

Impacts of community forestry in rural livelihoods a case study from Bharkhore Community Forest, Parbat District

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The paper endeavours to assess the impacts of community forestry programme on rural livelihoods and economy. Bharkhore Community Forest of Parbat district of Western Nepal was selected for this purpose. The information on shrub and trees diversity was collected through transect walk. Participatory Rural Appraisal and Rapid Resource Assessment techniques were used to gather social and forest resource information. Secondary information on forest resource management aspect was obtained from Community Forest User Group, District Forest Offices, and published literature. With the implementation of community forestry programmes, the degraded forests have been converted to sapling and pole forests. Moreover, the programme has been instrumental in controlling erosion and conserving water source. It was found that each household has been receiving an average amount of 1248 kg to 2359 kg of forest products annually for the last ten years. The contribution of community forestry programmes in social capacity building and rural infrastructure building was significant in the study area. Each household of the Community Forest User Group extracted about NRs 3,200 worth of forest products annually from the forest within the period of ten years.

Key Words: Community forestry, impacts, forest products, livelihoods, Nepal

Nepal is regarded as one of the pioneer countries to embrace community forestry in its national forest policy. This programme has received highest priority within the forestry sector in Nepal and is regarded as the most successful (Acharya, 2003; Nightingale, 2002; NPC, 2001; Springate-Baginski *et al.*, 1999). As of January 2004, about 1 million ha of forest area has been handed over to nearly 13,000 of CFUGs (DoF, 2004). Recent studies have claimed that Community Forest User Groups (CFUGs) have been established as a grassroots level institution for managing forest resources in order to improve livelihoods of forest users of Nepal (Malla, 2001; Acharya, 2002). However, at the same time many believe that community forest management is protection-oriented where the main forest management activities are limited to the removal of dead and dying trees, and leaf litter. As a consequence, the users are getting sub-optimal benefits (NPC, 2001; Shrestha, 2001; Branney, 1996, 1994; Karki *et al.*, 1994; Sowerine, 1994; Chhetri and Pandey, 1992; Gilmour and Fisher, 1991). Recently, it has been estimated that active forest management could increase forest products supplies and take-off levels of fuelwood for example by 100% (FFMP, 2000)

and in this situation community forest management will reduce the pressure on deforestation and degradation of forest resources. Many studies have been conducted on various dimensions of community forestry that are mainly focused on social and policy aspects. Study on assessing overall impacts of community forest management in Nepal is limited. Realising this, the Department of Forest Research and Survey (DFRS) initiated a study to identify the impacts of community forestry on environment and rural livelihoods.

Methodology

Study site

Based on the criteria such as involvement of users in active forest management, availability of recorded information and accessibility, Bharkhore CFUG was selected for the study. The Bharkhore community forest is located at Siwalaya Village Development Committee (VDC), ward number 1 of Parbat District in Western Nepal. It covers an area of 57.5 ha. The altitude of the area varies from 900 to 1150 masl. The forest is on the top of the hill slopes and

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settlements are scattered around it with the main settlement at the bottom of the hill slopes. It is characterised by loamy red soil, boulders and big rocks resulting in an undulating topography and a few open gaps. The low soil depth available for root development is evident through the stunted growth of the trees. The forest is predominantly natural *Sal* forest of pole stage. Other main species found are Amala (*Emblicca officinalis*) Bhakimlo (*Rhus javanica*) Bhorla (*Bauhinia vabilii*) Chilaune (*Schima wallichii*) Dhangero (*Woodfordia fruticosa*) Jamun (*Syzygium cumini*) Katus (*Castanopsis indica*) Kyamun (*Cleistocalyx operculata*), Mauwa (*Madhuca indica*), Saj (*Terminalia tomentosa*) Sindure (*Mallotus philippensis*) and Simal (*Bombax ceiba*). It contains about 4.5 ha of plantation of Sissoo, Badahar (*Artocarpus lakoocha*), Chap (*Michelia champaca*) and Khanyu (*Ficus semicordata*). Erosion sensitive areas are planted with bamboo and grasses like Amliso (*Thysanolaena maxima*), Napier (*Pennisetum purpureum*) and Setaria.

The main occupation of the users is subsistence agriculture. The literacy rate is above 90 percent. The CFUG consists of 113 households. Of the total households, about 75% are Brahmins and Newars.

Methods

The information on shrub and trees diversity was collected through transect walk in six transects at three different altitude in east west and north south direction in the forests. This information was verified through informal discussions with CFUG members. Participatory Rural Appraisal (PRA) and Rapid Vegetation Assessment (RVA) techniques were used to gather information. These include semi-structured interview, focus group discussions, informal discussions, transects walking, and key informant's surveys, time line survey and observations. The principle of triangulation was applied to verify the information. Secondary information was obtained through CFUGs, District Forest Offices, and published literature.

