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Forest products preference of rural economic spectrum in the community forests of Nepal

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Abstract

Community forestry user groups (CFUGs) are hetrogenious in terms of social and economic conditions, which influencetheir preference and use of tangible forest products (timber, fuel wood, Non Timber Forest Products (NTFPs), fodder and leaf-litter). The study aimed to examine relationship between economic heterogeneity and forest product preference in the community forests based on empirical research in two community forest user groups (CFUGs) of Dolakha District of Central Nepal. The study analyzed preference of forest products among different economic strata (rich, medium, poor and very poor) of the CFUGs by conducting survey of 115 household along with group discussions and key informant interviews. Forest product preferences vary with the economic status of the respondents. Preference for timber increased with the betterment of economic status, whereas the very poor and the poor respondents have higher affinity for fuelwood. No clear distinct pattern was observed in case of NTFPs. Medium and poor class households highly preferred fodder as they owned relatively less farm landandhigh number of domesticated cattle. Results indicates that the users of lowest economic status are deprived of getting maximum benefit from forest management if assessed in terms of economic values of benefits. This is possibly due to their less preference for the most commercially valuable forest product, timber, which is possibly induced by two factors - low household requirement and restriction in commercial utilization. The study agrue for promoting pro-poor benefit distribution mechanism in CFUGs such that equitable sharing of benefits could be ensured.

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Introduction

Forests, apart from providing ecosystem benefits in terms of watershed protection, erosion control, enhancement of soil fertility,catering of bio-diversity and storage of carbon, they also serve as a source for many directly usable goods as forest products (FPs).In Nepal, with 83% of total population living in the rural areas (CBS, 2011), FPs in form of edibles, fuelwoods, timber, fodder, leaflitter, construction materials, medicines and saleables are imperative basic contributors of their daily livelihood (Sharma, 1992; Bartlett and Malla 1992; Chetri and Pandey1994). Dependency of rural households on FPs, coupled with high possibility of unmonitored resource extraction for forests, suggests sustainable management of these natural resources against the temptation of free ride is an important topical issue.

In this light, to ensure stable and reliable livelihood contributions through the common resources, community forestry initiative in Nepal started in the year 1978 (Dev *et al*, 2003, Yadav*et al.*, 2003). This model led to the devolution of forest management from the centralized government to the local user groups, providing the locals with forest management and use rights (Dev *et al*, 2003, Yadav*et al*., 2003). This landmark shift in forest management although considered significant in forest conservation, whereas equitable benefit distribution of the forest resources among the Community Forest User Groups (CFUGs) is still a discourse.

Community forestry can play a significant role in reducing the rural poverty if the marginalized groups are treated equitably in terms of access to FPs (Niraula, 2004). However, CFUGs are very heterogeneous in their make-up, and different economic class users tend to have their own preference in term of FPs. Richard *et al.*, 1999 indicates that CF program of Nepal is primarily dictated by production of intermediate forest products those that are utilized mainly by households with land and livestock holdings. According to Pokharel*et al.,* (2006) it is usually the poor people who primarily benefit from forest-based enterprises through employment. However, there are only limited data related to equity-based distribution of forest products to different groups of people (Verma, 1988).Additionally, there is also a sense of realization thatequitable benefit sharing of resources might not be sufficient in fulfilling the forest product requirement of the forest users. This study therefore aims to examine whether or not theeconomic status of the rural households affect the preference level in terms of forest products. By analyzing the underlying links among the economic conditions of forest users, the study also explores management options for the conservation and wise use of the CF resources.

Material and methods

Study area

Two community forests,Bhitteripakhaand Kalobhirof Dolakha, a mid hill district of Central Development Region Nepal (Fig..1)was selected for this study as this area represented afour-decadelong CF program history with CFUGs covering heterogeneous economic spectrum. Characterized by sub-tropical to sub-alpine climate both the study CFs were found to host tree species such as Thingresalla (*Tsugadumosa*), Gobresalla (*Pinuswallichiana*), Rani Salla (*Pinusroxburghii*), and NTFPs species, such as Lokta (*Daphne bholua*), Argeli (*Edgeworthiagardnerii*), Dhasingare (*Gaultheria frarantissima*), Chiraito (*Swertiachirayita*), Angeri (*Loyaniaovalifolia*) and Pakhanbed (*Bergania ciliate*). Kalobhir CFis located in the Jiri Valley extending in an area of 545.25 ha which is 55 km east of Charikot, the district headquarter. The community forest is located from 2000 to 3300 m above sea level and contains 215 households with a total population of 1088. Similarly, Bhiteripakha forest is located at about 10 km west of Charikotand covers an area of 362.31 ha locatedfrom2100 to 3300 m above sea level. There are 234 HHs with a total population of 1338. Both the CFUGs constitutes fairly a good composition of ethnical and economical heterogeneity among the user groups with majority of them being of Tamang ethnicity. The main occupations of the

CFUGmembers are agriculture, private and public service, small business and labor works.

