

Local pricing system of forest products and its relations to equitable benefit sharing and livelihood improvement in the lowland community forestry program in Nepal

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## Abstract

The study examines the relationships between local pricing system of forest products and its effects on equitable benefit sharing and livelihood improvement of user households who are living in and around the forests. The community forest user groups of lowland in Nepal have practiced low pricing strategy for high value forest products considering the access of socio-economically poor households. However, the study suggests that even though the low pricing strategy was designed considering poor households, rich households greatly benefited from the forest benefits. The study further enlightens that the low price for high value forest products particularly timber is counterproductive for equitable benefit sharing among the user households in the areas of heterogeneous socio-economic conditions. In addition, the strategy is defective for collecting adequate community fund and carrying out enough livelihood improvement activities at the local level.

**Keywords:** Community forestry program; Pricing strategy; Forest products; Lowland; Nepal

## 1. Introduction

A large number of studies on forest decentralization claimed that the community-based forest management approach is crucial to increase the efficiency, equity, and greater response of governments to citizen demands (Agrawal *et al.*, 1999; Larson, 2002; Agrawal and Gupta, 2005; Batterbury and Fernando, 2006; Ribot *et al.*, 2006; Palmer and Engel, 2007). Agrawal and Gibson (1999) suggested that the construction of local institution is essential for community-based natural resources management; however, such institution may need minimum conditions for successful implementation (Wade, 1988; Ostrom, 1990; Agrawal, 2001). Their argument is that the local institutions have greater understanding of their local society and resources, and therefore they can implement a local plan of forest management more effectively and efficiently than centrally imposed ones. Such institutions have decisive roles to organize the local people, conserve the forest resources through their collective efforts, and improve their livelihood particularly those who are living in and around the forests (Springate-Baginski *et al.*, 1998; Sunderlin *et al.*, 2005; Sunderlin, 2006; Wollenborg *et al.*, 2006; Baral and Heinen, 2007). The latest forest policy of the World Bank (2004) also emphasized the transfer of forest management powers to the local communities in order to reduce poverty and integrate the forest benefits in overall economic development process. However, such power transformation always requires construction of accountable local institutions and decision-making capacity to whom the powers are devolved (Agrawal and Ostrom, 2001; Larson, 2002; Ribot, 2002; Tacconi, 2007). Nepal is one of the pioneer countries to implement community forestry program under decentralized forest policy regimes in the world (Gilmour and Fisher, 1991). The program has constantly been implemented since 1970s to date. In the program, the government transfers the forest management powers to the local institution called Community Forest User Group (CFUG) based on the criteria of access to forests, traditional use rights, willingness to take management responsibilities, and capacity to manage forest area (Acharya, 2002). As of 2006, 14,258 CFUGs were formed and these CFUGs covered two-fifths of total population and one-fifth of total forestland (Kandel and Kanel, 2006). The program has tremendous positive effects in local resource conservation and local livelihood improvement (Kanel and Niraula, 2004). The positive outcomes of the program has also transferred to other domains of natural resources management such as watershed conservation and protected area management (Kanel, 2004). In the program, each CFUG designs an operational plan with technical prescriptions of forest management and a constitution of forest with local rules and regulations. The CFUG constructs an executive committee to operate forest management activities on day to-day basis. The committee is expected to be a representative

of all segments of the society following the site-specific characteristics such as gender, castes, and ethnicity. Overall, the CFUGs manage the forests based on collective efforts and share the forest benefits among the user households on equitable basis (Gautam *et al.*, 2004; Kanel, 2004; Kanel and Niraula, 2004; Nagendra *et al.*, 2005). The program simultaneously aims to conserve the forest resources and livelihood improvement of local people on a sustainable basis.

