Collective action of local communities in forest conservation and utilisation: Critical reflections from Nepalese Community Forestry

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ABSTRACT

Collective action by local communities has increasingly been recognised as crucial for effective management of natural resources, particularly the management of forests in the rural settings. This recognition is principally based on the universal and often unquestioned assumption that the involvement of local communities in the management of forests can improve the forest condition and utilisation. There are, however, limited studies indicating that collective action by local communities has significantly improved the condition of forests. Most studies often fail to critically analyse how and why the condition of forests have improved (or have been destroyed), and what are the implications of such improvement for local communities. An important confusion exists on whether the utilisation of forests under community forest management has been optimal or even significant in terms of meeting the needs of local people and contributing to local community development.

By combining qualitative and quantitative methods, this study analyses issues of forest conservation and utilisation in three Forest Users Groups (FUGs) from Nepalese community forestry (CF), which is often considered as one of the most progressive examples of collective action of local communities in forest management. The findings from the case studies indicate that compared with the highly degraded forests from which most community forests have started, the conditions of forests have significantly improved. However, the improved forests may not be ideal in terms of biodiversity conservation because of the communities being selective in retaining only preferred species. Further, there are limited benefits from the forests in terms of meeting the needs of local people and contributing to community development. This occurs for two underlying reasons. Firstly, not all improved forests are at the stage to supply sufficient and suitable forest products to all forest users. The popular assumption of the improved forests being able to meet local needs and produce surplus forest products which can be sold and generate income for community development, is seriously flawed. Secondly, forests are underutilised as the harvest of forest products is far less than what is available. The underutilisation has mainly been influenced by politics of forest management that deprives local users obtaining and exercising a real authority to harvest forest products. The powerful actors both within and beyond the local communities control the forest use to ensure conservation, thereby the poor users who are mostly dependent on forest resources, are worse off under community forestry.

In order to achieve sustainable conservation and utilization of forest resources managed collectively by local communities, the paper concludes by emphasising that the genuine power to make meaningful decisions on conservation and utilisation of forests should be devolved to local level, and further devolution is required within local communities. For this, conventional forest policy making and implementation processes need major rethinking on the ways issues of conservation, utilisation and equity are identified, understood and actions proposed to address them.

Key words: Collective action, Forest Conservation, Utilisation, Community Forestry (CF), Forest Users Groups (FUGs), Nepal and Power-relations.

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INTRODUCTION

The poor outcomes that followed decades of intrusive natural resource management strategies and planned development have forced policy makers and scholars to reconsider the role of communities in resource use and conservation (Agrawal and Gibson, 1999). Empirical evidence has been put forward that local users' groups are capable of managing natural resources through collective action (Ostrom, 1990; Hobley, 1996). Collective action is believed to further progressive social change that brings about meaningful participation, decentralisation and conservation (Chambers and McBeth, 1992). In the debate over sustainable use and management of natural resources, the collective action approach has gained significant attention, but there is limited understanding on the resource management system, its processes and outcomes.

Community Forestry (CF), as an approach based on collective action, has been increasingly accepted as suitable for the sustainable management and utilisation of forest resources, particularly in developing countries (FAO, 1978; Victor et al., 1998; Brown et al., 2002). Accordingly, forest areas owned or managed by communities have doubled in the last fifteen years, occupying more than 25 percent of the forest estate in developing countries. The area is expected to double again by 2015 (Bull and White, 2002). The importance of participatory management of forests was affirmed by the 1992 Earth Summit in Rio de Janeiro, and reaffirmed by the 2003 World Summit on Sustainable Development in Johannesburg and the 12th World Forestry Congress in Montreal in 2003. As many as fifty countries claim to be pursuing activities that would devolve some control over forest resources to local users (FAO, 1999).

The recognition of collective action in forest use and management is principally based on the universal and often unquestioned assumption that the involvement of local communities in the management of forests can improve the forest condition and utilisation. There are, however, limited studies indicating that collective action of local communities has significantly improved the condition of forests (e.g. Yadav et al., 2003). Most studies often fail to critically analyse how and why the condition of forests have improved (or have been destroyed), and what are the implications of such improvement for different groups within the local communities. An important confusion exists on whether the utilisation of forests under CF been optimal or even significant in terms of meeting the needs of local people and contributing to local community development.

The paper investigates an experience of collective action in conservation and utilisation of forests under Nepalese CF, which is often regarded as one of the most progressive policies implemented in one of the poorest and environmentally sensitive countries in the world. The paper is divided into six sections. Firstly, the theory of collective action relevant to the use and management of forests under CF is reviewed, followed by the discussion of Nepalese CF policy and key issues in the second. Thirdly, methods employed to carry out the research in three Forest User Groups (FUGs) are discussed. Results are presented in the fourth section, followed by the analysis of results in the fifth. Finally, the paper concludes by highlighting the need for rethinking of CF policies and implementation processes and the ways issues of conservation and utilisation are identified, understood and actions proposed to address them by the state bureaucracy.

COLLECTIVE ACTION AND SUSTAINABLE FOREST MANAGEMENT

Collective action is central to sustainable CF. Why and how people act together to sustain the forest and improve livelihoods are important questions in the study of human-environment relationship concerning the management of community forests. However, it cannot be assumed that individual forest users will cooperate to manage and use forest resources in a sustainable way. There are contradictory explanations about collective behaviour of local people involved in participatory natural resource management. It has been argued that cooperation among self-interest driven individuals is often impossible because it may actually harm individual interests (Olson 1965; Hardin, 1968). Olson (1965, p.2) argued that

"unless the number of individuals is quite small, unless there is coercion or some other special device to make individuals act in their common interest, rational self-interested individuals will not act to achieve their common or group interest". Similarly, Hardin (1968) argued that the individual's rational action results in collectively irrational outcomes. For many years, it was thought that when individuals share ownership of resources with others, they are prone to over-use those resources (Demsetz, 1967; Hardin, 1968). Two major solutions have been proposed; state control and management (Ophuls, 1973) or privatisation (Demsetz, 1967).

However, many writers suggest that collective management of natural resources by their users can be an appropriate system for overcoming 'The Tragedy of the Commons' (Wade, 1988; Ostrom, 1990; Li, 2002). Advocates of CPR[1] argue that Hardin confused common property with open access, failing to distinguish between common property and no property (Ciriacy-Wantrup and Bishop, 1975). The tragedy of the commons results not from the sharing of the rights, but the absence of rights. Geographers, political scientists and anthropologists demonstrate that many societies have devised, maintained or adapted collective arrangements to manage common pool resources (e.g. Blaikie and Brookfield, 1987; Menzies, 2003). More recently, scholars argue that the behaviour and actions of individuals are not exclusively determined by self-interest, but trust, norms and power influence actions and thereby offset pure self-interest (Petrzelka and Bell, 2000; Granovetter and Swedberg, 2001). Collective action and resource management are better understood by analysing them as embedded in social, economic and political situations (Mearns, 1996).

One of critical issues of CF is whether and why collective action contributes to effective forest conservation and utilisation because the adoption of CF has largely been based on a relatively unquestioned assumption that CF will provide widespread benefits. CF is often defined as managing of forests by people with the intent of benefiting themselves. It is also argued that CF is more than providing communal benefits, it is pursued for social benefits and contributes to community development (Race et al., 2003). Brown (1999) argues that the implementation of CF aims at ensuring adequate resource flows to rural population so as to alleviate poverty and for socially justifiable income distribution. Unlike single-purpose industrial forestry, CF is based on local needs and interests, which is likely to change the ways forests are managed to ensure the safeguarding and diversifying the multiple benefits from the forests. Multiple purpose forest management by communities is more likely than single-purpose industrial forest management to conserve biodiversity (ibid).

While the benefit stream forms a major part of CF, there are emerging issues of power and control because CF is essentially a political process, by which the local forest users are empowered to control the use and management of forests on which they depend (Gilmour and Fisher, 1991). It is argued that the control by local communities is necessary because their needs are not able to be expressed effectively in the existing economic and political contexts (Leslie, 1987). While there is an increasing acceptance of devolution of power to local levels, it has not been accompanied by the political, legislative and regulatory measures needed to empower those to whom the responsibility is passed (Arnold, 2001). The transferred rights are often made to the local bodies or elite members, which are often, in practice, appointees, or extensions of the central government, and are consequently more responsive to the government than the local people (Ribot, 2002).

