (3)	0.868 (2)	0.977 (1)
NTFPs	0.867 (2)	0.801(2)	0.997 (1)	0.851 (2)	0.807 (3)

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

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Availability of more quantity of grass and fodder from community forests have encouraged the practice of stall feeding which have reduced grazing pressure and saved the time of children to herd cattle to the forests. Enrollments of children at local school have also increased (Malla *et al.* 2003). The perception of richer and non-dalit individuals was found to be more agreed than poorer and dalit individuals on forest product availability. The possible explanations are; there has still influence on the decision-making process, rich and non-dalit respondents had better control over the forest, or the poor and minorities were unhappy with results of the CF program.

Resource management

CFs are increasingly fulfilling basic needs of the poor on forest compared to the previous forest management system where the benefits were obtained by powerful and elite people (Gilmour *et al.* 2005, Malla *et al.* 2005, Upreti 2000). According to the majority of the respondents (42.5%), the condition of forest is highly improved. Natural regeneration, composition and biodiversity also increased. Only 22.5% of the total respondents said that the condition of the forest is depleting. Chi square test indicates the observed frequencies do not confirm to the hypothesized frequencies by the different wealth rank respondents. However, the test statistic shows the hypothesis is true. Condition of handed over forests has remarkably improved (Pokharel 2002). Natural regeneration and biodiversity are increased, composition and crown coverage increased (Rai 2005); and in this research forest condition highly improved (majority 42.5%). Upreti (2000) elaborates CFUG earn money from their CF products (both timber and NTFPs) by selling the rights to collect the products. Some CFUG have several thousands of Nepalese Rupees and are utilized to develop forest as well as to execute development activities and entrepreneurship development.

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Impact on farming system

The contribution of community forestry to farming system was analyzed in terms of crop production, soil fertility, and livestock situation. The soil fertility has been increased (strongly agree, rich=32.4%, medium=43.2% and poor 24.7%), thanks to the community forestry because more compost produce due to availability of leaf litter and bedding materials (strongly agree, rich=31.2%, medium=37.3% and poor=16.2%) in the forest after the community forestry. Upreti (2000) point out that crop production increases, though not significantly and solely due to community forestry. Majority of respondents felt that forest agriculture interface has improved following the establishment of community forests in their villages. The landless poor have no meaning of increased leaf liter in the forest. The impacts on the cropping intensity and crop diversification, inputs used were found negligible

Good governance

Sub-hypothesis that "Forest User's Groups are sincere about the community governance so that they maintained all the governance practices on community forest management practices" has been set and tested with the collected data. Perceptions on the transparency, accountability, future vision and people's participation are collected and analyzed (Table 3). Gilmour (2005) wrote that transparency issues related to benefit flow is the subject of discussion due to local elites, and in some cases very poor people also benefited, if not absolutely, worse off. So, transparency in opportunities (trainings, tours, benefit sharing) and punishments (abuse of rules and norms of OP) studied. Rich and medium people had agreed

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to the transparency in all processes, however, the poor were reluctant to answer (26.6% strongly agreed, 32.8% agreed and 15.6% disagreed).

Table 3- Perception of respondents about the governance practices

	Perception					χ^2	P value
	Strongly agree	agree	neutral	disagree	Strongly disagree		
Transparency	26.6	32.8	9.4	15.6	15.6	18.19	0.020*
Accountability	15.6	18.8	9.4	23.4	32.8	6.04	0.643
Long future vision	12.5	34.4	9.4	23.4	20.3	17.37	0.026*
Peoples' Participation	21.9	31.3	15.6	18.8	12.5	12.39	0.034*
*P<0.05, significant							

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No members were agreed with the accountability and the responsibility of committee member. They strongly disagreed that the members did not give emphasis on information dissemination from developmental agencies and participant selection during the meeting. People blamed the giant member of CFUG being unable to bring the sufficient funds for the income generation activities and even they did not monitor the informal education classes. In addition, there should not be worried about the perception for the strongly disagree because 18.8% has been agreed to this view.