The concept of community forestry program was introduced in the mid-hill. The mid-hill households have common interest on forests management and use. In many instances, they have indigenous forest management system. Conversely, the lowland topography is plain and fertile for agriculture production. The households were distributed asymmetrically. They have diverse interests on forest management and use as they were migrated from various parts of the country. They also lack indigenous forest management system. However, the government has implemented same model of community forestry program in the lowland with same objectives that has been developed in the mid-hills. The outcomes of lowland community forestry have mixed reactions as the lowland households have heterogeneous socioeconomic conditions and the forest resources have higher economic potential (Baral and Subedi, 1999; Chakraborty, 2001; Iversen *et al.*, 2006). In addition, the forest products collection and consumption depend on socio-economic characteristics of households in the mid-hill (Adhikari *et al.*, 2004; Maskey *et al.*, 2006). Such dependency also raised a question whether the equitable benefit sharing and livelihood improvement objectives can achieve in the lowland where local households have heterogeneous socio-economic conditions. The pricing of high-value forest products is also crucial to collect community fund and carry our livelihood support through timber rent (Bampton and Cammaert, 2006; Dhakal and Masuda, 2007a). In this study, we focused on local pricing system and its effects on equitable benefit sharing and livelihood improvement of user households which are the common objectives of lowland community forestry program of Nepal. The lowland CFUGs are independent to fix the price of forest products and sell them to the user households on equitable basis. In the mean time, they are also independent to collect a community fund and utilize it focusing to better forest management and better livelihood of user households. The forest products pricing and financial mechanisms are not only designed to ensure the equitable benefit sharing and sustainable use, but also rural development and livelihood improvement of user households. Since the Sal (*Shorea robusta*) forest are considered a highly valuable resources for local livelihoods and regional industry (Webb and Sah, 2003), the CFUGs have possibility to collect a large community fund from the sale of forest products and develop each CFUG into a strong local institution with sufficient financial sources from community forest management. In this background, our main concern is what kind of forest products pricing system and financial mechanisms are in practice in the lowland community forest and how it affects in equitable benefit sharing and livelihood improvement of user households, where the forest resources have higher economic potential and local communities have heterogeneous socio-economic conditions. In summary, the paper presents basis for timber price fixation, compared the price to other timber-selling agents whether it is cheap or expensive, and examined whether the timber benefits are distributed equitably among the user households or not. In addition, the paper presents some insights on how the price affects to increase or decrease the access of user households over the forest benefits along with community fund collection and livelihood improvement. Finally, the paper suggests some policy implications.

## **2. Methods**

### **2.1. Study sites and data collection methods**

The study was carried out in the lowland of Nepal (Fig. 1). The lowland is extended from east to west along with southern border with India. The land topography is plain and fertile for agriculture production. It is also popular for food grain and main attraction to hill migrants. The lowland was infested by Malaria until the 1950s. The government eradicated Malaria in the 1960s. The construction of national highway in the 1970s made the area an attraction to hill migrants. As of 2001, 48.4% (11.2 million) of country population resides in the area (CBS, 2001). The communities have diverse socioeconomic characteristics such as gender, occupations, caste/ethnicities, education and origin as they were migrated from various parts of the country. The constantly increased population has inserted human pressure on forests. The lowland forests annually decreased by 1.3% from 1978/79 to 1990/91 and by 0.08% from 1990/91 to 2000/01 (Gautam *et*

al., 2004; DoF, 2005). The government has implemented community forestry program aiming sustainable forest management and improve the people's livelihood.

