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EQUITY AND LIVELIHOODS IN NEPAL'S COMMUNITY FORESTRY

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Abstract

Community forestry in Nepal was specifically designed to address the problem of environmental degradation and enhance livelihood opportunities through increased supply of forest products, generation of income and empowerment of the rural forest-dependent communities. The concept behind such design is that people's access to the forest and their involvement in decision making directly affects distribution of goods and benefits and, therefore, their livelihoods. Although the community forestry approach in the country has demonstrated notable successes in many cases, it still has several shortcomings. The difficulties relate to the inclusion and full participation of traditional users, especially the disadvantaged and marginalized groups, and the distribution of benefits to them. Based on the data collected from seven community managed forests using the International Forestry Resources and Institutions research protocols, this paper examines various ways in which community forestry is contributing to sustainable livelihoods, explores the status of equity in community forest management, and looks at the nature of dependence of the forest users on their community forest and how this is likely to change over time. Finally, the paper provides some recommendations for enhancing the contribution of community forests and forestry towards achieving sustainable livelihoods and improving equity in community forest management.

Keywords: *community forestry, rural livelihoods, equity, forest dependency, Nepal.*

Introduction

Forest is an integral component of the subsistence agriculture practiced by the majority of rural populations in Nepal. People utilize forest resources for meeting their needs for energy, livestock feed, construction material, agricultural implements, raw material for wood-based industries, and leaf-litter used as compost fertilizer in agriculture fields. Millions of rural families substantially depend on non-wood forest products (NWFPs), as their

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principal sources for medicines and supplemental sources for food and cash income (Edwards 1996). In many places, forests are also important direct sources of water for household use and irrigation.

In addition to the consumptive uses, forests are also providing a vast range of social and environmental services. Forests and trees help maintain or improve the productivity of agricultural lands through positive interactions between the two land uses (Yadav 1992). Forests sequester carbon, conserve biological diversity, and provide other ecosystem services. As one of the major land use types, forests contribute to watershed quality in various ways such as reducing soil erosion and off-site sedimentation, reducing flood peaks on streams and replenishing ground water, which ultimately contributes to orderly management of irrigation schemes (FAO 1998). It is for these reasons, sustainable utilization and conservation of forest resources at community level has been considered as one of the important components of the poverty alleviation and sustainable development strategy in Nepal (NPC 2002, NPC/MOPE 2003).

Community forestry program in Nepal, which involves the governance and management of forest resources by communities in collaboration with the government and other stakeholders, was specifically formulated to address local livelihoods and abate environmental degradation through sustainable forest management. The program is now a central component of Nepal's national sustainable development strategy that is focused on poverty alleviation through development and efficient management of natural resources. Empowerment of local bodies and community based user groups to manage their natural resources and certain basic services related to them by themselves is a key component of the national strategy (NPC/MOPE 2003). The favorable policy has resulted establishment of a total of 14,439 registered Forest User Groups (FUGs) in the country, including 1.66 million (m.) households that are managing 1.23 m. ha. of designated community forest land (about 21 percent of the country's forest area) by August 2009 (DOF 2009). The program is considered to be successful in many respects, especially with regard to shared responsibility for management and the sharing of profits with local communities. Several past studies have found that the community forestry program has been largely successful in improving forest cover (e.g. Schereier *et al*. 1994, Virgo & Subba 1994, Jackson *et al*. 1998, Gautam *et al*. 2003).

According to Pokharel (2001), Nepal's community forestry program contributes to improvement of the livelihoods of rural people in three main ways: (i) by increasing the resources, (ii) by reforming the organizations, agencies and policies, and (iii) by facilitating the social changes. Forest condition, composition of user groups, decision making, access to resources, and distribution of benefits are some of the specific components of

community forestry that affect the people's livelihoods (ICIMOD 2004). The concept behind is that people's access to the forest and their involvement in decision making directly affects distribution of goods and benefits and, therefore, their livelihoods. There is an increasing recognition in the country that rural communities derive a far wider range of benefits from forests than has previously been acknowledged, and that community forestry can make a critical difference to the socioeconomic sustainability of rural populations.

Although the community forestry approach has improved forest condition and livelihoods in many cases, it still has several shortcomings. Some studies have found that the improvement in forest condition has not led to concomitant improvement in local communities' access to forest products such as timber, firewood and other non-wood forest products (see Malla 2000; Adhikari, Di Falco & Lovett 2004; ICIMOD 2004). There are also indications that the biological conservation could be taking place at the cost of the benefits sacrificed by the local communities. Another major difficulty of the approach relates to the inclusion and full participation of traditional users and the distribution of benefits to them. Recent experience shows that the opportunity for socially marginalized people to be involved in community decision making is not being realized in practice and community FUGs have not been able to reflect the needs and aspirations of the poorer and socially disadvantaged groups within the communities.

Experience also shows that, in some places, the formation of community forests has negatively affected the traditional livelihoods of some social groups that especially rely on access to forests in order to carry out their traditional occupations. For example, forest user groups often exclude seasonal transhumance livestock grazers, claiming that they are outsiders and this had has an adverse impact on the livelihoods of the seasonal grazers. The formation of community forests has also restricted their traditional practice of collecting non-wood forest products. Similarly, the restrictions imposed by community FUGs have severely limited some occupational castes' (e.g. blacksmith) means of earning a livelihood. The expectation that community forestry will address such unequal power relations as forest user groups gradually gain maturity and experience sustainability, has not come true in many areas. Another emerging concern in Nepal's community forestry relates to the changing dependency of users at least in some community forests in recent years.

