



Is collaborative forest management in Nepal able to provide benefits to distantly located users?



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ABSTRACT

Collaborative forest management (CFM) is a joint forest management approach between government and community. It covers distant communities too, who live out of 5-km periphery of the forest and involves them in forest management. This paper assesses whether the distant communities are deriving benefits from CFM in the form of timber, fuelwood and fodder. A total of 350 households was surveyed using a structured questionnaire. The result indicated that distant users were getting more timber compared to the users who lived close to collaborative forest and it was opposite in case of fuelwood and fodder. About 75% and 85% of fuelwood and fodder needs was fulfilled from the private source- trees grown on private farmland. Although CFM approach is able to supply timber to distantly located households, rich and male-headed households are disproportionately receiving high benefits. Provisioning small timber to the poor for house construction in place of sawn timber which is very expensive, may enhance welfare of the poor.

1. Introduction

There is a growing consensus that local communities manage common pool resources (CPRs) more efficiently and effectively (Agrawal, 2001; Ostrom, 1990; Twyman, 2000). Before 1970s when community forestry (CF) was not introduced in Nepal, forests were either under the state control or private (Arnold, 1992). People were legally isolated from appropriating any kind forest products from the nearby forest. Even though forests were controlled by the government, they were open to everyone and everyone's property due to the government's failure to provide an effective forest management mechanism. This led to a free ride, which resulted into a rapid depletion of forest in Nepal (Arnold, 1992; Fisher et al., 2007). In order to curb the accelerated forest degradation and deforestation, the CF program, a community-based forest management (CBFM) regime, was introduced (Acharya, 2002). The underlying principle of the program was people are likely to have more interest in conserving forest or other CPR that is close to them. Numerous studies have shown that the CF program has contributed in local economy boost-up and restoration of degraded forest resources (Niraula et al., 2013; Pandit and Bevilacqua, 2011; Rai et al., 2016).

Despite the CF's contribution in forest restoration and conservation,

the program fails to address certain issues. For instance, benefit appropriation is not equitable. Appropriation is determined by the user's well-being, gender and caste. A study carried out in the mid-hills of Nepal points out that the poor households face more restricted access to community forests than the relatively better off households and the so-called higher caste collects more forest products than the so-called lower caste (Adhikari et al., 2004). In the same study, they found that the female-headed households appropriate less amount of forest products than the male-headed. In terms of cost associated with CF management, the poor bear higher percentage than the rich households (Adhikari and Lovett, 2006).

Besides the discrepancy in benefit sharing among the forest users, the CF program has a flaw in user identification (Pant et al., 2017). In the mid-hills, where the program was first introduced, forest user identification was not a major issue since the human settlements and forest patches are physically very close (Bampton et al., 2007). As a result, there was less or a minimum conflict during the process of user identification. However, the case of the Terai is different. Unlike the mid-hills, the socio-ecological landscape of the region is very complex. The distribution pattern of population and forest resource is not even. Forest patches and human settlements are apart in the region. Issue of proximate and distant users has greatly influenced forest management

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and use in the region (Pravat and Humphreys, 2013). Uneven distribution pattern is the reason of conflict between the proximate and distant users (Karna, 2008). There are examples of violence and confrontation among users over the control and use of the forest resources in the region (Bampton et al., 2007; Ebregt et al., 2007). Even though attempts have been made to include the distant users into forest management under the CF policy, in most cases they have been excluded (Bampton et al., 2007). The failure of CF policy in recognising the distant users as a part of forest management led to evolution of a new form of participatory forest management regime, known as collaborative forest management (CFM) to ensure that distant users are included in and benefited from (HMGN, 2000).

In the last 15 years, the CFM has come a long way. A total of 24 CFM groups, covering 63,933 ha of forest in 11 Terai districts of Nepal, have already been formed, which is approximately 20% of the forest area in Terai, excluding protected areas (DoF, 2017). CFM has been legitimized by amending the Forest Act 1993 (MoLJPA, 2016). Considering the potential contribution of CFM in national economy and gap reduction between demand and supply of timber in Nepalese market, the forest department has initiated a production-oriented forestry in some collaborative forests (Rai et al., 2017). The production forestry, which is known as scientific forest management (SFM), divides forest into different coups, defines harvest controlling area and determines growing stock based on the rotation age.