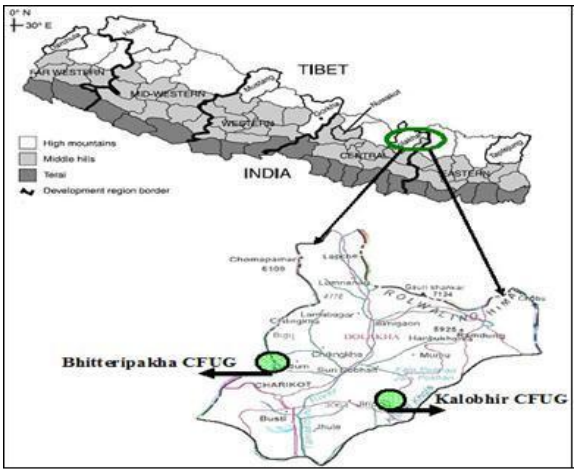

Fig. 1. Location of the Study Area.

Data collection and Analysis

The study is based mainly on primary data and information collected in the year 2010, basically from three participatory tools. Firstly, the well-being ranking, a useful tool for the grouping of households according to their relative wealth status (Chambers, 1994) was used to explore the economic status of the total households. This process was facilitated by twentykey informants, 10each from the studied CFUGs with the help of metacards. The households were categorisedinto foureconomic classes (Table 1) namely, rich, medium, poorand very poor based on a predefined set of criteria as.

Table 1. Classification of households indifferent economic groups.

Rich Economic Class (REC)	Medium Class (MEC)	Poor Economic Class (PEC)	Very Poor Economic Class (VPEC)
Year long food security with surplus for sale	9-12 months food security	6-9 months food security	3-6 months food security
Family member in a permanent government or private job	Family member in a permanent government or private job	Work on daily wages	Work on daily wages
Land size > 0.8 hectares of land	Land size: 0.5 - 0.8 hectares	Land size: 0.25-0.5 hectares	Land size< 0.25 hectares

Table 2. Presents number of households by economic conditions. Table shows that majority of the members in CFUGs belongs to medium economic class followed by poor, rich and very poor HHs.

Table 2. Total households according to economic class.

SN	Name of CFUGs	Total HHs	Percent of HHs			
			Rich	Medium	Poor	Very Poor
1	Kalobhir	215	21.9	49.3	18.1	10.7
2	Bhitteripakha	234	21.8	37.6	25.6	15.0
	Total	**449**	21.8	43.2	22.0	12.9

Fig. in the parentheses indicates the respondent surveyed.

Secondly,focus group discussions was organized with the each categoryrespondents to identify and prioritize different forest products which they collect from the CFs .Of the 10 products, which they are collecting, five forest products with highest preference were selected for further analysis as the most important FPs.

Lastly,stratified random samplingwascarried out to understand relationship between the preferred forest products and economic stratum. The sampling intensity was fixed at 25% from each economic stratum. A semi-structured household questionnaire survey was carried in 115 households from two CFUGs.Questions were asked to obtain information on household size, employment, food security, land and

livestock holdings, preference of major forest products and the CF benefit sharing mechanism. The collected data were then analyzed with the help of the Statistical Package for Social Science (SPSS) version 15.0. Descriptive and inferential statistics was used to interpret results.

Table 3. Number of respondents surveyed by economic class.

SN	Name of CFUGs	No. of households				Total HHs surveyed
		Rich	Medium	Poor	Very Poor	
1	Kalobhir	12	27	10	6	55
2	Bhitteripakha	13	22	16	9	60
	Total	**25**	**49**	**26**	**15**	**115**

Results

Forest Product Distribution Mechanism

Both the study CFUGs were found to have a written constitution and operational plan as guiding documents for regulating FPsextraction and distribution. Distribution of timber was on need basis. The OPs of both the CFUGs were found to have a written provision for the household for acquiring the required amount of timber after the payment of a fixed amount of royalty as allocated in the OP. However, timber could also be distributed free of charge given the circumstances that the CFUG household demanding timber belongs to thepoor group and/or struck by natural disaster and the demanded timber is utilized for house construction or renovation. Fallen and dried wood was regarded asfuelwood, whichcould be collected throughout the year. In Kalobhir CF, to get such fuelwood, each household had to pay an annual membership price of NRs 25 to the CFUG. On the other hand, Bhitteripakha CF was found to haveno provision ofprice allocation for fuelwood. Although timber could not be subjected for selling in local market, fuelwood on the other hand could be collected and sold unless they are collected from standing trees. In the case of fodder, households of the CFUGs have the freedom to access the forest free of charge during the months of December to May, the period when there is fodder scarcity in private lands. OP of both the CFs were found to be silent about rules for harvesting and sell of NTFP species found in the CFs, with an exception for Lokta and Argali on which states a clear prohibition on their collection and sell. However, there were occasional provisions for the users to harvest NTFPspecies in the close monitoring of the executive members of CFUG during specified periods as per decided by the CFUGs. As fordomestic use of leaf-litter,dead branches and fallen twigs, these could be collected throughout the year.