Explaining fully about the causes behind the above outcomes and resolving the social and environmental issues in community forestry requires in-depth knowledge and understanding of the actual situation across the country, which is currently lacking.

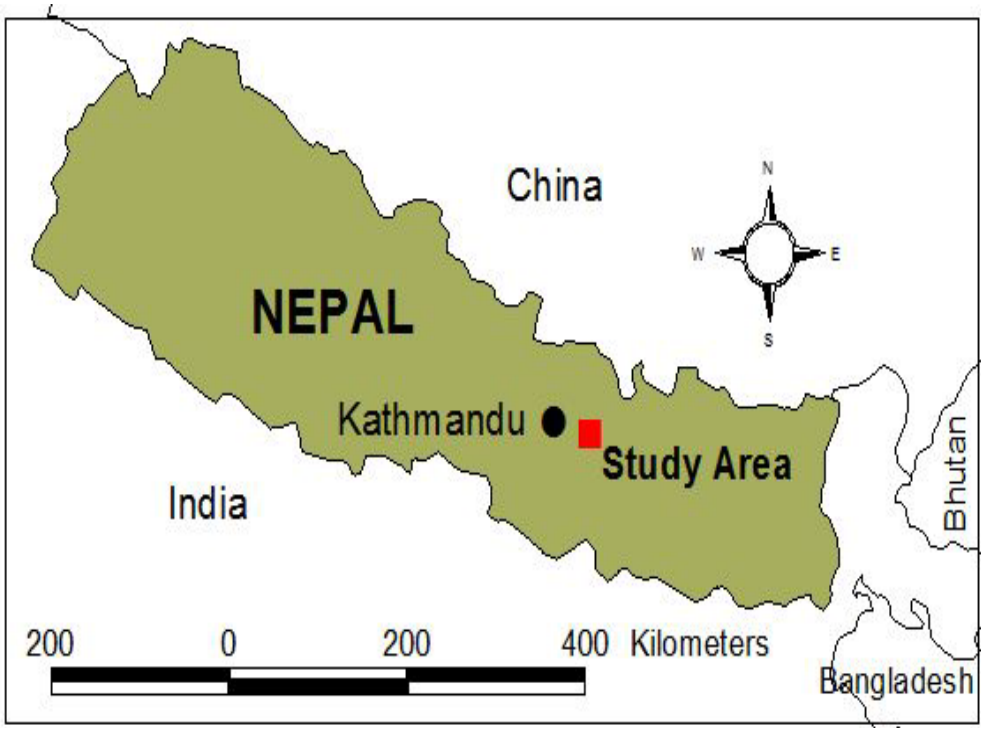
In the above context, this paper examines various ways in which community forestry is contributing to sustainable livelihoods, explores the

status of equity in community forest management, and looks at the nature of FUGs' dependence on the community forest and how this is likely to change over time. Finally, it provides some recommendations for sustainability of the community forestry program, and enhancing the contribution of the program to achieving sustainable livelihoods and equity. The findings are expected to be useful in making the community forestry more useful in simultaneously achieving the dual goals of environmental conservation and poverty alleviation as envisaged by Nepal's sustainable development framework.

Study Sites

The study was carried out in seven community forest sites located within the Kavrepalanchok district in central Nepal. Each site is comprised of a forest and one or more settlements resided by the forest users. Two of the sites (Dhobikhola and Panityanki Dada) are connected to the district headquarters and Kathmandu valley by all-weather roads, while the rest are connected by seasonal unpaved roads. All the sites are located in similar ecological settings but differ substantially in terms of forest size and social characteristics (Figure 1; Table 1).