CF generally aims at linking conservation of forest resources with the development needs of rural populations dependent on the resources (Gilmour, 1995). However, collective action in CF does not necessarily lead to sustainable outcomes that balance conservation and livelihood needs. Empirical evidence indicates that integrating conservation and development objectives on an equal basis is proving to be especially difficult, but often one objective, usually conservation, predominates among foresters (Warner, 1997; Arnold, 2001). There are examples where local people's development needs are not effectively reconciled with biodiversity conservation (Arnold, 2001). This orientation has come from the primary

criteria used for evaluating how a forest agency manages the resource for which it is responsible. The criteria have shifted from that of fund generation to the expansion of forest cover, more recently from afforestation to the maintenance or improvement of biological diversity (ibid). As a forest agency is evaluated for its effectiveness based on its success in forest conservation, the agency is likely to stress the importance of conservation to communities. Forest agencies emphasise the conservation objectives, and communities and other stakeholders the development objectives (Wood et al., 1995). The critics against this dichotomy, however, argue that the balance between conservation and development has been essentially based on flawed assumptions on how people and the environment interrelate. For instance, Leach and Mearns (1996) assert that there is a need to move away from macro-scale approaches and policies towards a more situation specific focus. The locals, who depend on forests for inputs in their livelihoods, may consider the "professionals' degradation" as transformation and even improvement of the resource. There is a need for greater appreciation that the locals may experience their own environmental problems, which need to be addressed separately from environmental policies seeking to satisfy wider values.

COMMUNITY FORESTRY IN NEPAL

Nepal is a small, landlocked kingdom positioned between India and Chinese Tibet. It comprises 14.7 million hectares, with an average east-west length of 885 kilometres and an average north-south width of 193 kilometres (MOPE, 2001). The country is divided into three physiographic regions (see Map 1), consisting of the Terai (59 m –610m), which is an extension of the Ganges Plain; the Middle Hills Region in the foothills of the Himalayas (610m – 4,877m), and the Mountains/Himalayas (4,877m – 8848m). Administratively, the country is divided into 5 development regions, 14 zones, 75 districts, 58 municipalities and 3,912 Village Development Committees (VDC) (ibid).

CF policy emerged in Nepal in the 1970s after a failure of forest policy to halt perceived deforestation, and by a realisation of the need for a forest management responsive to, and built upon, local needs and indigenous system. Conceptually, it was a paradigm shift from the state's centralised control (top-down) to users' decentralised control (bottom-up) (Gilmour and Fisher, 1991). In 1976, the National Forestry Plan introduced a new policy to hand-over responsibilities of forest protection and management to local political body. The policy and legislation emphasised the plantation and protection of forest by motivating people to look after it. Nurseries were built, plantations were established and forest watchers were hired to protect the forest. Since the needs of local people were not the focus of the management, the externally supported plantation and protection-focussed forest policy did not significantly benefit local people (Hobley, 1996).

In 1989, the government of Nepal prepared and implemented the Master Plan for the Forestry Sector (MPFS) with the realisation that the local people's need and participation must be given a central position for CF to be effective. The plan, which is being implemented and will be effective until 2010, aimed at combining environmental objectives of protecting land and resources with social and economic objectives through developing partnership between local people and forestry organisations. This forest policy contains some explicit statements about the government's intention for the management of CF (HMGN, 1989, p.14):

> *Phased handing over of all accessible hill forests to the communities to the extent that they are able and willing to manage them.*
>
> *… to entrust the users with the task of protecting and managing the forests. The users to receive all of the income…*
>
> *Retraining the entire staff of the Ministry of Forest and Soil Conservation [MFSC] for their new role as advisors and extensionists.*
>
> *Revision of legislation to encourage people to accept full responsibility for the development, management, protection and sustainable utilisation of community forest.*

In 1993, the Forest Act was revised and regulations were put in place in 1995 for the

purpose of providing a legal framework, while operational guidelines were provided to the field staff with regard to how they are supposed to facilitate the initiation, establishment and implementation of CF. The processes were outlined for forming the FUGs, making and implementing decisions and preparing the local plan (called an Operational Plan) in order to manage forests and receive livelihood benefits. The FUGs were given 100 percent ownership of forest products, while the land tenure remained with the state. The MPFS transformed externally imposed CF intervention into community driven CF process.

Currently, an average of two FUGs are formed every day in Nepal (Pokharel, 2003). Over 12,000 FUGs are involved in managing about 1 million ha of forest land, representing over 15 percent of total forestland and over 28 percent of potential CF (CPFD, 2003). The overall trend of CF in Nepal is represented in Table 1:

With such an intensity of CF, the government had to update the legislation. In 1998, the Forest Act was amended to require FUGs to submit an annual report describing the forest activities performed, the condition of the forest and the status of the fund to the DFO[2] (Kanel, 2001). The amendment also empowered the DFO to penalise the FUG committee members and required FUGs to spend at least 25 percent of the income on forestry development (ibid). In 2001, the government drafted the Forest Bill by proposing two separate approaches to manage community forests in the hills and Terai. The formulation of the Bill aimed at generating the revenues through collaborative forest management of the productive forests in Terai. It was proposed that the FUGs in Terai would not freely sell products and may not fix prices of firewood and timber below royalty rates, and 40 percent of FUGs' income would be paid to the DFO. However, the Bill failed to get approval from the parliament. Although CF is a major focus in Nepal, there are increased tensions, mainly due to the attempts by the forest bureaucracy to increase its control over the forests managed by the FUGs.

FOREST CONSERVATION AND UTILISATION UNDER NEPALESE CF

Forest conservation and utilisation is one of the key issues of CF. There is numerous anecdotal evidence that forests have been better protected by communities than by the state, but a few studies have reported that the forest condition has improved (e.g. Maharjan, 1998; Dev et al., 2003). The improvement has been attributed to the FUGs focussed on forest conservation, not on utilisation. Consequently, forests are being managed below their productive potential (Springate-Baginski et al., 2003). The potential of CF for commercial use is largely ignored. However, strict protection and under-utilisation in one location has transferred the pressure for forest products elsewhere (e. g. Malla et al., 2003). There is a limited understanding on the impact of strict protection and underutilisation to those users who mostly depend on the forest products from CF.

It is suggested that how CF will be implemented and whether it will improve forest resources are inextricably linked to historical and geographical specificities (Nightingale, 2003). An understanding of issues related to forest conservation and utilisation is related to how and why people

Table 1 Outcome of CF in terms of area under FUG management

Features	Outcomes
Number of FUGs formed	12,079
Forest area under the control of FUGs (ha)	955,358
Potential CF area identified (ha)	3,551,849 (61%)
Total forest area	6,306,000 ha
Percentage of Forest land under the FUG management	15.1%
Percentage of CF area under the FUG management	28.6%

(Source: CPFD, 2003)

collectively act and how socio-economic, political and ecological factors interact to each other and condition collective action processes and outcomes. However, there is a paucity of such investigations in the context of Nepalese CF.

One can assume that the relative progress of CF in Nepal may partly be because it has benefited forest users. Some reports show that CF has increased product flows and is contributing to improving livelihoods (e.g. Dev et al., 2003). However, this does not mean that CF satisfies the need of all users and available benefits are distributed on an equitable basis. In some cases, it is reported that CF has added costs to the poor, such as reduced access to forest products and forced allocation of household resources for communal forest management with insecurity over benefits (Pokharel, 2003). Therefore, there are serious concerns that CF has worsened the livelihoods of women and poor households (e.g. Malla et al., 2003; Neupane, 2003). Elite domination in decision making process has been widely documented in Nepalese CF (e.g. Malla et al., 2003).