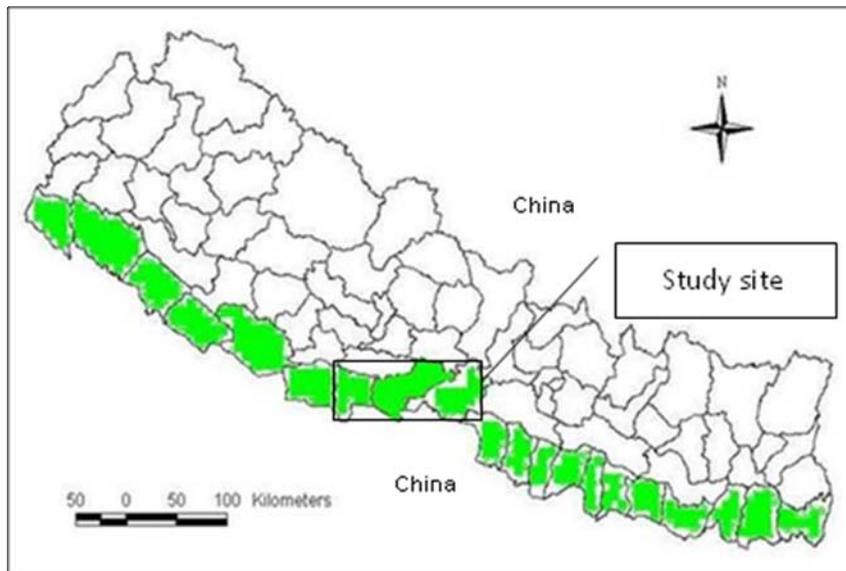


Fig. 1. Location of study sites

The study sites are located in three districts: Rupandehi, Nawalparasi, and Chitwan of central lowland of Nepal. Six CFUGs (Fig. 1). Two CFUGs from each district were selected based on the three criteria: i) dominance of commercial species particularly Sal (*Shorea robusta*), ii) relatively long experience (five years or more) of community forest management, and iii) having a better recordkeeping system of forest products with harvesting and distribution.

Table 1. Basic attributes of selected CFUGs

Forests	Area (ha)	Household	Forest area/ Household	Executive committee members
Rudrapur	418	1,178	0.35	21
Rajapani	141	307	0.46	11
Chautari	355	937	0.38	13
Sundari	385	1,352	0.28	13
Kankali	737	1,795	0.41	15
Dudkoshi	596	1,005	0.59	17
Average	439	1,096	0.41	15

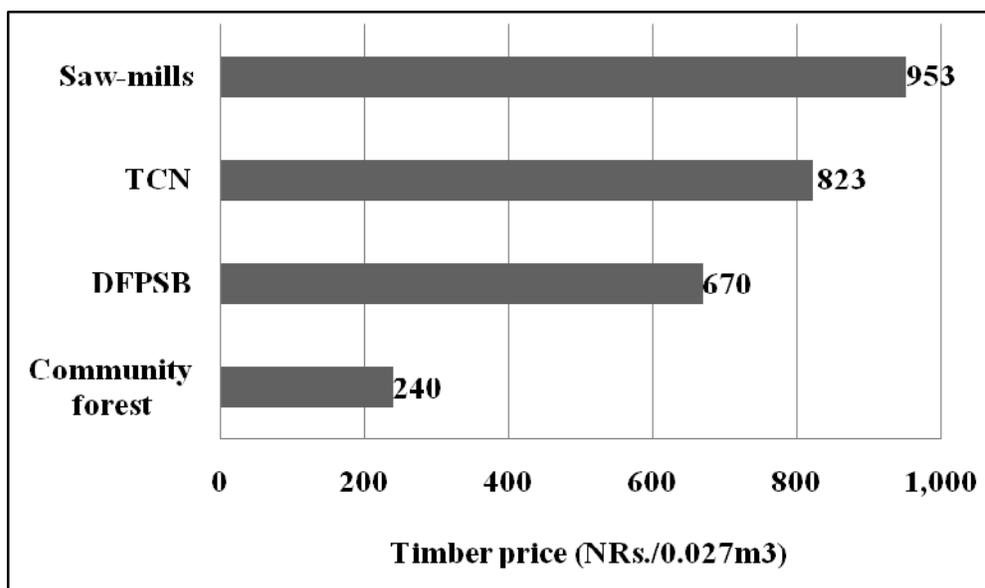
Source: Records of respective CFUGs, 2006

The minting of meeting, forest products distribution register, annual report and annual auditing report were used as the indicators of better record-keeping. The average forest area and member households per CFUG were 439 ha and 1096 respectively (Table 1). The forest area per household ranges from 0.28 ha to 0.59 ha which is 2 to 4 times less than national average. In all six CFUGs, majority of the households were immigrants from various parts of the country. Subsistence agriculture was the main source of livelihood, and almost all the households depend on nearby community forest for firewood, fodder/grass, and timber to supplement their other incomes. The discussion with government officials was carried out at two levels. First, it was discussed with officers, Rangers and Forest Guards who closely linked to the community forests. Second, the one-on-one discussion was carried out with high-level officials at central and district levels on policy matters. In addition, the one-on-one discussion was carried out with concerned field staff of community forests. The discussion with field staffs was crucial for rapport building with executive committee members and selected households. The discussion was focused on community forestry policy and their facilitation roles on pricing of forest products. Similarly, the group discussion was also carried out