Figure 1. Location of the Study Sites



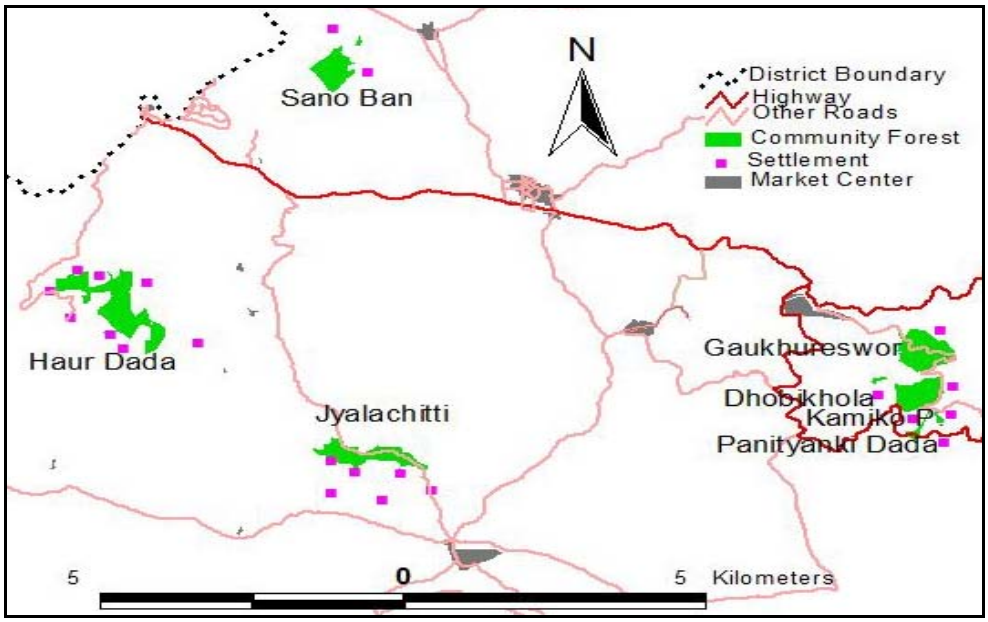


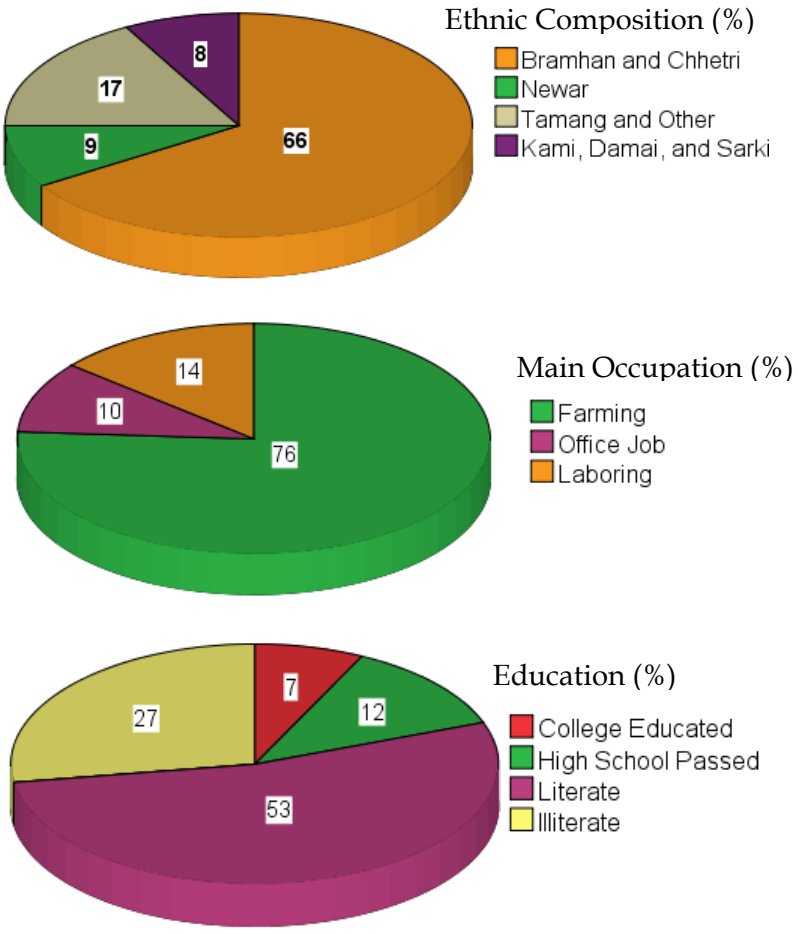
Table 1. Description of the Study Sites

Attribute	A	B	C	D	E	F	G
Forest size (ha.)	17.3	21.5	90.5	25.9	0.9	1.7	25.5
Average elevation (m, above m.s.l.)	1620	1627	1830	1525	1583	1547	1638
Average slope (degrees)	28	26	31	29	26	24	23
Slope orientation	South-east	North	North	North	East	South	North-east
Size of FUG (i) Households (ii) Individuals	 99 567	 60 330	 152 910	 270 1556	 32 159	 36 227	 54 244
Number of ethnic groups in FUG	5	4	3	5	5	3	2
Distance from motorable road	<1 km	<1 km	<5 km	<1 km	<1 km	<1 km	<3 km
Distance from nearest market	<3 km	<1 km	<5 km	<3 km	<4 km	<7 km	<3 km

Sites names: A = Dhobikhola, B = Gaukhureswor, C = Haur Dada, D = Jyalachitti, E = Kamiko Pandhero, F = Panityanki Dada, G = Sano Ban

Most people in the sites are primarily dependent on arable agriculture and livestock raising for their livelihood. Firewood, timber/poles, fodder and leaf-litter are the main forest products harvested to meet subsistence requirements. Firewood is used for cooking and heating. Timber and poles are used for construction and manufacturing farm implements. Fodder-tree leaves are fed to the animals particularly during the winter months when ground forage is in short supply. Fallen leaves are used for animal bedding, and mixed with dung converted to organic manure for maintenance of soil fertility on the agriculture fields. The FUGs are comprised of various castes and ethnic groups with different social, economic and cultural backgrounds (Figure 2).