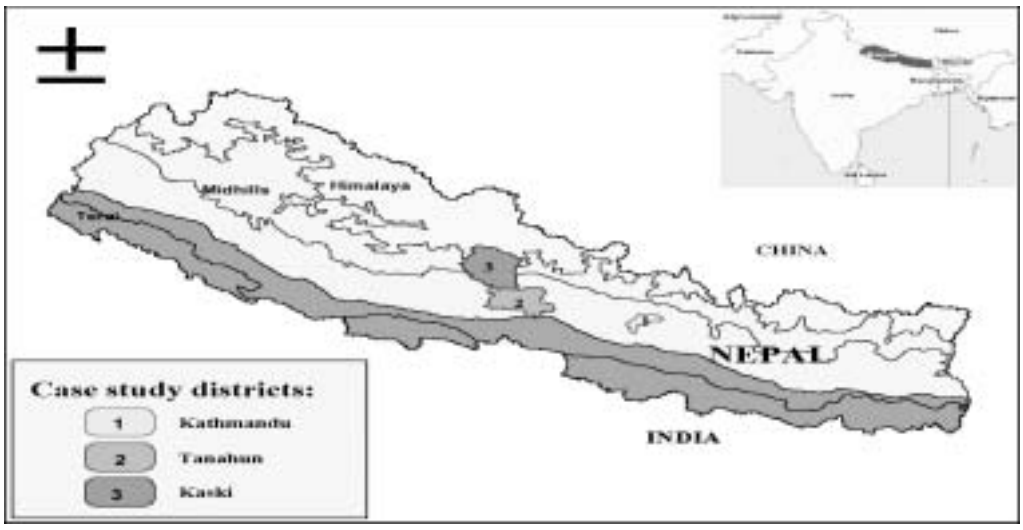
CF in Nepal involves the devolution of DFO's power over the use and management of forests to local communities. However, critics highlight that the tendency of DoF staff is to transfer forest management responsibilities without devolving meaningful authority (e.g. Fisher, 2000a). There are many studies suggesting that the role of DFO is controlling, rather than facilitating (e. g. Shrestha, 1999; Britt, 2001).

METHODOLOGY

CF research essentially involves both natural and social phenomena. Research approaches for CF have to bring social and natural sciences together. Political ecology[3] is an emerging approach that offers insights for integrating both sciences for CF research. This research uses two sub-approaches of political ecology; one based on environmental change (i.e. forest improvement or degradation) and one based on actors. The research employs the case study as a research strategy, which offers a method of learning about a complex instance through extensive description and contextual analysis by articulating why the instance occurred as it did, what might one usefully explore in similar situations, and what might become important to look at more extensively in future research (Yin, 2002). It is a valuable method for identifying, linking and comparing issues of resource management (Howitt, 2001).

Three cases are selected from Nepalese CF; Laglage Pakha FUG, Bagbhanjyang FUG and Pragatisil FUG from Kathmandu, Tanahun and Kaski district respectively (Map 1).

The Nepalese CF policy and practices are interesting because they are large in scale, supported by legislation and relatively effective in



Map 1 Map of Nepal showing three case study districts (In the inset – Nepal in South Asia)

the context of subsistence economy, deep-entrenched socio-cultural inequity and rural poverty. All three districts are in the mid-hill region where CF has mainly been implemented, representing the diversity of Nepalese CF in terms of the stage, the number of FUGs formed and issues involved with forest conservation and utilisation. The selection of a FUG within each district is based on diverse factors including the emergence and evolution of collective action and diversity of issues of forest conservation and utilisation.

The first case is Laglage Pakha FUG which is in Thankot Village Development Committee (VDC) of Kathmandu district and comprises of 61 households of relatively homogenous community of Magar ethnic groups who are heavily dependent on forest resources for their livelihoods. It manages 13.5 hectare (ha) of forests, which was heavily degraded prior to CF, despite several efforts of the DFO to restore the land. Collective action was introduced by the DFO in 1993. The DFO of Kathmandu awarded first prize to this FUG for its success in protecting the forest. Despite its proximity to the capital, poverty is high. There is limited availability of agriculture land, low alternative income sources, a few regularly paid workers and low levels of literacy.

The second case is Bagbhanjyang FUG which is in Vyas Municipality (district's headquarter) of Tanahun District and comprises 30.42 ha of forest that supports 170 households. A local system of forest protection existed in Bagbhanjyang FUG before CF. The DFO recognised the local system. There are few conflicts in forest protection and management. The FUG is heterogenous. The location is highly developed, the majority of users are wealthy, poverty is low and the FUG is politically sensitive. The FUG members are less dependent on the forest because most of them are involved in some form of businesses or paid jobs. Participation of users in forest protection and management is low and therefore, the protection is carried out by paid forest watchers.

The third case is Pragatisil FUG which comprises 290 households and is in Lekhnath Municipality of Kaski district. It manages 57.74 ha of forests scattered in five patches. Collective action in Pragatisil FUG was imposed by the DFO by undermining the existing forest protection system. While the forest condition has improved, discussion with the users and DFO indicated that the use and management of forest has become problematic because there are serious conflicts. It is a heterogenous community dominated by the higher caste and traditional landlords. While the majority of the people are involved in agriculture and livestock, a significant number of people are involved in business activities. This is a case that has significant problems of forest conservation and use with moderate levels of poverty and heterogeneity.

DATA COLLECTION

Data collection was carried out by Krishna Shrestha. This was done at different levels using triangulation techniques. By considering the FUG as a key focus and a unit for analysis, the data were collected from indirect and direct sources. The indirect method of data collection was used to gather information on CF from the records maintained by the households, FUGC, from the publications of government and non-government organisations and previous research. The direct collection of data was carried out using both qualitative and quantitative methods. Quantitative methods such as RFA (Rapid Forest Assessment) and HQI (Household Questionnaire Interview) were used to collect information on forests, demography and other variables. Nevertheless, they do not provide direct statements of what people are thinking and are insufficient to understand the relationship and perceptions of participants. Qualitative methods, such as group discussion, participant observation and informal talks complement the quantitative methods.

72 (20, 23 and 29 in case 1, 2 and 3 respectively) households were interviewed in the three FUGs representing about 14 percent of the 521 households (61, 170 and 290 in case 1, 2 and 3 respectively). The selection of individual households was based on the wealth rank (Poor, Medium, and Rich), ethnicity (Lower Caste, Middle Caste and Higher Caste) and gender of the household's head (both male-headed and female-headed households). Two group discussions in each

FUG were conducted with five members of the FUG randomly selected from the categories made during the household interviews. In the data collection process, Shrestha observed forests, government and non-government offices and official, forest users and FUGs. He used participant observation, in which he shared the life of the observed group by staying in each village for four weeks. Each night he recorded a narrative description of the interaction after returning to the field residence.

Rapid Forest Assessment (RFA) was carried out to assess the condition of forests and potential availability of forest products from community forests. The RFA is a derivative of Rapid Vegetation Assessment, which is the hybrid of formal forest inventory techniques and participatory appraisal techniques. RFA was carried out by using stratified random sampling of the forest in three case study sites. Three rectangular plots were established in each community forest. The size of each plot was 100 square meters (10m x 10m). The selection of site for individual plots was discussed with the FUG and DFO field staff. The forest was stratified on the basis of types of regeneration, level of canopy and extent of harvesting. The distribution of plots within the forests was chosen in such a way to capture plantation, recently harvested site and dense forest with mature trees. This was to represent the diversity of forests within the sample plots. Plots were established, in which the number of seedlings (DBH[4] less than 4cm) was counted and recorded. Saplings (DBH between 4 and 10cm), poles (DBH between 10 and 30cm) and trees (BDH more than 30cm) were measured and recorded in the field book. Experienced villagers and DFO staff helped to identify the name of the species and to estimate the approximate height of saplings, poles and trees.

RESULTS

Case study 1: Laglage Pakha Community Forest

a) The condition of forest

Laglage community forest is a mixed forest of hardwood and coniferous species, the former having naturally regenerated and the latter established through plantation. The dominant hardwood species are Chilaune[5], Katus and Salla. The forest was heavily degraded prior to CF. The plantation of coniferous species (Salla) was done by the DFO to restore the degraded land, but was not effective. The active involvement of local people under CF and effective protection measures people adopted have encouraged the regeneration of hardwood species. In the open spaces, the FUG members have planted cash generating species like Amriso, Bamboo, Jethimadhu, and Panisara. No evidence of soil erosion observed. Rapid Forest Assessment (RFA) found that the forest is a young. The total number of stems per hectare is 11,734, with 59.1 percent seedlings, 33.2 percent saplings, 7.1 percent poles and 0.6 percent trees (Field Survey, 2001/2002). The dominant species such as Jhingan, Daphne, and Kaphal, which account for about 65.3 percent, are seedlings and saplings. Salla is the only tree species which was established through plantation, suggesting that there were no trees left before the plantation. The forest is diverse in terms of species, DBH and height. There are 24 species of various sizes with the plant diversity index (PDI) of 0.07 (out of possible 1)[6]. The average crown cover percentage is 71.7, with micro-site variations in slope and aspect.