Limitations

As there was no baseline information, it was difficult to assess changes made by the community forest management. Moreover, the study is based on only one community forest in the hills of Nepal. The Department also aims to continue similar study in future so that a clear picture will emerge. Though the study is restricted to only one community forest

(CF), the case study presented in this study provides indications and evidences on the impacts of community forestry. It is expected that this research will also motivate others to conduct similar studies in future.

Findings and discussions

Forest management activities

In April 1993, the forest was officially handed over to the CFUG as Community Forest. Since then, the CFUG has been involved in various forest management activities. Based on natural boundaries, the forest is divided into five blocks. Harvesting operations is developed on a five-year rotational basis, each block being harvested once during the winter (December/January). Weeding, cleaning, protection against fire and grazing, singling, pruning, thinning, selective felling, leaf litter collection, soil conservation, and plantations are the main forest management activities carried out by this CFUG. Two different forest demonstration plots are established in order to identify sustainable methods of forest management. Specifically, the first demonstration plot was established to identify best management options for *Sal* forests in order to ensure sustained supply of forest products. The second one was established to explore the possibilities of fuelwood production.

Impacts of community forest management

The impacts of community forestry are multifaceted and complex. Their nature varies from direct and measurable to indirect and non-measurable. The impacts of community forestry are grouped into two categories: biophysical and socio-economic, but the categories are neither exhaustive nor have clear boundaries among them. In general, community forest management was beneficial to the users. However, some negative effects were also observed.

Bio-physical impacts

The biophysical impacts created by the programme are listed as follows:

Forest condition

- The most beneficial impact created by the programme is the rehabilitation of degraded hills. The regenerating forests has now been transferred to either sapling or pole stage forest.

Table 1: Increased in shrubs and trees diversity in Bharkhore CFUGs.

Plant life form	Numbers Present		Percentages increment
	1978	2003	
Shrubs	20	29	69
Trees	17	28	60

- The rehabilitation of degraded hills has been instrumental in controlling erosion and conserving water source.

The land once having only few scattered trees is now covered with hundreds of species, and natural ecosystem has been restored. For example, several birds and deer have been appeared in community forest. The reportedly increasing number of incidences caused by leopard indicates presence of large wild mammals. The number of flora and fauna has been increased compared to earlier situation and CF can be seen as an important mechanism through which bio-diversity of Nepal can be managed. The use of recall method revealed that there were 20 shrub and 17 tree species in Bharkhore CFUG in 1978 when they started protection activities. The number of trees and shrubs found in the Bharkhore CFUGs in different time period is presented in Table 1. The table indicates that there is a substantial increase in plant diversity as a result of forest protection.

Forest products

The types and amount of different forest products harvested in each year in green kg per ha² is presented

in Table 2. The table shows that each household has been receiving average amount of 1248 kg to 2359 kg of forest products each year for the last ten years. The table also indicates that the forest products received by each household in the second rotation has slightly been decreased except in the block 3.

There are no quantitative over-time data available to compare the average annual harvest from community forest. A maximum yearly harvest under intensive management regime of Sal forests over a 70 year rotation in the hills of Nepal is estimated to be 6.13 ton/ha of green biomass (Sowerine, 1994). Branney and Dev (1994) have reported average annual yield of 1.5 ton/ha of green biomass from a pole stage Sal forest from the Handikharka user group's demonstration plot in Dhankuta district. Considering the age of forest to be 22 years in 2003, annual yield is about 6.1 ton/ha, which shows users are receiving forest products as in intensive management according to Sowerine's estimate.

An average annual yield of 1.8 tons of biomass appears to have been collected by each household during the past 10 years. Moreover, the products might have been obtained from more than two blocks in a year.

Table 2: Amount of forest products harvested in the last ten years

Year	Block no	Area (ha)	Forest products		Others		HH no	Total yield kg	Yield/HH kg
			Total yield (kg)	Yield (kg/ha)	Total Yield (kg)	Yield (kg/ha)			
1	1	15	179949	11996	18250	1216	84	198199	2359
2	2	10	159102	15910	20250	2025	93	179352	1928
3	3	8.5	128870	15161	22250	2617	100	151120	1511
4	4	10	148372	14837	24250	2425	101	172622	1709
5	5	14	167378	11955	32590	2327	101	199968	1979
6	1	15	172090	11472	32680	2178	101	204770	2027
7	2	10	159120	15912	33280	3328	103	192400	1867
8	3	8.5	128900	15164	33900	3988	105	162800	1550
9	4	10	101685	10168	34400	3440	109	136085	1248
10	5	14	162792	11628	34500	2464	113	197292	1745

Source: CFUG Records of different years. Note: Forest products include Firewood, timber, fodder, leaf litter, pole and twigs. Others include Broom grass, Napier, and ground grass.