Figure 2. Key Socioeconomic Characteristics of the Forest User Groups



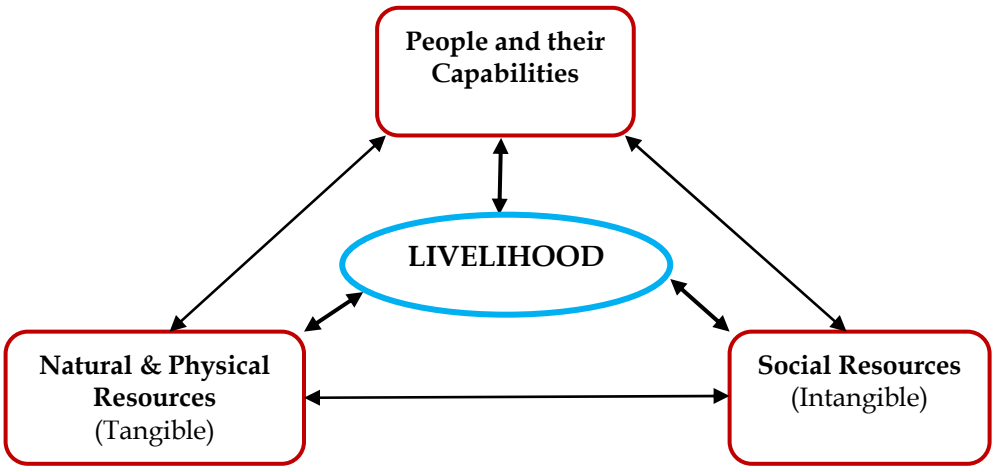
Household structures and division of labor within a household varies among caste and ethnic groups, farming systems, household location, non-farming occupation and involvement in off-farm employment. Women mostly collect leaf-litter, grass fodder and firewood; men collect timber/poles, and both men and women collect leaf-fodder. Generally, both men and women remain aware of where all of these products are available. In each site, forest management is governed by a Forest Users' Committee (FUC) elected unanimously from within the FUG.

Methodology

(a) Defining Sustainable Livelihood

Livelihood has been defined in different ways by different people. According to Chambers and Conway (1991), a livelihood comprises people, their capabilities and their means of living, including food, income and assets. Assets can be tangible (natural and physical resources) and intangible (social resources including claims and access) (Figure 3).

Figure 3. Components of a Livelihood and Their Relationships



Source: Adapted from Chambers & Conway (1991).

A livelihood is sustainable when it can "cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, provide sustainable livelihood opportunities for the next generation; and which contributes to net benefits at the local and global levels and in the short and long term" (Chambers & Conway 1991:6).

Ownership of land, livestock and trees; rights to grazing, hunting, fishing or gathering; and stable employment with adequate remuneration are some of the variables that are often used in measuring sustainable livelihood of a

household (WCED 1987). In this study, contribution of the community forestry program to sustainable livelihoods has been evaluated primarily by assessing the program's contribution to meeting the local needs for essential forest products, and enhancement of communities' physical and social capitals.

(b) Defining Equity

Equity can have several forms, which can be assessed in different ways. According to Chambers & Conway (1991), social equity refers to unequal power relations between the rich and poor, high and low castes, women and men, and so on, characterized by both cooperation and conflict. Specifically, equity includes an end to discrimination against women, minorities and all who are weak and end to rural and urban poverty and deprivation. In the context of the community forestry, equity can have two major dimensions: (i) equity in sharing benefits accrued from forest management, and (ii) social equity related to participation in decision making.

(c) Data Collection

Data was collected between October 2006 and April 2007 by a team comprised of a forester, a botanist, and a social scientist. Data on attributes of the user groups, forest use and other livelihood related information, equity status, and forest dependency was collected through Rapid Rural Appraisals, interviews, group discussions, and field observations, using the IFRI research protocols (please see Wollenberg *et al*. 2007 for details on the Protocols). Secondary data and information available from the forest management plans and constitutions of the FUGs, office records, reports, research papers and other published sources were used to supplement the primary data.

Botanical data was collected through forest inventories from randomly selected forest plots composed of three concentric circles that were 1-meter, 3-meters, and 10-meters in radius. In the innermost circle (1m radius), woody seedlings and herbaceous ground cover were sampled. In the next circle (3 m radius), shrubs, saplings, and climbers were identified and counted, and also the diameter at breast height (DBH; 1.37 m above ground) and heights of woody stems between 2.5 and 10 cm in diameter were recorded. In the largest circle (10 m radius), stems of equal or greater than 10 cm in DBH were identified, counted and DBH and height measured.

The perceptions of the users in terms of changes in forest conditions during the last five years were recorded in three ordinal scales including "improving", "stable", and "worsening". "Improving" indicates users' perception of an increase in forest cover and abundance of tree and shrub species, and "worsening" indicates their assessment of a clear depletion in the cover of woody vegetation and species.

(d) Data Analysis

Both qualitative as well as quantitative techniques were used in the data analysis. Contribution of community forestry on local livelihoods and status of equity within each of the user groups were analyzed qualitatively and/or descriptively. Biological conditions of the forests were analyzed and compared quantitatively using measured values of selected dependent variables including the basal area of trees (≥10 cm DBH), density of trees, density of saplings (tree species with 2.5 - <10 cm DBH), and richness of plant species. The perceptions of the users in terms of changes in the forest conditions during the last five years were analyzed qualitatively. Conclusions are based on both the qualitative as well as quantitative findings.