Preference of Tangible Forest Products

Among various tangible FPs available in the study CFs, the users were found to mostly depend onfiveimportant forest products namely; fuelwood, fodder/grass, leaflitter, timber and NTFPs. These FPs wereidentified applying free listing methodology.This study on preference is based on these recognised major FPs.

Preferred forest productby Economic Spectrum

Respondents were asked for their preference on major forest products in three point ordinal scale (1 to 3), to which the studied households showed varied response. Table 3 shows the overall preference of the respondent by combining the two CFUGs with the grouping variable economic classes. Statistical analysis revealed the preference in fuelwood, fodder, timber and NTFPs to differ significantly among the varying economic groups (Table 3). On the other hand, no significant difference in the preference of leaf-litter among various economic groups was revealed.In both the CFUGs, it was fuelwood followed by leaf-litter that was the most preferred forest product preferred product by all economic class.

Table 4. Chi-Square test for preference of forest products in the studied CFUGs with grouping variable economic spectrum.

	Timber	Fuelwood	Fodder	NTFPs	Leaf-Litter
Chi-Square	24.003	31.819	8.593	11.864	3.39
df	3	3	3	3	3
Asymp. Sig.	0.000*	0.000*	0.035*	0.008*	0.335

a Kruskal Wallis Test
* Significant at 5%

In the Kalobhir CF (Fig. 2), the preference for timber was observed to increase with the improvement in the economic status of the households. Revealed as thepreferred product of the rich, 40% of the rich households categorised timber as their highly preferred FP. Fuelwoodon the other hand, was preferred by almost all respondents with a perfect 100% and 90% high preference of the very poor economic class PEC and the poor economic class respectively. However, there were some 10% of the rich respondents who categorised fuelwood as the least preferred product.Similar to fuelwood, NTFPs were also revealed to be highly and medially preferred by more than 50% of almost all economic classes. As for fodder, more than two third respondents from all economic classes showed medium preference. Nearly one-fifth of respondents from all classes have mentioned it as high preferred product while none of the respondents from the rich class have high preference on it. More than 50% respondents from rich and middle class considered leaflitter as a high preference FP whereas, for 60% respondents from poor class and 50% from the very poor class, leaf-litter was of medium and low preference respectively. The study also showed an indication of the preference for leaf-litter to be increasing with improvement of economic status similar to the preference for timber.

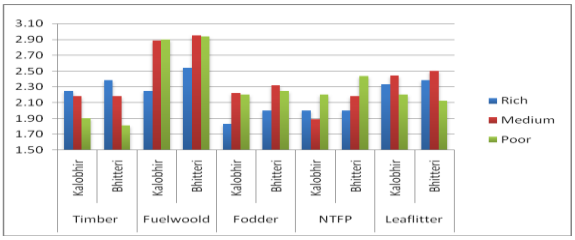

Fig. 2. Preference of forest products among different economic classes.

Regarding Bhitteripakha CFUG (Fig. 2), the rich economic class and the medium economic class, similar to Kalobhir CFUG were observed to have high preference for timber ascompared to the respondents from the poor economic class and very poor economic class. Not a single household from the poor economic class and very poor economic classconsidered timber as ahigh preferred forest product. In addition, more than 50% respondents of the very poor economic classconsidered it to be least preferred. Similarly, the analysis of the survey revealed that the user groups representing all the economic spectrum of this CFUGregardedfuelwood was the most preferred FP. More than 90% of households from all classes of CFUGs, except the rich economic class, mentioned it as a highly preferred product. Likewise, few households (7%) from rich class mentioned it as a low value product.