The HQI and discussions confirm the result of RFA that the condition of forest in Laglage has been significantly improved through CF. The improvement was mainly due to people taking up the responsibilities of forest protection and management. All users participated in forest protection and godmel (silvicultural operations) and thus there is no need for hiring forest watchers. People have a strong sense of responsibility. As one participant said, “who else will protect our forest, we have to do it”. Users are more concerned with forest protection than the utilisation of the forest because they are eager to ensure that the forest “would never be destroyed again as it was before”. They were quite enthusiastic about income generation through the sell of non-timber forest products.

The forest has improved its potential to supply a range of goods and services. It was estimated that the forest has a supply potential of 77 bhari[7] of foliage (excluding ground grass), 174 bhari of

fuelwood and 63 cubic feet (cu ft.) of timber per hectare per year (see Table 2). Each household can receive an average of 14 cu ft. of timber, 39 bhari of fuelwood and 17 bhari of foliage per year.

b) The utilisation of forest, users' needs and community development

To find out if the potential supply of products can meet the needs of the FUG members, discussions were conducted with household members during the HQI. The study estimated that each household required an average of 11.4 cu ft. of timber, 49.5 bhari of fuelwood, 70.5 bhari of fodder and 10.1 bhari of leaf litter per year from CF and other sources. Users expected to meet most of forest product needs from CF. However, the study estimated that each household only received an average of 1.7 cu ft. of timber, 15.1 bhari of fuelwood, 14.1 bhari of fodder and 6.1 bhari of leaf litter per year. These products were collected during the silvicultural operations, principally to improve the condition of forests. The community needs are not fulfilled.

One reason why needs are not met is that the forest is underutilised. The potentially available major forest products (i.e. timber and fuelwood) for harvesting are far greater than what is actually being harvested (Figure 1). Another reason is that either the forest size is small compared to the population size, or it has not reached the stage that can supply sufficient and suitable products to all users. The finding clearly demonstrates that the potential supply from forests can meet the timber demand, but cannot meet the fuelwood demand (see Figure 1).

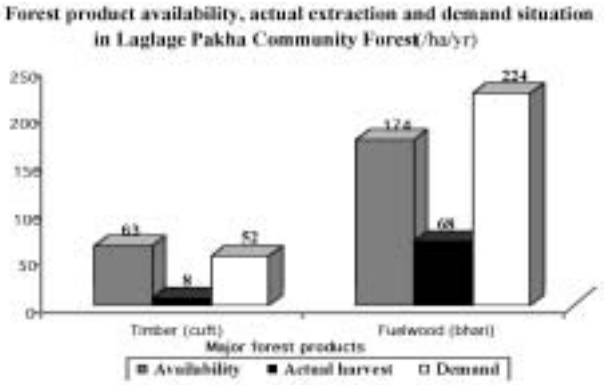


Figure 1 Under-utilisation of Laglage Pakha Community Forest

The HQI and discussions also indicate that the products harvested and distributed have not fulfilled the needs of the FUG because the harvesting decisions and distribution process are not driven by the community needs and products availability, but are controlled by the FUGC, which in turn, is controlled by the DFO. There was an indication that the underutilisation of forests was a key issue among users. For example, one participant said; "we have many dead trees, which can be sold, I don't know why they are left to decay".

Most users are interested in income generation and community development through CF. Informal talks and discussions suggested that there is a need for the FUG to increase its income and contribute to the construction of water tanks, school and roads. Users were interested in the use of forests that would not lead to the forest degradation, such as selling of Non-Timber Forest Products (NTFPs) and ecotourism. However, a common point that emerged from the discussions was that the contribution of CF to improve users' livelihoods

Table 2 Number of stems, biomass Annual Allowable harvest in Laglage Pakha FUG/ha

Development class	Per hectare		Annual Allowable Harvest (AAH)/ha			Allowable harvest/ha/yr[10]					
	No of stems	Biomass (kg)	Avg. age (yr.)	MAI (kg)	AAH (kg)	Foliage		Fuelwood		Timber	
						kg	bhari	kg	bhari	kg	cu ft.
Seedling	6900		2								
Sapling	3900	41150	5	8230	4938	1728	58	3210	107		
Poles	833	86640	15	5776	3466	520	17	1906	64	1040	53
Trees	67	17040	30	568	341	51	2	102	3	188	10
Total	4800	144830		14574	8745		77		174		63

through fulfilling the needs, income generation and community development had been very negligible.

Case study 2: Bagbhanjyang Community Forest

a) The condition of forest

Bagbhanjyang community forest is a naturally regenerated broad-leaved forest dominated by Sal and Chilaune. Its ground cover is mixed, which includes species such as Bhoddheiro, Simal, Kyamun, Padke, Katus and Yeiselu. The vigorous regeneration and closed canopy of the forest means that it is a dense forest, supporting wildlife, such as leopard, monkeys, foxes, deer and bees. The RFA found that the forest is dominated by seedlings, saplings and poles of Sal and Chilaune species. The forest is young and dominated by seedlings (86.1%). When the seedlings are excluded, the forest contains 67.5 percent of poles, 31.2 percent of saplings and 1.3 percent of trees (Field Survey, 2001/2002). The plant diversity index is low at 0.04 (from the possible 1). The forest is diverse in terms of DBH, height and biomass and volume. There are no significant open spaces and soil erosion. Although the density varies widely within the forest, the overall forest condition is good.

There was a consensus among the HQI respondents and group participants that the Bagbhanjyang forest has significantly improved through CF. One respondent said; "CF has changed the face of Bagbhanjyang. It used to be a barren land; landslides were common about 10 years ago. Now, it is a dense and green forest". The change in forest condition was due to the relatively effective protection measures and the strong sense of ownership among users. One respondent said, "… we feel the forest as our own, the protection is our obligation". However, as the majority of users are involved in business and jobs, they appeared to have prioritised their business over the participation in CF. The continued effectiveness in forest protection is under threat as the community interest and participation is gradually decreasing. Users also highlighted the danger posed by a large population of non-users, easy access to forests linked by the highway and the proximity to the market. People are less confident as they stressed the need for forest guards to look after the forest.

With an improved forest, the RFA estimated that the forest can potentially supply 105 cu ft. of timber, 184 bhari of fuelwood and 64 bhari of foliage (excluding regeneration and ground grass) (Table 3). Each household can receive an average of 18.8 cu ft. of timber, 32.9 bhari of fuelwood and 11.5 bhari of foliage per year.

c) The utilisation of forest, users' need and community development

The findings indicate that the majority of users are wealthy and they use alternative to forest products for their cooking, heating and other needs. However, they are concerned about forest utilisation because they still need various forest products, but the extraction of products has been very limited. To assess the needs of the users, discussions were conducted with the members of the sample households studied in the HQI. It was estimated that each household required an average of 20 cu ft. of timber, 17.6 bhari of fuelwood, 37.4 bhari of fodder and 1.7 muttha of Sal leaves from CF and other sources (Field Survey, 2001/2002). Users indicate that almost one-third of their

Table 3 Number of stems, biomass and Annual Allowable Harvest in Bagbhanjyang FUG/ha

Devlop ment class	Per hectare		Annual Allowable Harvest (AAH)/ha			Allowable harvest/ha/yr					
	No of stems	Biomas s (kg)	Avg. age (yr.)	MAI (kg)	AAH (kg)	Foliage		Fuelwood		Timber	
Seedling	15900		2			kg	bhari	kg	bhari	kg	cu ft.
Sapling	800	24710	5	4942	2224	778	26	1456	49	-	-
Poles	1733	238432	15	15895	7153	1073	36	3934	131	2146	96
Trees	33	24331	30	811	365	55	2	110	4	201	9
				21648	9742		64		184		105

requirements are expected to be met by CF. The data shows that timber is the most valued forest product. However, the study estimated that each household only received an average of 3.1 cu ft. of timber, 5.8 bhari of fuelwood, 0 bhari of fodder and 1.7 muttha of Sal leaves per year. The extraction of these products was carried out during silvicultural operations (as a part of improving forest health), which were sold to user households. Clearly, users' needs were not fulfilled as the supply of products is far less than what is wanted. However, the harvesting of products was far less than what was available in the forest (i.e. underutilisation of forest). As most households use alternative fuel for cooking, there is an enormous surplus of fuelwood, but the forest cannot meet the high demand of timber (see Figure 2). This is opposite to the case of Laglage Pakha FUG. The shortfall of timber supply in the Bagbhanjyang community has to be fulfilled from other forests, thus shifting the pressure to forests elsewhere.