The conflict between distant and proximate users over the control, management and use of forests has been resolved under the CFM model by including the distant users in forest management. Even though inclusion of distant users has broadened the benefit distribution from the collaborative forest in the Terai, the issue of equity in resource appropriation is not properly addressed. For example, CFM rules allow users to freely collect dry and dead branches as fuelwood, leaf litter and fodder regularly. However, the distant users cannot enjoy these benefits because of the additional time to get the forest area and forest product transportation cost (Lumbini CFM, 2014; Tilaurakot CFM, 2010). The opportunity cost of collecting such products to them may be high. Unlike fodder, fuelwood and leaf litter, users cannot extract timber for free. The CFM committee uses hired labourers to extract timber following the forest operational guidelines (Rai et al., 2017). Even though both users pay for timber, the distant users have to spend an extra time and bear transportation cost to get the same amount of benefit. Since the extra time and transportation cost are not factored into revenue distribution, equity in resource appropriation is still questionable under the CFM model too (Mahanty et al., 2009).

Against the above backdrop, this paper is an attempt to examine whether the CFM rightly addresses the issue of the distant users, which the CF fails to accomplish in the Terai region of Nepal. Whether the distant users are less or equally or more benefited from this approach compared with the nearby users is the central question to have addressed through this study. Specifically, three forest products, timber, fuel-wood and fodder were taken into consideration as benefits. What factors are responsible in determining the amount of these products appropriated by both users is also discussed. Our working hypothesis is because of additional costs involved, the distant users are likely to appropriate/collect less amount of forest products compared to the nearby users. The study presented here was carried out in two CFM groups: Lumbini CFM of Rupandehi District and Tilaurakot CFM of Kapilvastu District of Nepal.

2. Study area and methods

2.1. Study area

This study was carried out in two districts in western Terai of Nepal, Kapilvastu and Rupandehi. One CFM group in each district was selected for household survey (see Table 1 for details). The Lumbini CFM group of Rupandehi district covers 16 village development committees (VDCs)

Table 1
Forest attributes of Lumbini CFM and Tilaurakot CFM.
Source: (Lumbini CFM, 2014; Tilaurakot CFM, 2010).

Description	Lumbini CFM	Tilaurakot CFM
Total Forest Area (ha)	1321	2778.5
Set-aside (ha)	204.2	76.5
Productive forest (ha)	1045	2702
Seedling (Nos/ha)	14,029	2877
Sapling (Nos/ha)	2012	2080
Pole (m ³ /ha)	35.51	92.15
Tree m ³ /ha	212.6	73.10
Household	25,934	22,622
Major species	<i>Shorea robusta</i> , <i>Terminalia tomentosa</i>	<i>Shorea robusta</i> , <i>Terminalia tomentosa</i> , <i>Schleichera oleosa</i>

with 1321 ha of forest and 25,934 households as forest users. The Tilaurakot CFM group of Kapilvastu district covers one municipality and 23 VDCs, which manages 2778.5 ha of forest with 22,622 households. The forest operational plan of the Tilaurakot CFM and the Lumbini CFM was approved in the fiscal years 2009/10 and 2014/15 respectively. The forest-household ratio was higher for the Tilaurakot CFM while the Lumbini CFM was denser than the Tilaurakot CFM (Table 1). Even though the productive forest area of Lumbini CFM is smaller, the tree volume is three times higher than that of Tilaurakot CFM. The forest of the study CFM groups is dominated by two species, *Shorea robusta* and *Terminalia tomentosa*. Our choice of these two groups as study sites was mainly due to the fact that they are pioneers of scientific forest management (SFM) in the region.

The two groups receive technical assistance from the District Forest Office (DFO) to carry out forest management activities. Unlike CF, hired labourers are used by the CFM groups for timber and fuelwood harvesting. Harvested products mainly the logs (timber) and fuelwood are collected at sales depot from where the CFM committee distributes them to its users. The users have to pay for these products. The distant users have to pay an additional cost of transportation. The revenue generated from the forest products sale is spent in five different activities including community development (30%), poverty reduction (30%), forest management (25%), natural hazard mitigation (5%) and institutional development (10%) (Tilaurakot CFM, 2010).

2.2. Basic theory and empirical model

The distance-decay effect also applies in resource appropriation from the common pool resources such as forests (Sapkota and Oden, 2008). The households that happen to live closest to the forests are likely to collect more forest products than the households living farthest. This is because the distant users may require additional time to travel to the forests and pay certain fare for transportation. Even though the CFM claims that the distance-decay issue has been resolved by securing the access of distant users to forest, because of time and transportation cost, the distant users may not be able to appropriate equal benefits. Therefore, it is expected that the distant users are likely to collect less amount of forest products than the nearby users.

In order to examine the claim of the CFM program, this study estimates the functional relationship between demand and its determinants. Here, we consider three forest products, timber, fuelwood and fodder representing demand, because forest users of the Terai region mainly collect/extract these products (Rai et al., 2016). The home-to-forest distance and other socio-economic variables are taken as determinants of demand. The model proposed for analyzing the influence of the factors on appropriating the key forest products is specified below and the descriptive statistics of the factors are presented in Table 2.

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