There was no idea of long term initiative among the members and the committees for the betterment of rural economy and employment; no discussion had made during last meetings about the plans, they replied that they need advice and suggestions from the DFO and developmental organizations. Moreover, they are seeking of the best alternatives and the idea of the best opportunities within the local area. However, people's participation the most preferred process and chosen by the different developmental organizations, get 31.3% of perceptions to agree with the sub hypothesis "there is more people's participation in the community forest management". All the people agreed that there was no problem in participation for every work that means users were followers of committee and they participated in forest and developmental works if committee requested. It can be inferred from the result that if the committee had accountability and future vision and if they could have plans then the people would have given the great support towards the programs. Other elements of governance have the high significance value with more chi-square value except in accountability section and the level of significance also showed that the weaker element is the accountability.

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Practice of governance for livelihoods

Community forestry has changed the access of individual households to forest products and services (Poudel 2004), new institutional arrangements have led to improved forest conditions (Upreti 2000) thus the denuded hills are covered with forests and greenery again (Nurse *et al.* 2004, Pokharel 2004). Livelihood pentagon has been used to analyze the access to the assets of the community people in the system of resource utilization. Some discussions on access to capitals are given as: **Natural assets:** People answered the forest is very abundant (12.5%), abundant (53.1%). Respondents gave reason of abundances (38.1%) as reduce in encroachment and controlled grazing. Easily accessible forest (70.3%), support to flora and fauna (66.5%), support to environment and soil amelioration (40.2%) are other perceptions. **Human assets:** Support in health care (38% agreed), contribution to the

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education sector (32.2% strongly agree), support micro enterprises (26% agreed), trainings and seminar (35% of the respondents are trained) were other supports from CF. **Financial assets:** They utilized the fund as loan to the dalit and poor for income generation (plays good role in income 31.1% agreed). However, employment due to CF has not increased. The support from CF for the financial assets was also not sufficient. **Social assets:** Social assets for instance strong group cohesion (66.5% agreed), helped to make inter and intra group members' feeling/attitude (71.2% agreed), and have trustful relationship between each other (53.8% agreed). They have social norms to exchange experience and support each other during the crisis that makes equity in decision making (33.8% strongly agreed), and equity in benefit sharing (31.3% agreed).

Physical assets: It was found that CF were assisting school construction (22.1% agreed), however the water source protection, community building construction, rural foot trail renovation, and small bridge renovation like works are not supported due to the unavailability of funds (34.4%). Crafting institute establishment is next main support under physical capital formation. Every developmental works in terms of infrastructure are supporting by CFUG fund and it is a good example of participatory development. **Political assets:** There was serious impact (39.2% people strongly agreed with the effect) of armed conflicts in community forest management. Some of them can be taken as limited mobility of government and other NGO's staffs which has hampering the support to local FUGs, training and camping inside forest by both state and rebels, taxes to rebels and state on trade of forest products.

Baglung

Socio-economy

Three FUGs and 80 households were involved in questionnaire survey. Of total 23.8% of the respondents belonged to rich, 36.3% medium, and 40.0% poor. Percentages of the female respondent were 45% and the male 55%. There is no significant correlation between the family size and the ethnic group. Landholding size varied significantly among rich, medium, and poor households. An analysis of variance showed that the khet, bari, and total land differ by economic condition of the households.

Resource utilization

Perceptions about the natural resource use and availability were assessed and the perceptions were tested differently to the wealth ranks rich, medium and poor for the fuel wood, timber, agricultural implements, grass, leaf litter and bedding materials, and NTFPs and to the ethnic groups too. On average, rich respondents were agreed to the condition except to the leaf litter category. Most respondents from medium and poor households were also agreed. In case of timber availability, most of the respondents were not agreed to the hypothesis, besides the rich were. The majority of the respondents of the wealth rank agreed with statement and the responses on the statement were rated on a five point Likert scale. Chi square test was applied to test observed frequencies does confirm to the hypothesized frequencies. And the perception of the respondents did not varied greatly.

Forest product availability

In the wealth rank wise analysis for timber availability, most respondents do not agree to the hypothesis (11.1% agree only), besides the rich were (21.2%). The majority of the respondents agree with statement fuel wood is increasing (40.3%) and rich disagree (12.2%). Rich claims leaf litter and bedding material increasing (63.4%) and poor and medium disagree (23.2%). In addition, non-timber forest products (NTFPs) all rich, medium, and poor are agree with mean (22.2%). Chi square test does confirm the hypothesized frequencies and the perception that do not vary.