One of the highlights of the HQI and discussion was that the forest utilisation has been sub-optimal. This was due to "the FUGC not being confident to regulate the extraction and maintain the forest cover" and because "the DFO discourages for cutting and selling trees". While users agreed that their dependence on forest products was marginal, the majority of users questioned the retention of older trees inside the forest. A major point coming out of the group discussions was that the Bagbhanjyang FUG had not utilised the forest because the DFO staff encouraged them to conserve it and controlled the decisions to utilise forest products.

The HQI and discussions indicated that peoples' participation was mainly in buying products, in which prices were assumed to be cheaper than the market price. However, some users complained that the rate is still "too high for poor users". The FUGC members and DFO staff were also criticised for "selling timber to friends and relatives". The majority of group discussion participants indicated that the poor users have been unfairly penalised by this selling system.

Income generation and community development through CF is popular among users, but the discussions and talks indicate that such

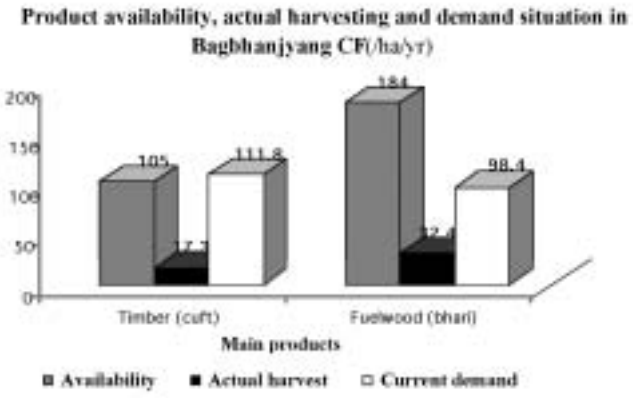


Figure 2 Under-utilisation of Bagbhanjyang Community Forest

activities on the ground are limited. The HQI data show that the income generation is passive as the FUG only generates limited income from the sale of forest products and membership fees and fines. This is due to "the forest being young and there is a low level of confidence among FUG members to actively utilise the forest", and "the DFO being unhelpful". A common point coming out of the talks and discussion was that most users are not confident for cutting trees to generate income, but they emphasised other measures, such as eco-tourism, recreational use of the site and plantation of cash generating species.

There are critical issues in terms of mobilising fund by the FUG. The majority of group discussants believe that the income has been spent on forest watchers, FUG office management, infrastructure building and community support. They argue that the fund mobilisation has not been effective because the FUG lack skills to mobilise fund and the DFO does not care about fund mobilisation.

Case study 3: Pragatisil community forest

a) The condition of forest

Pragatisil community forest is a mixed broad-leaved forest, dominated by the naturally regenerated Sal and planted Sissoo species. Being located in the flood plain of the Seti River, Khair is naturally occurring within the Sissoo plantation. The forest was significantly degraded before the

introduction of CF despite several efforts by the DFO to restore the land. The introduction of CF encouraged users to protect tress and plant Bamboo, Amriso, Amla, and Sissoo. Users also report that the forest has wildlife, such as leopards, monkeys, foxes and deer. The forest along the highway and close to the residential area has some open spaces. The soil is sandy with low productivity and frequently flooded by the Seti River. The plantation has some open spaces and soil erosion. There are potholes due the FUGC controversially selling mud and stones.

The RFA results show that the forest is young, dominated by seedlings (91%) and poles (7.2%), with few trees (0.2%) and saplings (1.5%) (Field Survey, 2001/2002). There are 23 species, with the largest numbers of stems being Ghantu (5,900/ha). Although the density and other factors vary widely within the forest area, there are 18,067 stems per hectare, out of which saplings, poles and trees only constitute 1,600 (8.6%) and the rests are seedlings. Compared with the data by the FUG, the total number of stems per hectare has increased from 12,065 in 2001 (Pragatisil FUG 2001). The plant diversity index is low at 0.03. The crown density is 55 percent, largely attributed to 1,600 stems (excluding seedlings) per hectare. The forest condition is improving in terms of the diversity of DBH, height and biomass and volume.

The HQI and discussions indicate that the condition of forests has significantly improved. As one respondent said, "forest has improved from almost a denuded land, but products are not sufficient". However, the FUG has some critical problems as the majority of respondents are unaware as to how forest is being managed and what the boundaries of forests are. Consequently, there are conflicts in forest protection, for which the majority of respondents emphasise the need for hiring the forest watchers. Most FUG members see the DFO as a source of ''power, knowledge and finance".

RFA estimated that the forest can potentially supply 24.1 bhari of foliage (excluding regeneration and ground grass), 83.2 bhari of fuelwood and 56.1 cu ft. of timber per hectare per year (Table 4). If the forest is managed to its potential, each household can receive an average of 4.8 bhari of foliage, 16.7 bhari of fuelwood and 11.2 cu ft. of timber per year.

b) The utilisation of forests, users' needs and community development

To find out if the potential supply of products could meet the needs of the community, discussions were conducted with the household members during the HQI. The study estimates that each household requires an average of 16.1 cu ft. of timber, 42.9 bhari of fuelwood, 359.3 bhari of fodder and 16.7 bhari of leaf litter per year from CF and other sources. Users suggested that about two third is expected to be met by CF. However, the needs are not fulfilled as the study estimates that each household has only received an average of 3.6 cu ft. of timber, 10.3 bhari of fuelwood, 14.3 bhari of fodder and 7.3 bhari of leaf litter per year. Users only receive the forest products during the

Table 4 Number of stems, biomass and Annual Allowable Harvest in Pragatisil forest/ha

Development class	Per hectare		Annual Allowable Harvest (AAH)/ha			Allowable harvest/ha/yr					
	No of stems	Biomass (kg)	Avg. age (yr.)	MAI (kg)	AAH (kg)	Foliage*		Fuelwood*		Timber*	
Seedling	16467		2			kg	bhari	kg	bhari	kg	cu ft.
Sapling	267	2571	5	514	154	54	1.8	100	3.3	-	-
Poles	1300	211079	15	14072	4222	633	21.1	2322	77.4	1267	50.7
Trees	33	24577	30	819	246	37	1.2	74	2.5	135	5.4
				15405	4622		24.1		83.2		56.1

silvicultural operations mainly carried out for improving the forest health. Clearly, the harvesting of products is far less than what was wanted from CF, while the forest is being underutilised. Since the demand far exceeds the supply potential of forest products under the current practices, even when the forest is managed scientifically and used to its optimum potential, the potentially available forest products is unlikely to meet all the needs (Figure 3). It should be noted that the above prediction for potential harvest is a rough guideline. Social acceptability is important in determining the scientific availability of forest products.

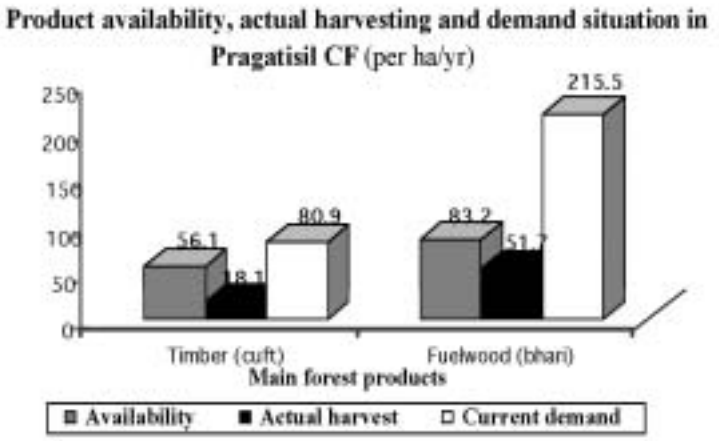


Figure 3 Under-utilisation of Pragatisil forest

Group participants agree that the FUG member households "receive fuelwood, grass and leaf …but not enough". A teashop owner is frustrated with the product distribution rules, "being ignorant of the need of poor people, too strict and rigid in compared to the improvement of the forest and increased forest products availability". A poor woman argued; "I only need fuelwood, which is insufficient, nothing else … cannot swap products with other users".

The HQI and discussions indicate that the products harvesting and distribution have been driven by the wish of the DFO, not by the collective decisions of the community. Users participate in product harvesting and distribution because they anticipate some benefits. However, one participant said; "the chairman of the FUGC is biased to households close to him". Overall, users are not happy with the existing FUGC and the DFO. One participant said; "the ultimate decisions on forest product harvesting depend on the DFO … this also affect distribution". Another participant argued; "the power of the DFO comes from the ownership of land … to be able to control the FUG".