Findings

(a) Contribution of Community Forestry to Sustainable Livelihoods

Community forestry is found to be contributing to sustainable livelihoods of the FUG members in many ways, including fulfilling the basic subsistence needs for forest products, improving or enhancing the natural capital, creating local organizations for collective action, contributing to policy reforms, and supporting income generation activities.

Fulfillment of Basic Needs for Forest Products

The contribution of community forests in fulfilling basic needs of user households for essential forest products is found to be variable across the seven sites. In general, the community forests are making a substantial contribution in meeting the subsistence needs for firewood and leaf-litter in most of the sites. Fulfillment of timber requirements was substantial in one site. In addition to the essential forest products, the community forests are also providing some other benefits to the local people (Table 2, 3).

Table 2. Proportion of the Households' Forestry Needs Met by Community Forest

Site	Firewood	Timber	Leaf litter	Fodder
A	30	0	50	10
B	70	5	90	5
C	50	60	70	30
D	10	0	25	1
E	8	0	10	10
F	0	0	5	5
G	40	0	60	10

A = Dhobikhola, B = Gaukhureswor, C = Haur Dada, D = Jyalachitti, E = Kamiko Pandhero, F = Panityanki Dada, G = Sano Ban

Table 3. Other Benefits Provided by the Community Forest

Site	Benefits
A	• Recreation (picnic spots) • Edible fruits (e.g. *Melastoma normale*)
B	• Clean water (40% of the requirements) • Religious (Hindu temples are located inside the forest) • Recreation (picnic spots, hiking)
C	• Medicinal herbs (e.g. *Valeriana jatamansi*, *Potentilla fulgens*) • Edible fruits • Cremation spot for the majority *Tamang* community
D	• Clean water (10% of the requirements) • Recreation (picnic spots) • Medicinal herbs (e.g. *Valeriana jatamansi*) • Lemon grass for use as a herbal tea
E	• Recreation (picnic spot)
F	• Social (a local club office is located inside the forest) • Economic (a private grain-mill is located inside the forest)
G	• Clean water (100% of the requirements) • Religious (places for worshiping) • Recreation (picnic spots, hiking)

A = Dhobikhola, B = Gaukhureswor, C = Haur Dada, D = Jyalachitti, E = Kamiko Pandhero, F = Panityanki Dada, G = Sano Ban

Improvement in Natural Capital of the FUGs

Forests are important natural capital, which combined with other assets contribute to sustain livelihoods, especially among the poor (DFID 1999). The community management of local forest patches has resulted in recovery of the vegetation in areas that were almost denuded before the communities took over the management.

A quantitative comparison of the conditions of five community forests (i.e. Dhobikhola, Haurdada, Jyalachitti, Kamiko Pandhero, and Sano Ban) between 2001 and 2007, based on average value of the selected dependent variables, showed that there have been significant improvements (t-test, 95% CL) in condition of the forests during the period (Table 4).

Table 4. Changes in Conditions of the Community Forests between 2001 and 2007

Dependent variable	2001 (N=126)	2007 (N=131)	p value
Basal Area of trees (m^2/ha)	9.4	15.8	.000
Density of trees (number/ha)	473	700	.000

Density of saplings (number/ha)	148	226	.001
Richness of plant species (number of species/plot)	11	16	.000

N = number of forest plots

The perceptions of the users, particularly regarding the changes in tree crop, strongly support the quantitative findings. The users of six of the forests (excluding Panityanki Dada) think that there has been significant increase in the density and size of trees in their community forest during the last five years.

Creation of Local Organizations for Collective Action

Community forestry in Nepal essentially involves handing over user rights of the government-owned forests to the groups of local people who customarily hold the *de facto* user rights of such forests. The creation and functioning of the self-governing FUGs at the local level has been contributing to livelihoods by enhancing social and human capital.

Enhancement of Individual Capacities

Many members of the FUGs have participated in short trainings, workshops and study tours organized jointly in the past by the local district forest office and Nepal-Australia Community Forestry Project. Although those extension activities were primarily focused on improving knowledge and skills in different dimensions of community forest management, they were also crucial in enhancing overall personal capacity of the participants. Some of the FUG leaders who attended multiple forestry extension activities in the past have now taken up higher level of managerial (e.g. manager of local cooperative bank) or political (e.g. Village Development Committee chair) positions.

Increased Income

Although contribution of community forestry to income generation is not substantial in the study sites, small earnings from sale of forest products (particularly, firewood) are often important as a complement to other income. Informal interviews with the FUGs leaders revealed that a number of households in most of the sites (except for Panityanki and Kamiko Pandhero) generate some of their income from selling forest products, often on a part-time basis. This income is often used to obtain inputs for other activities that contribute to livelihoods, such as to purchase farm inputs (e.g. seeds), purchase food between harvests or generate working capital for small-scale trading activities (e.g. tea shop). Some of the user groups have also initiated

income generating activities within their community forests thereby contributing to the economic sustainability of the user group.

Cardamom cultivation in Gaukhureswor Community Forest as part of income generation

Contribution to Cooperative Activities

In some sites, community forestry has stimulated cooperative activities in the community. Cooperative harvesting within the forest in most of the sites, formation of women' group within the Dhobikhola FUG with the objective of forest-based income generation, and formation of women' group for dairy business in Jyalapati settlement (Jyalachitti site) are some examples.