In case of ethnic group side, dalit (37.5%) agree to the condition of the forest to fulfill the fuel wood than before. In case of the timber, responses are different, Brahmin and Chhetri (20.3%), dalits (18.8%) and others (15.4%) agree. Responses for agricultural implements such as plough handles, leveling tools, poles, and pegs derived from forest products shows to the increase Bhramin and Chhetri (32.5%), dalits (34.5%), and others (22.3%). Respondents say livestock based subsistence farming contributing to income generation and the livestock dung contributed to improve the soil condition of the farm. ANOVA performed to assess the responses whether they vary to the wellbeing or not (**Table 4**) confirmed to the hypothesized frequencies that the responses do not vary greatly except in some categories among three ranks.

Table 4- Results of responses study performed to assess whether the wellbeing status and ethnic group of the people vary on forest product availability or not in 95% confidence interval, Baglung, Nepal

	Parameter estimate (\pm SE)	Responses of well being status		Responses of ethnic groups	
		F _{2, 61} Value	P-value	F _{1, 61} Value	P-value
Fuelwood	2.431 \pm 0.189	6.346	0.049*	17.438	0.001*
Timber	3.258 \pm 0.196	5.862	0.038*	7.341	0.021*
Ag. implements	2.912 \pm 0.139	2.673	0.854	0.464	0.923
Grass	3.183 \pm 0.169	6.916	0.008*	1.657	0.275
Leaf litter	3.284 \pm 0.159	0.384	0.032*	3.976	0.039*
NTFPs	3.581 \pm 0.173	0.167	0.050*	0.792	0.028*

* P<0.05, significant

Index of perceived availability (IPA) of forest products

Calculated IPA of forest products availability (Table 5) shows tendency of people being liberal towards the CF. Index shows that three is strongly agree and two and one are the value in decreasing order. Perceived index shows that rich (43.3%) and non-dalit(32.3%) individuals agree to more availability of resources after CF. Possibility might be the dominance for decision-making. Second may be, rich and non-dalit respondents has better control over the forest, and third may poor and dalit respondents are unhappy with results of the CF program. Despite the fact that grasses and leaf litter increase in the forest in all case, poor and dalit still tends to disagree. On the contrast, timber is less available (rich=21.2%, medium=13.3% and poor=3.00%, Brahmin and Chhetri=17.5%, others=5.3% and dalit=0.00%) it may due to the immature forest, dominated by the pole sized-tree. In addition, respondents agree that forest product collection-time reduce (all strongly agree, rich=36.7%, medium=24.3%. poor=40.2%, Bhramin and Chhetri= 26.3%, others=25.4% and dalit=57.3%) after hand over the CF.

Table 5- Index of perceived availability (IPA) of the forest products

Forest products	Ethnic group			Wealth rank		
	Bramhin and Chhetri	Dalit	Others	Rich	Medium	Poor
Timber	0.543 (3)	0.682 (2)	0.743 (1)	0.532 (3)	0.639 (2)	0.718 (1)
Fuel wood	0.873 (1)	0.839 (2)	0.802(3)	0.826 (3)	0.872 (2)	0.883 (1)
Agri. Implements	0.639 (2)	0.846 (1)	0.521 (3)	0.630 (3)	0.683 (2)	0.715 (1)
Green Grasses	0.815 (3)	0.817 (2)	0.863 (1)	0.829 (2)	0.861 (1)	0.743 (3)
Bedding materials	0.832(3)	1.203 (1)	0.956 (2)	0.849 (3)	0.859 (2)	0.963 (1)
<i>NTFPs</i>	0.853 (2)	0.799 (3)	0.921 (1)	0.982 (1)	0.843 (2)	0.791 (3)

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

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Similarly perceptions in case of ease of collection show the mixed answer. Among them rich respondents strongly agree (31.6%) and medium and poor respondents agree (31.0%) and (43.8%) respectively. The highest values of agreement in the ethnic group are Brahmin and Chhetris (31.1%), Dalits (43.8 %) and others (36.8%). As for the fodder increment, 26.3% chose “strongly agree”, 30.0% “agree”, 22.5% “neutral”, 7.5% “disagree” and 13.8% “strongly disagree”.