Income generation and community development are promoted by the DFO and other agencies with the assumption that natural, social, human and institutional capital organised within the FUG framework can potentially generate financial capital, which can be crucial for local development. However, users have suggested that for Pragatisil FUG, the generation of income and community development are very limited and the FUG has not realised such activities in practice to the extent that they are promoted in the rhetoric. There is however a strong expectation among the respondents that the CF can generate income. Users have hesitations about cutting trees because "the DFO may resume CF". The group discussion indicates that the joint venture with industry is a good idea, so that "the partnership between the private company and the FUG brings knowledge, money and skills needed for active forest management". There was an issue of mobilisation of funds which has been inefficient and non-transparent. One group participant argued; "the FUGC needs to show how much is the income, where the income is and how it is being mobilised". There are serious doubts whether "the fund has been properly managed by the FUGC". One group participant questions the FUGC as "accountable more to the DFO as to the FUG".

ANALYSIS

a) The condition of forests

The findings indicate that local communities are effectively protecting the forest, either through direct efforts of users (in Laglage) or through forest watchers (in Bagbhanjyang) or sometimes both (in Pragatisil). Different protection systems are employed in different FUGs according to their socio-economic and geographical contexts. This suggests that forest protection is effective, not through universal mechanisms previously employed by the state, but by different mechanisms

determined by CF users as suitable for their specific local contexts. A uniform system that is imposed on FUGs is therefore less likely to be effective as the feasibility and effectiveness largely depend on the FUG's specific socio-economic and ecological contexts.

The condition of forests has been significantly improved through CF which is demonstrated by both the survey of the perceptions of people as well as by the RFA. Soil erosion and landslides problems are generally non-existent and degraded lands have been converted into dense forests. Improvement in forest condition was one of the most frequently cited statements by all stakeholders who often compete to take credit for this achievement. This finding suggests that CF is reversing degradation and regenerating degraded areas. This is a great achievement and an endorsement for CF in Nepal and is consistent with previous studies (e.g. Branny and Yadav, 1998; Yadav et al., 2003).

The improvement in the condition of forests is probably due to a number of interrelated causes. The rise of CF policy, based on the learning from indigenous practices and the failure of the top-down model of forest management, have provided motivation for stakeholders to effectively protect forests, regulate extraction and exclude non users. The maintenance and protection of forests are linked with social and economic processes, in which forests play a vital role. Findings suggest that forests provide social, economic and religious benefits to users, persuading them to carry out effective protection measures, plantation and improvement activities. Moreover, the political processes have changed over time and greatly influenced forest management approaches. Policies are made, the staff re-trained and institutions are promulgated to support users to improve forest condition. As Nightingale (2003) argues, the improvement of forest condition is associated with the historical, socio-economic and political processes. Therefore, any attempts to improve the forest condition should attend to the historical, socio-economic and political processes, in which the forest has to be managed.

Despite improved condition of forests, there are three key issues. Firstly, improved forests mean that the ability of forests to supply forest products has increased, but the forests have not reached to the stage to be able to meet all users' demands. Results indicate that if forests are scientifically managed, Laglage FUG can potentially meet timber demand, but it may not meet the demand of fuelwood and foliage. In Bagbhanjyang, the FUG may meet the fuelwood demand, but may not meet the demand of timber and foliage. On the other hand, Pragatisil FUG may not meet the demand of timber, fuelwood and foliage. This suggests that improved condition of community forests have not reached the stage whereby they can supply sufficient and suitable forest products to forest users even if they are "optimally" managed and used. Additionally, the match between the demands and availability of different forest products varies across locations and changes over time. Therefore, the popular assumption of an improved forest being able to produce surplus forest products, which can be sold and generate income for the FUG, is seriously flawed.

Secondly, as Brown (1999) argues in the context of forest co-management in Africa, collective forest management is better for biodiversity conservation than single-purpose forest management. The research indicates that CF is not ideal for biodiversity conservation. The findings show that all forests have low species diversity. The trees and poles are dominated by few species promoted by the FUG for their particular social, economical and political values. Forests are dominated by some species under CF in comparison to a forest protected as a national park. However, given that forests are often established in degraded areas in the first place, as Fisher (2000b) argues, they should be judged in comparison to what was there before, not against some theoretical ideal. Considering the increasingly active management of forests under CF with a specific selection of species conditioned by social, economical and political values, CF is unlikely to focus on biodiversity conservation.

Thirdly, the research clearly shows that the forests are underutilised as the harvest of forest products is far less than what is available. Underutilisation of community forests in Nepal has been identified by previous studies (e.g. Springate-Baginski et al., 2003). The implication of

underutilisation is that there are foregone opportunities from sustainable product harvesting, processing and marketing of both timber and non-timber forest products. Current practices clearly neglect commercial or monetary possibilities (Malla, 1993), while the subsistence focus of CF has also been compromised. Community forests could be, and should be, better utilised.

b) The utilisation of forests

The utilisation of forests and livelihoods benefits are the fundamental elements of CF and are seen as an underlying part of the rationale for CF. However, the research indicates that the benefits from CF are very limited. CF is supporting the local livelihoods far below the potential, particularly in relation to poorer users. There are examples of local users becoming worse off as a result of CF such as teashop owner and disadvantaged groups in Pragatisil FUG. The harvest of forest products is minimal in comparison to the individual users' demand and potential availability of products. There appears to be a huge gap between the demand and supply of forest products while forests are significantly underutilised. The direct benefits for other actors, such as the state, are not significant. This affirms the findings of Malla (2000) that contributions from CF have not been substantial. Despite the policy commitments to support livelihood benefits, much remains to be achieved.

An important question emerges; why have the benefits of CF been so limited? The research indicates that the direct reason for limited benefits from CF is the underutilisation of forests. The underutilisation of forests is mainly caused by politics of forest management that deprives users obtaining and exercising a real authority to harvest forest products. Wood et al (1995) argue that forest agencies emphasise the conservation objectives and communities and other stakeholders the development objectives, but the former may become dominant due to its political, financial, technical and other backings. The protection of forests is highlighted by all DFOs because DFO's institutional efficiency is being judged in terms of the protection of forests, rather than management of controlled use. After the endorsement of the Convention on Biological Diversity in 1992, the bureaucracy is obliged to meet conservation objectives. For this, the state retains authority indirectly by fixing certain conditions, in which there is flexibility for minor activities, while most important decisions are set by the state at the higher levels. As Ribot (2002) argues, most decentralisation policies are being constrained by the key natural resource management authorities persistently held at higher levels of the government. The emergence of CF has not brought about the shift in decision making assumptions underlying the state as controller. Instead, custodial ideas of the DFO making the decisions for people (often covertly) have simply been reinforced and put on work in the new policy context. Therefore, there is a need not only for real devolution of power to the local level, but also for a change in conceptual and ideological assumption about the role of state bureaucracy as a facilitator, not as a decision maker and implementer of CF.

The politics leading to underutilisation has been supported by the elite members who often hold the FUG Committee position and hijack the FUG. Elites dictate the protectionist ways of managing forests as they depend less on communal forests and therefore, protection-focus does not have a significant impact on them. For elites, managing protection is easier than managing controlled use. Accordingly, institutions are devised in such a way that a limited quantity of forest products is extracted, mainly as a part of forest improvement, not to meet users' needs. As a result of the limited use and protection focus, most users are deprived of their basic forest products needs and are constrained by the rules administered by the FUGC. The central issues are to minimise use so that the forest condition is improved, while users' needs and supply potential of forests are peripheral. CF may meet the conservation objectives, but it is at the expense of poor users who are mostly dependent on forest products. Therefore, there is a need for further devolution within the FUG to address the needs and interests of the poor.

The underutilisation and difficulty about productive management of forests is related to knowledge and skills required for users to utilise forest products without threatening the long term sustainability of the forest. In this study, it was

observed that local elites, disadvantaged groups or government staff cannot confidently say that some level of use is better than no use. Despite three decades of implementing CF, findings indicated that there is still a lack of appropriate approaches to assist the FUGs in developing monitoring and reporting mechanisms that could effectively help to reflect, review and adapt their forest management practices. Users seem to have a low level of confidence on forest use as they are highly dependent on the DFO to guide for increased use of forests. The discussion also indicates that users lack knowledge about how increased forest use leads to the deterioration of forests and when the DFO may take back CF from the FUG. Consequently, users emphasise the indirect use such as eco-tourism and other non-extractive uses and are unable to carry out active utilisation of forests. Despite a clear policy regarding forest utilisation, under-utilisation continues. Clearly, the issue is not only the knowledge and skills and supplying better tools, finance and other support, but also the underlying interest of the forest agency to maintain the forest cover.