with executive committee members of six CFUGs on price fixation of forest products particularly timber and its effects on equitable benefit sharing, collection of community fund, and livelihood improvement of user households. In addition, the questionnaire was distributed to 90 executive members of six CFUGs, but only 69 members responded in the given time and the remaining 21 members were excluded from the study. The fieldwork was carried out on November and December 2006 and a complementary visit was conducted on September and October 2007 in order to reconfirm whether the timber distribution was equitable or not and also crosscheck the pricing effects on livelihood improvement. For comparison purposes, the timber price of community forest and other timber-selling agents, namely the Timber Corporation of Nepal (TCN), District Forest Products Supply Board (DFPSB) and private sawmill were collected, calculated, and compared from the respective organizations. The average timber price of community forest was calculated from each CFUG. Similarly, the average price of DFPSB was calculated from different rates of three districts. The TCN fixed the same timber price for lowland districts, whereas the average price of private sawmills was calculated from the different rates of 15 private sawmills nearby the CFUGs.

## 2.2. Data analysis approach

The CFUGs always take the collective choice rules and the executive committees implement them with operational decisions on day-to-day basis. The structure of executive committees was assessed whether they properly represented based on the socioeconomic structure or not. A Chi-square test ( $\chi^2$ -test) was performed in order to know the influence of social characteristics of executive members on timber pricing decisions. Similarly, in order to compare whether timber benefits were distributed equitably among the user households, the timber distribution records and household lists were compared and analyzed respectively. Two empirical methods were applied to assess the equitable distribution of forest benefits particularly timber. First, the households that purchased the timber were ranked based on the ascending order of timber quantity. Then it was grouped into five categories from bottom 20% to top 20% households, and compared with quantity of timber they purchased. Second, the social well-being grouping which was carried out at Sundari and Chautari CFUGs based on the landholding size, food sufficiency, education, occupation, household and income was used whether timber equitably distributed or not. Such analysis was carried out only two forests as they applied during the study time. The forest products role to community fund collection was compared between forestry and non-forestry sources. Similarly, the forest products role to livelihood improvement is discussed based on the community fund collection and use on various items of forest management, community development and office operation with table and figures. For the analysis of financial mechanism, the sources of community fund were divided by the income sources into two: forestry and non-forestry sources, and explained in relation to price and its effects on community fund collection and people's livelihood support.



Source: Field survey, 2006.

Fig. 2. Comparison of timber price, December 2006

### 3. Results

#### 3.1. The forest products pricing decision

The general assembly of CFUG is the apex body of forest management decisions. It is held once a year and finalized the collective choice rules. The executive committee on the other hand takes the operational decisions for day-to-day community forest management. The executive committee of six sample CFUGs consisted of an average of 15 members and ranged from 11 to 21 (Table 1). The committee members of four CFUGs were selected based on consensus while the remaining two CFUGs by an election process. For the sake of balanced decisions, the social characteristics such as sex; caste/ethnicity, education; occupation and migration were duly considered while selecting the committee members. One community forest has selected an all female executive committee members to show an exemplary work of women leadership and initiative. The committees took the day-to-day decisions, kept records such as the minutes of meetings, and informed the decisions to all user households. They also sanctioned persons involved in illegal activities such as unauthorized harvesting and collection of forest products including rule breakers going beyond the committee decisions. The committee held meetings at least once a month and some months more than once if the situation demanded. Normally, following the provisions of operational plan and constitution of forest, the committee took the decision of forest products collection, distribution, and price fixation. They fixed the timber price based on three criteria: i) timber production costs, ii) CFUGs office operation costs and some community development costs at local level, and iii) purchasing capacity of poor households and took the final approval from general assembly. The lowland forests have access to the road and do not take much production costs mainly while carrying out harvesting and logging works. The office operation costs are prerequisites, and only the savings from the production and the office operation costs are available to community development activities.