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Resource management

Analysis of resource management in CF shows that condition of handed over forests is remarkably improved. Natural regeneration and biodiversity, forest composition and crown coverage is increased (42.5%) agreed to the hypothesis ‘the condition of the forest is highly improved’ (mean =2.80 and standard deviation= 0.78). Only 22.5% of the total respondents are disagreeing with the hypothesis (strongly agree, rich=52.3%, medium=51.4%, poor=46.7, Bhramin and Chhetri=42.2%, others=43.8%, and dalit=42.1%). This may perhaps be due to the unawareness of the condition of the forest though it is highly improved. Utilization of resources to farming system analyzed (crop production, soil fertility, and livestock situation). The soil fertility increased (strongly agree, rich=32.4%, medium=43.2% and poor 24.7%), thanks to the community forestry because more compost has been producing due to availability of leaf litter and bedding materials (strongly agree, rich=31.2%, medium=37.3% and poor=16.2%) in the forest after the community forestry.

Good governance

Sub-hypothesis that all the FUGs are sincere about the community governance so that they maintained all the governance practices on community forest management practices has been set, tested and presented (Figure 4). Perceptions on the transparency, accountability, future vision and participation were collected and analyzed. In relation to the transparency in the community forest management rich group strongly agreed (42.9%), agreed (48.0%) and poor (20%) agreed with the subhypothesis. No one group was agreed with the accountability taken by the committee members and strongly disagreed to the sub hypothesis that the members are accountable to the own responsibility (32.8%). And there should not be worried about the perception for the strongly disagree because 18.8% has been agreed to this view. Future vision for the community forest has not been seen except the training needed for the different types of program. This could be clearly seen in the perceptions about the future vision (40.0%), disagreed about the planning has been done for the future development through the community forest program. But the most preferred subject matter chosen by the different developmental organization, people’s participation 31.3% agreed to the sub hypothesis “there is more people’s participation in the community forest management”.

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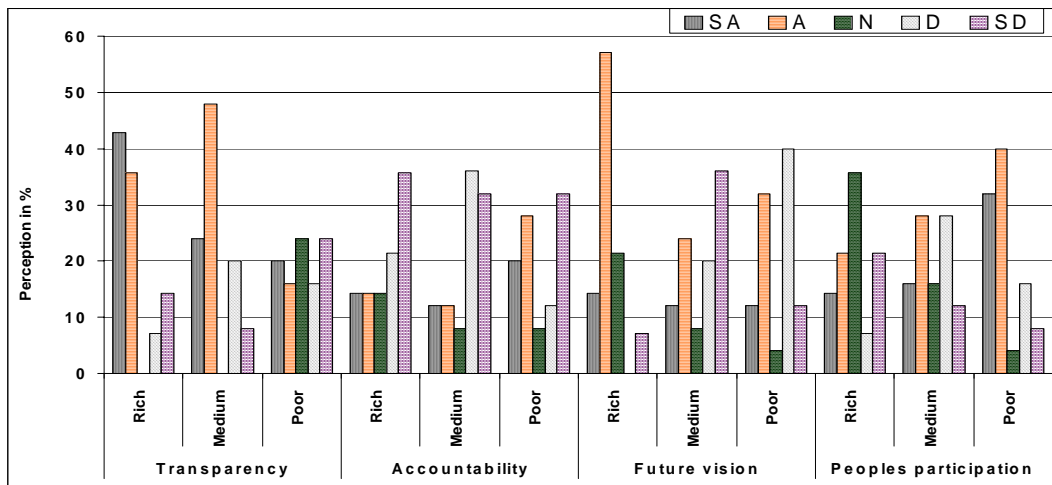


Figure 4- People’s perception in percentage for governance practices

Note: “SA=Strongly Agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree”

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Practice of governance for livelihoods