The underlying reason behind the limited benefits from CF is the persistent control over forest management and utilisation decisions by the DFO to meet its conservation interest. While the policy is committed to give full use rights to users and users have some power to make decisions, these decisions are seriously constrained by various rules and circulars, and by the overriding power of the DoF. The circulars issued from the DoF for clarifying issues often counter legal and policy provisions. Therefore, as Fisher (2000a) explained, the issue of limited benefits from CF is based on flawed arguments because the problem is largely about the control of forest resources, not about the limited flow of benefits. Due to the absence of real devolution of decision making and limited real access of forests for the FUGs, the users do not have power to demand and receive CF benefits. Obviously, the transfer of rights is limited and incomplete (Agrawal and Gibson, 1999; Ribot, 2002). The underlying reasons for a lack of devolution and secure tenurial rights are due to institutional rigidity within forest departments and the failure of policy attention on devolution and secure rights. There have been many changes in terms of techniques and training, but the underlying control structures are largely sustaining so do the lack of benefits to communities. There is a need for a genuine devolution of power to local levels.

Despite the limited contribution of CF, the findings indicate that the majority of users attend meetings, participate in forest protection and management activities and confirm rules. This means, collective action continues to exist for a number of reasons. Firstly, CF provides at least some products and other benefits, which are important for users' livelihoods. Secondly, users also have a high anticipation of future benefits in terms of generating income and carrying out community development through the sustainable use of forests. These anticipations are often shaped by the external actors through dissemination of "scientific" explanations that CF has the potential to significantly contribute in livelihood improvement, income generation, community development and environmental protection and thereby, achieving sustainable development. Thirdly, despite the limited flow of products, the relative benefits of cooperative forest management over other available alternatives are higher and therefore, the situation under CF has been perceived to be better than the previous situation. Fourthly, interdependent forest users are not motivated, solely or perhaps even principally, by the intended outputs of collective action, but also by the benefits of participating in the process of action such as maintaining social relationships. Finally, people continue to cooperate in CF, not only because of the benefits, but also because of the politics that force them to do so. Contrary to the common assumptions that individuals will only act collectively to receive benefits, the evidence implies that individual benefits are not the sole, or even the primary, determinant for collective action. As Leach and Mearns (1996) argue in the context of African environmental management, there is a need to move away from macro-scale approaches and policies towards a more situation specific focus because local people who depend on forests for inputs in their livelihoods may experience their own problems and solutions.

CONCLUSION

The paper has investigated collective action of local communities in the conservation and utilisation of forests under Nepalese CF. The analysis shows that forests are improved due to effective protection systems employed by users and is associated with the historical, socio-economic and political processes. CF is reversing degradation and regenerating degraded areas, which is a great achievement and an endorsement for CF. However, the improved forest condition is not an end in itself. Forests have not improved uniformly and the improved forests are not in a stage to produce surplus that can be sold and generate income. Forests managed under CF are not ideal for biodiversity conservation. Underutilisation is a major issue, which is caused by the lack of knowledge and entrenched politics of forest management that deprives users having knowledge about and authority to harvesting forest products. One important way to better utilise forests is by providing users with proper knowledge about their rights and genuine authority to harvest forest products. However, the major issue is not the knowledge, skills and supplying better tools, finance and other support, but the underlying interest of the forest agency to maintain the forest cover. CF can be, and should be, better utilised, but there is a need for a change in conceptual and ideological assumption about the role of state bureaucracy as a facilitator, not as a decision maker and implementer of CF.

Despite CF being implemented based on the assumption of widespread benefits, the benefits are very limited. The limited benefits are unfairly distributed as the needs and interests of poor users, who are mostly dependent on forest products, are largely ignored by the DFO and local elites. Therefore, there is a need for further devolution within the FUG to address the needs and interests of the poor. In fact, the arguments of limited benefits from CF are based on flawed arguments because the problem is largely about the control of forest resources by the state, not about the limited flow of benefits. Due to the absence of real devolution of decision making and limited real access of forests for the FUGs, the users do not have power to demand and receive CF benefits. The underlying reasons for a lack of devolution and secure tenurial rights are due to institutional rigidity within forest departments and the failure of policy attention on devolution and secure rights. As Fisher (2000) argues, there have been many changes in terms of techniques and training, but the underlying control structures are largely sustaining so do the limited benefits to communities. There is a need for rethinking the conceptual basis and structural and functional roles of the forest agency.

Limited benefit flows have frustrated users, but they continue collective action for variety of social, economic and political reasons. This implies that people's motivation to act collectively is not, solely or even principally, driven by economic benefits of CF, but by diverse non-economic causes. Individuals often act collectively against their economic gains because social norms and unequal power relations force them to do so. Social ties and other interdependence influence actions and thereby offset pure self-interest. Therefore, people's motivation cannot be reduced to economic costs and benefits. This challenges the rational choice tradition and supports the new economic sociology proposition of economic action being socially situated (Granovetter, 1985; Zurin and DiMaggio, 1990; Granovetter and Swedberg, 2001). In policy and planning, CF must be seen as a part of a wider system and the policy circle must critically assess the role of CF within the imperatives of rural development and poverty alleviation.

This paper has shown the problems associated with conservation and utilisation of forests under CF. While CF is yet to be significant for meeting needs and promoting poverty alleviation and community development, our research has not rejected the possibilities of CF to do so. CF has an important role in Nepal and beyond, but it must be recognised that CF possibilities have been limited by the conceptual basis, structural and functional role of the state. Critical assessment of CF, such as this research, is not anti-CF. It is a sympathetic, positive contribution to the existing understanding of human-environment relationships for the purpose of developing CF.

REFERENCES

Agrawal, A. and Gibson, C. C. (1999), "Enchantment and Disenchantment: The Role of Community in Natural Resource Conservation", World Development, Vol.27, No.4, pp.629-649.

Arnold, J. E. M. (2001), Forests and People: 25 years of Community Forestry, Food and Agriculture Organization of the United Nations, Rome.

Blaikie, P. and Brookfield, H. (1987), Land Degradation and Society, Methuen, London and New York.

Branny, P. and Yadav, N. P. (1998), "Changes in Community Forestry Condition and Management 1994-1998: Analysis of Information for the Forest Resource Assessment Study and Socio-economic Study of the Koshi Hills", Nepal UK Community Forestry Project (NUKCFP), Kathmandu.

Britt, C. (2001), "Mixed Signals and Government Orders: The Problem of On-again and Off-again Community Forestry Policy", Forest, Trees and People: Newsletter, Vol.45, pp.29-33.

Brown, D. (1999), "Principles and practice of forest co-management: evidence from West-Central Africa", Overseas Development Institute, London.

Brown, D., Malla, Y. B., Schreckenberg, K. and Springate-Baginski, O. (2002), "From Supervising 'Subjects' to Supporting 'Citizens': Recent Developments in Community Forestry in Asia and Africa", ODI Natural Resource Perspectives, No.75.

Bull, G. and White, A. (2002), "Global Forests in Transition: Challenges and Opportunities", In Proceedings of Global Perspective on Indigenous Forestry: Linking Communities, Commerce and Conservation, Vancouver, 4-6 June 2002.

Chambers, R. and McBeth, M. K. (1992), "Community encouragement: Returning to the basis for community development", Journal of Community Development Society, Vol.23, No.2, pp.20-38.

Ciriacy-Wantrup, S. V. and Bishop, R. C. (1975), "Common Property as a Concept in Natural Resources Policy", Natural Resources Journal, Vol.15, pp.713-727.

CPFD (2003), "Community Forest User Group Data Base", His Majesty's Government of Nepal (HMGN), Department of Forests, Community and Private Forest Division (CPFD), Kathmandu.

Demsetz, H. (1967), "Toward a Theory of Property Rights", The American Economic Review, Vol.57, No.2, pp.347-359.

Dev, O. P., Yadav, N. P., Springate-Baginski, O. and Soussan, J. (2003), "Impacts of Community Forestry on Livelihoods in the Middle Hills of Nepal", Journal of Forest and Livelihoods, Vol.3, No.1, pp.64-77.