Policy Reforms

The community forestry represents a significant policy shift in Nepal's forest management. The major changes in policy brought about by the approach are as follows:

- From centralized, revenue-oriented forest management to decentralized management aimed at fulfilling the needs of the local communities.
- From an exclusive focus on single product (i.e. timber) to a focus on multiple use forestry including non-timber forest products (firewood, fodder, grasses, leaves, medicinal plants, wild edibles etc.) that are important to the livelihoods of the local communities.
- From focus on a few commercially valuable species to mixed forests that include a diversity of trees and other plant species.

- From plantations (usually with exotic species) to natural regeneration as the dominant approach of forest development.
- From custodial management through policing to participatory management.

Increased Well-Being

In addition to income and tangible goods, the community forests are also providing non-tangible benefits that are contributing to livelihoods. Some of the factors associated with community forestry that have affected the sense of well-being include: self-esteem, sense of control and inclusion, sense of improvement in the local environmental condition, and acknowledgement of the user group's achievements by outsiders. Activities such as participatory decision-making have assisted in increased well-being, especially of the poor and disadvantaged groups.

(b) Status of Equity within the Forest User Groups

Access to Forest Resources and Benefits Sharing

Access to the community forests for non-consumptive uses is free for any time. All the user groups also permit free collection of fallen twigs and leaf litter during the time specified by the Forest Users' Committee (FUC) but restrict the use of forest products that have cash value (such as timber, firewood and traded NWFPs) (Table 5).

Table 5. Number of FUGs Having Similar Rules Regarding Access and Distribution of Forest Products from the Community Forests

Product	Distribution system		Restrictions			
	Free of charge	Sale	Collection time	Location	Type of material	Type of technology
Green firewood	All	One	All	Most	All	Two
Timber	Most*	Two	None	None	All	None
Leaf litter	All	None	All	None	None	None
Tree fodder	None	None	N/A	N/A	N/A	N/A
Grass	All	None	Most	None	None	None
Fallen twigs and branches	All	None	Most	None	All	None
Pine resin	None	Three	None	None	None	All
Other NWFPs	All	None	None	None	None	None

* Only for repairing damages by calamities and public constructions

Firewood is one of the most common products harvested from the community forests. Four of the user groups practice collective harvesting of green firewood. The harvested product is distributed equally to the members participating in the harvesting activity. In rest of the sites, the product is harvested individually during specified times. In both the cases, the product is usually distributed free of charge. Only the surplus quantity, if available, is sold through auction. Individual households usually rely on their share of firewood also for making handles for essential agricultural tools. Some user groups provide a certain amount of firewood for ceremonial use (weddings, cremations etc.) free of charge.

The harvest of timber from the community forests is only occasional. The FUGs provide construction timber free of charge to reconstruct houses that suffer damage from fire, landslides, earthquakes or other natural calamities, and sometimes for public works such as construction of local schools and temples. Two groups (i.e. Sano Ban and Haur Dada) provide limited quantity of timber for household construction on a nominal price. One group (i.e. Haur Dada) was also selling pine timber to outsiders through auction.

One site (i.e. Panityanki Dada) is unique in the sense that the members have a little interest in the community forest management and most of them ignore the forest use rules. As a result, the forest is being used by only about nine households (including one low-caste family) living closest to the forest.

Participation in Decision Making

An investigation in the participation of different social groups in the FUGs' meetings that make rules governing the development, maintenance and use of the forest, revealed that the participation is not uniform across different ethnic groups, castes and gender. In general, women and lower castes' participations are much lower as compared to higher caste men (Table 6).

Table 6. Status of Participation in Decision-making Activities of the User Groups

Site	Level of participation
A	*Tamang*, *Kami* and *Sarki* (all low castes) usually do not participate.
B	Generally, all members participate.
C	Women members do not participate. People from *Tamang* ethnic group has lower level of participation, even though they form the majority in the user group.
D	Most of the members participate. Few members who think that their views have a little significance in decision-making do not participate.
E	Most of the members participate.

F	Most members do not participate because they do not care about the rules of the forest, and do not use the forest.
G	Women and *Kami* members usually do not participate.

A = Dhobikhola, B = Gaukhureswor, C = Haur Dada, D = Jyalachitti, E = Kamiko Pandhero, F = Panityanki Dada, G = Sano Ban

The above findings reiterate the general perception prevalent among scholars that the opportunity for socially marginalized people to be involved in community decision making is not being realized in practice in Nepal's community forestry. The discrepancy in participation was found to be clearer in rural areas (Haurdada, Sano Ban, Dhobikhola) as compared to the semi-urban areas (Gaukhureswor, Jyalachitti). In general, the findings indicate that the local community leaders and elite groups mostly dominate decisions of the community forest user groups, and most of the user groups have not been able to reflect the needs and aspirations of the poorer and socially disadvantaged groups within communities. Further analysis of composition of the FUCs revealed that most of the FUCs are dominated by wealthier, high-caste (i.e. Bramhan and Chhetri) men (Table 7).