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People are practicing the community forestry for governance thereby good resource utilization is possible. The research revealed that the people’s perception on governance which directly supports to the livelihoods and resource utilization. **Natural assets:** Responses on adequacy of forage showed agreed (45.9%), critical shortage (8.4%) and (15.9%) shortage. People answered that forest product are very abundance (42.5%), and (51.3%) abundance in reason of ban posed on collection harvesting of the forest products (67.5%), (35%) agreed that forest condition is good than before. More than 40% agreed, with soil conservation, scenic beauty, and environmental amelioration. **Human assets:** Responses on employment creation gave the negative result; (45%) rejection. Support to the health (26.3%) agreed, support to the education sector (46%) agreed and did not agree (51.3%) with trainings organized in the local level are good for skill development. Among the total respondents, 35.0% participated in the trainings and only 35% are utilizing their skills. The degree of participation was highest (62.2%) in rich and lowest (24.3%) in the poor class. **Financial assets:** The major income of the poor was from the remittances 34.4%, and labor work 25.0%, grain and vegetables selling 18.1%. But the income of the rich people is from livestock and service. Respondents agreed (31.3%) that IG is supporting the daily livelihoods. Employment decreased due to CF (60%). **Social assets:** Observations made on male and female representation, 277 male and 171 female and in the committee member male are 27 and female are 8. However, equity in decision-making showed 33.8% strongly agreed, 32.5% agreed, 7.5% neutral, 13.8% disagreed and 12.5 strongly disagreed. Moreover, in the case of benefit sharing, 38.8% agree to the equity in benefit sharing and 10.2% strongly disagree. **Physical assets:** Collected perceptions analyzed, and found that developmental works viz. school construction, water source protection, community building construction, rural foot trail renovation, and small bridge renovation getting support from community forestry. Overall contribution from the community forest on physical capital showed the perception of people (strongly agreed 22.7%, agreed 37.5%, neutral 22.1%, disagreed 9.1% and strongly agreed 8.6%). Kanel and Niraula (2004) writes about 36% of the income from community forests was spent by the CFUGs on community development activities such as building of schools, roads and drinking water facilities.

Discussions

These studies from five VDCs and 13 CFs from the mountains and high mountains of Nepal revealed many proves about the community forests and people's perception on sustainable resource utilization. Thorough study on the governance practice showed that the CFs are the grass root level organization of democracy. Social norms and cultural values are being a part of the decision making. Social solidarity and the collection actions have been noticed improved (63% agreed). Some ethical behavior from the member of dynamic society is starting through the community governance and it is achievable and adoptable too.

The responses of the people on livelihoods capitals showed that CF is contributing except in the financial capital formation (37% disagree and 35% strongly disagree). The overall forest condition in terms of regeneration, basal area, growing stock, and annual increment, density, species diversity, and total bio-mass and water springs as well as the volume and duration of water discharge have increased (Poudel 2004, Pokharel 2002). Forest policy is supporting for social and human capital (Pokharel and Paudel 2005) thus improving the old forest management system and have all users access to the forest benefits (Malla *et al.* 2005, Upreti 1999). Equitable access of the poorest on forest benefits still needs to be strategically promoted (Timsina 2002).

In case of medium and rich people, the number of productive animals stock is increased and they are earning animal products however, the impact of CFs on the livestock population of poor is not positive (Poudel 2004). In some cases, they are forced to sell their livestock due to lack of fodder/grasses because of prohibition and or restricted access to CFs and no private forests available to collect fodder grasses. Therefore, in some cases restricted or limited access to CFs has negative impact on poor people. However, in recent days this problem is increasingly attracting the concerns of CFUGs and other actors to mitigate the negative effects. Rural people are also benefited from subsidized loans invested on various IG activities such as goat farming, bee keeping, buffalo and cow for milk. Each CFUGs has its own fund from levy, timber selling, fine and new membership fee etc.

Implications on agricultural productivity is governing by compost and maintaining soil fertility determined by the availability of grasses, fodder and litters. Due to controlled grazing fodder, grasses and litters are increasing whereby the quantity of compost is also increasing and leading to improve the soil fertility and ultimately increased agricultural production (Poudel 2004). There is evidence of marked improvement in conservation of forests (both increased area and improved density) and enhanced soil and water management (Gilmour *et al.* 2004). Moreover, human well-being of CF practice has considered in terms of rural livelihoods in general rather than poverty in particular. However, CF always link to poor people, there have not been, until recently, any specific strategies linked to operational methodologies to address poor people's needs (Fisher 2000).