² The conversion figure used are average weight of one pole = 40kg, one cu ft of timber = 27kg, one bhari of firewood = 35kg, fodder = 40kg, leaf litter = 12kg. One *halo* = 15 kg and *jhikra* = 17kg).

Socio-economic impacts

Capacity and infrastructure building

Social impact includes the contribution of community forestry in social capacity building and rural infrastructure building. It has also developed local level leadership. A recent study has shown that locally elected leader in local government were initially involved in executive committee in the CFUGs (CARE, 2001). Rural infrastructure building involves community development work such as school, road, and drinking water activities carried through the support of CFUGs. In addition, present system of community forestry in Nepal has helped in developing mechanism for participatory development process in natural resources.

- The CFUGs as a prominent institution at village level has provided forum for all people.
- CFUGs are involved with the management of the forest resources to support the development of the nation.
- The change of image and attitude of foresters in society and new friendly relationship between the Forest Department and users is greater social impact of community forestry.
- Social cohesiveness among the forest users of different castes/ethnic groups developed which help minimize the gap between higher and lower castes.
- Marginalised sector of the community including women has been empowered. As a result, the chairman of this CFUG has been elected as District chairman of Federation of Community Forest User Groups (FECOFUN), an association of forest users actively involved for the wellbeing of their members. Similarly, one woman member of this CFUG has been elected as ward member of Siwalaya VDC, a smallest political unit. After having attended the regular meeting and other public forum, the weaker section of the community including untouchables can put their

voices in such forum. Though the level of awareness can not be measured in quantifiable terms, it is a big asset for any organisation in enhancing the capabilities of users.

Dev *et al.* (2003) have reported similar findings from eastern hills of Nepal.

Household level benefits from CF

Table 3 presents the estimated value of forest products extracted from the forests for the last ten years. Based on the existing farm-gate price of the forest products, it appears that the users of the Bharkhore community forest obtained a gross value of about NRs 3.58 million over the same period. In other words, each household of the CFUG extracted annually about NRs 3,200 worth of forest products from the forest.

Networking

The user group organises CFUG workshop or seminar at range post or CFUG level, traditional folk songs among CFUGs, school level essay and quiz competition, plantation on earth day, competition each year. The objectives of the workshop and seminar are to increase awareness of HMG policy on CF, to share experiences between CFUGs, to deal with conflicts, and to discuss protection and harvesting of forests and the utilisation of the products.

Negative impacts

- The grazing restriction and forest protection negatively affected livestock rearing and livelihoods for the poor.
- Issues of elite dominance in decision-making and benefit sharing are increasingly emerging.

Conclusion

The most beneficial impact received from the community forestry programme at Bharkhore is the

Table 3: Estimated gross value of forest products during the last ten years

Products	Unit price (NRs)	Total product (kg)	Gross value (NRs)	Percentage
Firewood	2	918231	1836462	51.2
Tree fodder	1.5	149005	223507.5	6.2
Ground grass	1.5	243780	365670	10.2
Leaf litter	0.4	281465	112586	3.1
Pole	5	53238	266190	7.4
Timber	12	41034	492408	13.7
Others	1	288135	288135	8.0
Total		1974888	3584958.5	100

rehabilitation of degraded forests. As a result of the programme, the degraded forest has now been transferred to sapling or pole stage forest. In addition, erosion control together with water source conservation is the major outputs brought about by the programme. The increased number of flora and fauna in community forests could be an indicator that community forestry might be a viable option for bio-diversity conservation in Nepal. The study revealed that users of the community forests have been receiving their needs of forest products from the forests. It was found that each household has been receiving an average amount of 1248 kg to 2359 kg of forest products annually for the last ten years. The contribution of community forestry programmes in social capacity building and rural infrastructure building was substantial in the study area. Each household of the CFUG extracted about NRs 3,200 worth of forest products annually from the forest within the period of ten years. It was also found that social cohesiveness among the forest users of different castes/ethnic groups was developed which help minimise the gap between higher and lower castes. Similarly, marginalised sector of the community including women has been empowered. The paper concludes by saying that though the study is restricted to only one community forests, the case study presented in this study provides indications and evidences on the impacts of community forestry. It is, therefore, expected that this research will also motivate other researchers to conduct similar studies in future considering equity and distributional implications.

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