Regarding NTFP, approximately one third respondents of all classes had high preference for NTFP species and nearly half of respondents of the poor class preferredNTFP as a medium value forest product. Similarly, no respondentrepresenting the poor class mentioned it as low preference. In the case of fodder, although a little less than one third of the respondent indicated it as high value product, more than 75% of them showed their medium preference to this FP.The affinity to fodder, however, was observed to be higher in the medium and the poor economic classes. Similarly, more than half of respondents from rich and medium classes indicated leaf-litter as a high preference product while nearly half respondents from very poor class mentioned it as a low preference. Almost one-third respondents from poor economic

class indicated high preference for leaflitterwhile half of them mentioned it as a medium preference. Overall, the trend followed by leaf-litter in Bhitteripakha CFUG was also seen in parallelism to the preference in the KalobhirCFUG.

Discussion

Consistent with the findings of Adhikari*etal.*, (2004b) and Poudel (2003), this study also indicatedpreference on FP is very much influenced by economic status of the users. It was observed that the preference for timber increased with the improvement in economic status, showing a positive relationship between the preference of timber and the economic class. Timber was most preferred by the rich economic class followed by the medium in both the CFUGs, possibly because of their higher capacity to construct or renovate infrastructure, such as housecompared to the poor economic class and the very poor economic class. Although, both the CFUGs had provisionsof providing timber free of cost forthe very poor class, timber was found to be of least priority for them. On the other hand, the preference for NTFPs could mostly be attributed bythe limited sources of income and NTFP collection, processing and trade might increase their income(Adhikari*et al.*, 2004a). Commercial collection, processing and trading of NTFP species has always been one of the most important livelihood strategies for Nepal's rural poor where upto 50% of the rural households' income are derived from commercialization of NTFPs (Edward, 1996). High preference of the poor economic class and very poor economic class for NTFPs is possibly related to their engagement in harvesting of*Edgeworthiagardeni, Daphne bholua, Swertiachirayita,* mushroom and other NTFPs for commercial purposes. Another reason for being a high preference of NTFPs for the very poor class of Kalobhir CF could be because these users are getting profit out of their share in a Nepali hand made paper company whereas none of the shareholders of a paper company of Bhitteripakha CF are getting a profit out of their share. The medium preference towards NTFPs in both the CFs is possibly due to the involvement in agriculture activities and very few are engaged in NTFPs collection and trading. Preferences for timber and NTFPs were observed to be mainly attributed by economic factors.

In terms of fuelwood preference, results were found to be parallel to the findings of other studies where fuelwood is one of the top preferred forest product by all economic classes (Adhikari*et al.*,2004b;Thomas, 2008).Particularly in the mid-hills, 94% of rural households rely on fuelwood as primary fuel for cooking and heating (Edmonds, 2002). Fuelwood is not only important to household for cooking but also for protecting them from cold. During winters, the poor andthevery poor household when unable to invest money on warm clothes, they generally depend onfuelwood to make themselves warm. The close proximity ofKalobhirCFUG to the second largest market of the district–Jiri and the presence of paper making factories near both the CFs might also have aided in increasing the preference for fuelwood. Additionally, the higher economic class users have access to alternative energy sourceslike LPG and a substantial quantity of theirfuelwood requirement is fulfilled from their private land. Hence, they have less preference for it whereas for the poor economic class and the very poor economic classfuelwood selling is one of the important livelihood strategies.Demand and collection for fodder is dependent on the number of livestock holdings (Adhikari*et al.*, 2004a). The minimum preference for fodder by the rich economic classof both the CFUGs, could be attributed to the greater land holding (capable of providing fodder) with this economic strata, which might have lowered their total dependency on fodder from the CFs. On the other hand, the medium economic class and the poor economic class own relatively less land for fodder to feed a relatively high number of domesticated cattle which explains the group's high preference for fodder.Leaflitter is generally used as bedding material for livestock and also for preparing compost fertilizer for agriculture land. In both the CFUGs,it was the medium economic class that was revealed to have the highest preference. Major occupation of medium economic classhousehold

is agriculture and livestock farming hence require more leaflitter, whereas the very poor economic class has less quantity of both land and livestocks so they required less quantity of leaflitter and the preference is also least.

Conclusion

This study concludes that the preference over FPs varied acrossthe rural economic spectrumand it generally was the rich economic class those preferred more valuable forest products as compared to the poor who preferred subsistence and commercial forest products influenced by their limited income source (Paudel, 2003). Social factors, such as income sources, livelihood strategies, land and livestock holding were found to be influencing factors for determining preference.The study also shows that there is a need to emphasize on promoting the pro-poor benefit distribution mechanism in CFUGs to address the most vulnerable groups.The very poorusers are still deprived of getting maximum benefit from CF who is actual needy for that. Lastly, as OP of CFUGs, are not based on the preference of the actual users, in the long run its seems beneficial to incorporate the preference of forest products by the users in either the initial OP or at least at the renewal of the OP. This incorporation would be fruitful for CFUGs as well as for the long term wellbeing of CFUGs.

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