Concerns raised by observers as to whether the livelihoods suffering under the community forestry regime (Kanel *et al.* 2000). However, in fact the community forestry intervention has contributed greatly to the development of forest resource management institutions at the grassroots level and even the rate of out migration is decreasing because of income opportunities available through forest resources in their own villages (Upreti 2000). The villagers, especially CFUG members, are gradually gaining confidence and a sense of ownership of their village forest resources. However, these do not seem to be sufficient conditions for the community forestry intervention to be effective. There remain many more opportunities for augmenting rural livelihoods and equity through CFUG (Varughese 2001).

Experience of community forestry so far has shown that it is possible from community forestry to support the livelihoods in a number of ways. The major areas include: building *social* and *human capital* through training and networking, intensive management of *natural capital* (forests) to optimize productivity, development of *physical capital* such as community infrastructure – road, drinking water, rural electrification, and telecommunication and so on (Pokharel 2002). People are relying heavily on forests for a large number of forest products (Upreti 2000), and services such as controlling soil erosion, preserving perennial water resources, ameliorating the environmental condition (Poudel 2004) and serving as a reserve pool of biological diversity for the betterment of human health (Shrestha 2003) Proper use and management of the forest wealth could contribute significantly to the social, economic and environmental welfare of the Nepalese people (Bajracharya 2003).

Despite achievements and contribution of CF, there are many unresolved issues and challenges in all areas of capital as well as governance (Timsina 2002). Although CFUGs have been successful in terms of their institutional capacity to get people organized and form capital at group level, perhaps the most critical is in terms of financial capital for the forest dependent poor and women (Poudel 2006). Although the policy framework is good, implementation process is still in confusion. Priority has not been defined, only poverty reduction is not sufficient to implement the CF program. Therefore it is very important to draw the attention of all stakeholders to define the implementation sector and help the rural people in economic term from where, it can move towards more democratic, equitable CF management.

Community forestry demands the responsibility of management of resources for present and future as well with the practice that appears as the advocacy of the sustainable use of resources. Possibly the system includes economic, cultural, environmental, ecological services and can be drawn from the traditional and modern practices in one CF. I hereby request to revisit the analysis in previous paragraphs where we can find all the characters of the people and resource interaction. Illustrations about the regeneration, biodiversity vitality, soil amelioration, environmental services, timber products, and ecological functions, economic benefits, productivity, land use, economic well being, welfare of the society through the forest product, resource distribution and its justice, employment, participation, and multiple benefits can be found in CF. It is the system that respects to social solidarity, continuation of tradition, aesthetics, and spirituality. Therefore, sum total of forests' contribution or 'value' can compress into a single category 'livelihoods' in case of Nepal where all the rural people are using forests for their livelihoods.

Conclusions

The overall result of this study shows that community forestry program is supporting to the rural livelihoods significantly. Improved participation in decision-making, and forest resource management is enhancing the quality of forest. Economic facilities improved show, the bright future in improving the economic status of the dominant and low economic status people. Still the communities have not been aware of the caste and gender discriminations in the peoples' participation to the utilization natural resource base in local condition. Therefore, we do need check and balance from the authorized agencies viz. District Forest Offices, developmental organization making easy to the flow of contribution of community forest to the livelihoods of the Nepalese rural communities. All aspects of the rural livelihoods tries to address by community forest and have own practice for the sustainability.

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The constraint on most CFUG is adopting community forestry for livelihoods is the common perception that the FUG, as a body initiated by the District Forest Office. It is necessary to raise awareness of the great potential for an expanded CFUG role in livelihoods development needs. Support needs to educate CFUG in improved planning and decision-making practices to address concerns of inequity. Improved condition of natural resources will enhance the interest to develop the new schemes for the further improvement of the forest condition and village development. Human resource development will provide the facilities to organize the different awareness programs and help to plan the developmental activities.

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However the clear agenda on the forest resource utilization has not been published yet from the government as policy. That mean user groups are in confusion that where to go in this second phase of the CF management? Whether should emphasized to the income generation, or in the capacity building to the human resources or to start to get the financial return from the existing forest by users group for the community development. Conflict between the policy and the implementation is still debatable and the solution would not come easily towards the users group. Therefore in this maturity of CF, priority for the access to resource assets and management criteria should come to utilize the natural renewable resources from which we can get more benefits and ameliorate the environment forever.

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Acknowledgement

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