Table 7. Representation of Different Ethnic Groups and Gender in Community Forest Users' Committees

Site	Ethnicity		Gender		Total
	Bramhan and Chhetri	Other	Men	Women	
A	6	3	6	3	9
B	8	1	5	4	9
C	3	5	7	1	8
D	8	5	7	6	13
E	4	3	5	2	7
F	8	-	6	2	8
G	6	1	5	2	7
Total	43	18	41	20	61

A = Dhobikhola, B = Gaukhureswor, C = Haur Dada, D = Jyalachitti, E = Kamiko Pandhero, F = Panityanki Dada, G = Sano Ban

Of the seven FUGs, only two were having regular meetings of their General Assembly (GA). Four FUGs are having meetings at irregular intervals and there has been no meeting at all in one site. The irregularity in organizing the GA meetings implies that the executive committees in those sites are also responsible for making necessary rules and decisions using the authority that usually rests on the GA. This in turn means further alienation of disadvantaged groups from decision making activities.

(c) Changes in Dependency on Community Forests

Amid speculation that in several places the dependency of FUG members on community forests has been changed over the years, we investigated whether and, if yes, how this has happened in our study sites. The findings from five of the sites having time-series data (except Gaukhureswor and Panityanki Dada) indicate that there has been a general decrease in the dependency on community forests over the years (Table 8).

Table 8. Percent of Households and Individuals Depending Significantly on Community Forests for Meeting Their Requirements in 2001 and 2007

Type of use	2001	2007	% Change in dependency
Subsistence:			
Households	22.9	18.1	-4.8
Individuals	19.3	15.9	-3.4
Commercial:			
Households	5.1	2.5	-2.6
Individuals	2.0	1.5	-0.5

The observed changes in forest dependency were brought about mainly by the improved access to markets and technology in recent years, which triggered changes in households' livelihood strategies, farming practices and living conditions. Interviews with the community forest users revealed that many households that used firewood for cooking five years ago use LPG now, and have limited the use of firewood for heating in winter months and cooking feed for pet animals. Availability of improved seeds and technology has contributed to more intensive and commercially-oriented farming in some sites (e.g. Sano Ban, Jyalachitti).

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

The change in animal ownerships, however, was not uniform across the user groups. For example, in Haurdada total number of buffalos owned by user group members and buffalos fed on forest fodder increased by 103 percent and 173 percent, respectively in between 2001 and 2007 while the ownership as well as dependency on forest fodder decreased in all the other sites during the period. This drastic increase indicates inclination of the Haurdada user group members, who are traditionally subsistence farmers, more towards commercial farming due to increased access to market (especially milk market) in recent years.

Decreasing interest of young generation on traditional farming could be another important factor behind the changing livelihood strategies of the households. Past studies have reported that male members of households from the area are becoming increasingly attracted towards wage laboring in Kathmandu and other places and are becoming less and less involved in farming (Collett et al. 1996; Jackson et al. 1998). It is not clear whether the decade-long Maoist insurgency also contributed to increased outmigration of individuals from the study sites.

Discussion

The findings of this research indicate that Nepal's community forestry program offers both opportunities and limitations to achieving sustainable livelihoods of the local people. The program has helped enhance livelihoods of the local people by fulfilling (at least partially) several basic needs of the users, strengthened natural resources governance, and attempted for equitable sharing of benefits among the rural populations.

The findings that the conditions of the community forests are improving under the FUG management imply that there has been more sustainable use of the natural resource base by the community forest users. This is a significant achievement not only from the perspective of meeting current forestry needs of the local people but also enhancing the natural asset and ensuring sustainability of their livelihoods. This aspect of community forestry is especially relevant to the poorer members who tend to be the most vulnerable to the effects of environmental degradation (Lasco & Pulhin 2006). In some cases, income generated from community forests have been used to construct road (e.g. in Haur Dada) thereby enhancing the user group's non-forestry physical assets.

Conservation of biological diversity is another important dimension of environmental sustainability of the community forests. Although, the planning and design of community forest managements have not specifically considered biodiversity assessment and conservation, improvement in forest conditions after communities' involvement in the community forestry program has been crucially important in conserving Nepal's rich biodiversity. The improvement in forest condition has created habitat corridors, and successive stages of forests developed, which might have prevented the local extinction of species. Locals' reporting of increased wildlife sightings and depredation of livestock (particularly goats) by wild animals in recent years, support this speculation.

Although the community forestry program has demonstrated notable successes in several fronts, it still continues to face organizational, structural, and societal challenges. The expectation that organization of the local people in forest user group offers the opportunity for socially marginalized people to

be involved in community decision making has not been met in most of the study sites.

The amount of forest products harvested at present is insufficient to meet the users' needs. The products extraction and distribution systems are generally against the interest and needs of the poorer households who do not have alternative source to meet their daily needs and cannot afford to buy the required product from the market. In most of the sites, firewood is distributed equally to the members who participate in the harvesting of the product. The FUCs believe that this is the only way to treat all the members fairly and equally. This distribution system, however, does not take into consideration the prevailing differences in household economies.

The rules of the user groups allowing free collection of certain forest products (e.g. fallen twigs) also have not favored the poorer households simply because such products are not available in required quantity. In some cases, the low caste households were deprived of their right to obtain firewood from their community forest because most members of the households were away from their home (for wage laboring in Kathmandu and other cities) when the forest was opened for harvesting.