FAO (1978), "Forestry for Local Community Development", Food and Agriculture Organization of the United Nations (FAO), Rome.

FAO (1999), "Status and progress in the implementation of National Forest Programmes: Outcomes of an FAO Worldwide Survey", Food and Agriculture Organisation of the United Nations, Rome.

Fisher, R. J. (2000a), "Decentralization and Devolution in Forest Management: A Conceptual Overview", In Decentralization and Devolution of Forest Management in Asia and the Pacific, (Eds. Enter, T.; Victor, M. and Patrick, D.), RECOFTC (Regional Community Forestry Training Centre), Bangkok, pp.3-10.

Fisher, R. J. (2000b), "Poverty Alleviation and Forests: Experiences from Asia", In Forest Ecospaces, Biodiversity and Environmental Security, Amman, Jordan, 5 Oct.

Gilmour, D. A. (1995), "Conservation and Development: seeking the linkages", In Management of Tropical Forests: towards an integrated perspective, (Ed. Sandbukt, O.), Centre for Development and the Environment, Oslo, pp.255-268.

Gilmour, D. A. and Fisher, R. J. (1991), Villagers, Forests and Foresters: The Philosophy, Process and Practice of Community Forestry in Nepal, Sahayogi Press, Kathmandu.

Granovetter, M. (1985), "Economic Action and Social Structure: The Problems of Embeddedness", American Journal of sociology, Vol.91, pp.481-510.

Granovetter, M. and Swedberg, R. (Eds.) (2001), The Sociology of Economic Life, Westview Press, Boulder and Oxford.

Hardin, G. (1968), "The Tragedy of the Commons", Science, Vol.162, pp.1243-1248.

HMGN (1989), "Master Plan for the Forestry Sector", Revised, His Majesty Government of Nepal (HMGN), Ministry of Forest and Environment, Kathmandu.

Hobley, M. (1996), Participatory Forestry: The Process of Change in India and Nepal, Overseas Development Institute, London.

Howitt, R. (2001), Rethinking Resource Management: Justice, Sustainability and Indigenous Peoples, Routledge, London and New York.

Kanel, K. (2001), "Forests, Collective action, and Policy Instruments in Nepal: Aligning Decentralization with Fiscal Responsibility", In Eighth Workshop on Community Management of Forestlands, The East-West Center, Honolulu.

Leach, M. and Mearns, R. (1996), "Challenging received wisdom in Africa", In The lie of the land: challenging received wisdom on the African environment, (Eds. Leach, M. and Mearns, R.), The International African Institute, London.

Leslie, A. J. (1987), "Foreword", In The Purpose of Forests - Follies of Development, (Ed. Westoby, J.), Basil Blackwell, Oxford, pp.vii-xiii.

Li, T. M. (2002), "Engaging Simplifications: Community-Based Resource Management, Market Processes and State Agendas in Upland Southeast Asia", World Development, Vol.30, No.2, pp.265-283.

Maharjan, M. (1998), "The Flow and Distribution of Costs and Benefits in the Chuliban Community Forest, Dhankuta District, Nepal", Overseas Development Institute, Rural Development Forestry Network, London.

Malla, Y. B. (1993), "Changing Role of the Forest Resource Market: An Ignored Dimension of Community Forestry", Banko Janakari, Vol.4, No.1, pp.28-31.

Malla, Y. B. (2000), "Impact of Community Forestry Policy on Rural Livelihoods and Food Security in Nepal", Unasylva, Vol.51, No.202.

Malla, Y. B., Neupane, H. R. and Branney, P. J. (2003), "Why aren't Poor People Benefiting More from Community Forestry?" Journal of Forest and Livelihoods, Vol.3, No.1, pp.78-93.

Mearns, R. (1996), "Community, Collective Action and Common Grazing: The case of post-socialist Mongolia", Journal of Development Studies, Vol.32, pp.297-339.

Menzies, N. (2003), "Partners in Governing the Forests: Reviewing Community-based Forest Management", In 'Forests, Source of Life', the XII World Forestry Congress, Quebec City, 21-28 September.

MOPE (2001), "State of the Environment: Nepal", HMG/N, Ministry of Population and Environment (MOPE), Kathmandu.

Neupane, H. R. (2003), "Contested Impact of Community Forestry on Equity: Some Evidences from Nepal", Forest and Livelihoods, Vol.2, No.2, pp.55-61.

Nightingale, A. J. (2003), "Nature-Society and Development: Social, Cultural and Ecological Change in Nepal", Geoforum, Vol.34, No.4, pp.525-540.

Ophuls, W. (1973), "Leviathan or Oblivion", In Towards a Steady State Economy, (Ed. Daly, H. E.), Freeman, San Francisco, pp.215-230.

Ostrom, E. (1990), Governing the Commons: The Evolution of Institutions for Collective Action, Cambridge University Press, Cambridge.

Petrzelka, P. and Bell, M. M. (2000), "Rationality and Solidarities: The Social Organization of

Common Property Resources in the Imdrhas Valley of Morocco", Human Organization, Vol.59, No.3, pp.343-352.

Pokharel, B. K. (2003), "Contribution of Community Forestry to People's Livelihoods and Forest Sustainability: Experience from Nepal", In 'Forests, a Source of Life', the XII World Forestry Conference, Quebec City, 21-28 September.

Race, D., Pagan, R. and Deane, P. (2003), "Community Forestry: A Complex Task that Needs a Cautious Path", In Australia New Zealand Institute of Foresters Conference (ANZIF Conference), Queenstown, 27 April - 1 May.

Ribot, J. C. (2002), "Democratic Decentralisation of Natural Resources: Institutionalising Popular Participation", World Resources Institute, Washington, D. C.

Shrestha, N. K. (1999), "Community Forestry in Nepal in Danger", Forest, Trees and People: Newsletter, No.38, pp.33-34.

Springate-Baginski, O., Dev, O. P., Yadav, N. P. and Soussan, J. (2003), "Community Forest Management in the Middle Hills of Nepal: The Changing Context", Journal of Forest and Livelihoods, Vol.3, No.1, pp.5-20.

Victor, M., Lang, C. and Bornemeier, J. (Eds.) (1998), Community Forestry at a Crossroads: Reflections and Future Directions in the Development of Community Forestry: Proceedings of International Seminar held in 17-19 July 1997, RECOFTC Report No 16, Bangkok.

Wade, R. (1988), Village Republics: Economic conditions for collective action in South India, Cambridge University Press, Cambridge.

Warner, K. (1997), "The Vision and Role of Community Forestry in Sustainable Development", In Proceeding of the XI World Forestry Congress, Vol. 5, Section F.26: Social Dimension of Forestry's Contribution to Sustainable Development, Antalya, Turkey, 13 -22 October.

Wood, H., McDaniel, M. and Warner, K. (Eds.) (1995), Community development and conservation of forest biodiversity through community forestry, Proceedings of an International Seminar, RECOFTC, Bangkok.

Yadav, N. P., Dev, O. P., Springate-Baginski, O. and Soussan, J. (2003), "Forest Management and Utilization under Community Forestry", Journal of Forest and Livelihoods, Vol.3, No.1, pp.37-50.

Yin, R. K. (2002), Case Study Research, Design and Methods, Sage Publications, 3rd Edition, Newbury Park.

Zurin, S. and DiMaggio, P. (1990), Structures of Capital: The Social Organisation of the Economy, Cambridge University Press, Cambridge.

Notes

1 See Ostrom (1990) and Ostrom et al (1994) for definitions of Common Property Rights (CPR) and Common Pool Resources

2 DFO stands for District Forest Officer, while DoF refers to Department of Forests. The DFO is a district branch of the DoF.

3 While political ecology is broadly defined as an inquiry into ecology and broadly defined political economy (Blaikie and Brookfield, 1978), it is also interpreted as a research framework (Carney, 1993), and more a method of analysis than a theory (Peluso, 1992).

4 DBH stands for Diameter at Breast Height, which is generally measured in Nepal at 1.3 meter from the ground.

5 All names of the trees are in italics and are local names in Nepali. For scientific names, see Shrestha, K. K. (2005).

6 For details on the basis of calculation, see Shrestha, K. K. (2005).

7 Bhari is a Nepali term which refers to an average load of forests products that a person can carry. It is approximately 30 kg (Malla et al 2003).

8 All case study calculations and definitions are drawn from the PhD work by Shrestha, K. K. (2005).