The income generated from the community forests has to date been insignificant compared to the prospects. Wherever there is extra income, it is often used for activities that provide no immediate return for poorer households. Because of these reasons, increasing number of households is slowly losing their interest in the community forestry (e.g. in Dhobikhola).

One of the underlying reasons for the limited supply of forest products from the community forests and low income of most of forest user groups is the protection-oriented approach of forest management adopted by the user groups. Past studies from similar ecological and socioeconomic settings in Nepal have reported that once the FUGs take over the management responsibility of the forest, they establish simple but usually conservative management rules and limit harvests by area, quantity of product or by time of year (Arnold 1998; Branney, Neupane & Malla 2000). Experience and other interviews indicate that FUGs in the study sites have done the same. This may be due to a limited knowledge about actual yields and responses of forest to intervention and a result of the concerns of FUGs about the risk of degrading the resource.

Whatever be the reasons for its adoption, the protectionist approach in the management of community forests affects many aspects of livelihoods and equity. I argue that this approach may negatively affect marginalized members of the community, particularly land-poor households because there will be less opportunity for them to supplement the restricted forest products from private land. Moreover, lack of disposable income will prevent a household from purchasing the required product from a secondary source. A

protectionist approach of forest management by the FUGs thus might further marginalize more poor and disadvantaged households from community forestry. This may eventually result in more inequity within communities and could also be a potential threat to the long-term sustainability of the program.

The findings of this study show the necessity for revising the present protection-oriented approach of forest management adopted by the FUGs towards a more need-based and income-yielding forest management approach that can bring more equity and reduce conflict within the user group. It was expected that the recent policy initiatives of the government, requiring a complete assessment of the resource condition and harvesting prescriptions based on annual yields, could provide some confidence to the FUGs for intensive management and use of community forests. Unfortunately, the policy has not been properly implemented in the study sites due to lack of technical and financial capacities of the FUG to conduct forest inventories as demanded by the policy. The district forest office has not been able to provide the required technical support to the FUGs because of its limited technical staff. This situation has severely constrained the FUGs' desire for more intensive forest management and also has created mistrust between the DFO and some of the FUGs (e.g. Sano Ban).

The finding that dependency of local people on community forests is changing has important implication for community forestry policy. Specifically, the finding suggests that the objective of the community forestry program for meeting subsistence needs of the local people might be irrelevant in many settings, particularly in urban and semi-urban areas, in near future.

Conclusions and Recommendations

The community forestry intervention in Nepal has been largely successful in reversing the trends of forest degradation, fulfilling basic forestry needs of the local people, and improving forest governance through development of forest management institutions at the grassroots level. The positive changes in forest conditions provide some evidences of ecological sustainability of the resource and enhancement of the communities' physical capital. The creation and functioning of the self-governing FUGs at the local level has enhanced social and human capital.

The above achievements, however, are not sufficient conditions for the community forestry to be effective and successful. The findings suggest that amount of forest products harvested at present is insufficient to meet the users' needs. The decision making process is generally controlled by elite members of the user groups. Moreover, the current forest products harvesting and distribution systems seem to be unfavorable to the poor households and socially disadvantaged groups.

The decreasing interest of the people in community forest management in some sites and changing dependency of households on community forest shows the necessity for a more balanced approach to community forestry policy, which considers the demand for forest products for subsistence as well as commercial uses, and also encourages generating income from intangible forest products.

The findings led to the following recommendations.

1. The community forestry policy needs to be revised to make it more flexible to contextual factors, and to not adhere to a 'blueprint' approach. In locations where forests continue to be central to livelihood systems, meeting their needs on a sustainable basis should continue to be the principal objective of community forest management. In places where traditional forest-based subsistence livelihood systems are changing towards commercial agriculture or other strategies, community forest management should consider using the forest as a source for income generation through commercial forestry and/or utilization of other forest products and services. Carbon trading under the Kyoto Protocol, promotion of ecotourism, charging fee to municipalities for clean water provided from community forests and other environmental services (e.g. landscape conservation and maintenance of scenic beauty) could be some of the possible alternative uses of community forests, particularly in urban and semi-urban areas.

2. To bring more equity among community members and to avoid possible conflict within the FUG, it would be wise to consider revising the present protection-oriented approach of forest management adopted by the FUGs towards a more need-based intensive forest management approach that can make fuller utilization of production capacity of the forest and fulfill the diverse needs of the communities without degrading the forest condition. This will require a shift in FUG attitudes from protection to sustainable utilization and enhancement of their technical capacities through more effective extension and capacity-building of FUG leaders.

3. Providing special opportunities for income generation for the poorest members, particularly the landless that fully depend on common resources, should be considered within the broader framework of community forestry policy. Allowing private cultivation of medicinal herbs, improved grasses and other NWFPs in allocated areas within the community forest could be a feasible option in some sites.

4. Increasing participation of women and other disadvantaged groups in decision making activities is necessary. How this can be best achieved is a matter for further research.

5. Regular monitoring of FUG activities by district forest office is required to make sure that the FUGs have not deviated from stated objectives of community forest management and misused the community forestland.

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