Table 2.  $\chi^2$ -test between social attributes of committee members and their perception on timber price

Member attributes		Decision on timber price		Total (n=69)	$\chi^2$ -test
		Cheap	Expensive		
Sex	Male	40 (93.1)	3 (6.9)	43 (62.3)	2.3806*
	Female	21(80.7)	5 (19.3)	26 (37.7)	
Caste and ethnicity	Superior <sup>1</sup>	33 (89.2)	4 (10.8)	37 (53.6)	0.0251*
	Inferior <sup>2</sup>	28 (87.5)	4 (12.5)	32 (56.4)	
Education	Illiterate	17 (89.5)	2 (10.5)	19 (27.5)	0.1563*
	Literate	44 (88.0)	6 (12.0)	50 (72.5)	
Occupation	Agriculture	55 (91.1)	6 (8.9)	61 (88.4)	0.4520*
	Non-agriculture	6 (75.0)	2 (25.0)	8 (11.6)	
Migration	Migrated	54 (90.0)	6 (10.0)	60 (86.9)	0.2598*
	Indigenous	7 (77.8)	2 (22.2)	9 (13.1)	
Selection procedure	Consensus	57 (89.1)	7 (10.9)	64 (92.7)	0.0133*
	Elected	4 (80.0)	1(20.0)	5 (7.3)	

Source: Field survey, 2006

\* The  $\chi^2$ -test is significant at 5% significance level, df = 1 and the parenthesis shows the percentage of total.

The diverse socio-economic characteristics such as gender, occupations, caste/ethnicities, education and origin of executive committee members (native or migrant) were examined whether these social characteristics of executive members affect the timber pricing decision or not. Of the 69, 61 (88%) executive members responded that the current timber price is cheap. An independent Chi-square test ( $\chi^2$ ) was performed between the socio-economic characteristics of executive committee members (Table 2) and decision of timber price (cheap or expensive) in order to know whether the social attributes of committee member have relation while taking the pricing decision or not. It was hypothesized that there is no relation between the socio-economic attributes of committee members and their decision-making on timber price.

<sup>1</sup> Brahamin and Chettri were considered as the superior caste

<sup>2</sup> Except Brahamin and Chettri, other all castes including ethnic groups

The results showed that there is no close association between social characteristics of executive committee members and pricing decision of timber. Irrespective of social characteristics, majority of the community members accepted that the current timber price is far cheaper than the market price.

### 3.2. Comparison of timber price with potential market value

The average timber price (240 NRs./0.027 m<sup>3</sup>) of six community forests was compared with three timber-selling agents considering the species, timber quality, proximity to market and transportation. The three timber-selling agents are TCN, DFPSB and private sawmills. The TCN is a corporate government body that pays the minimum royalty to the government, and harvests and sells the forest products mainly timber and firewood from the national forests to the local and national markets. Its main aim is to supply timber and firewood to the urban areas on a regular basis. The TCN has fixed a universal price NRs. 823 for 0.0271 m<sup>3</sup> timber to all lowland districts. Similarly, the DFPSB is a committee of government representatives to supply the timber and firewood to the lowland districts. Each lowland district has one DFPSB. The DFPSB also harvests timber from national forests and fixes the reasonable price and sells to the people. The supply of forest products mainly to development works and households suffering from natural calamities are its main objectives. The DFPSB of each lowland district independently fixed the timber price. The average price for the three study districts is NRs. 670/0.027 m<sup>3</sup>. On the other hand, sawmills are private enterprises with a profit motive. They purchased the timber either from government and TCN, or from community forests, and sell to the local and national market. Therefore, the timber price of private sawmills is slightly higher, which is quite natural in a market economy. Nevertheless, the price of timber fixed by community forest is three to four times cheaper than other timber-selling agents (Fig. 2). During our field survey, we observed a big gap between timber price fixed by community forest groups and other timber-selling agents. We therefore asked the executive committee members about the possible reasons behind the low price of timber whenever the timber is the most valuable product to all community forests while the quality of timber is same. They assured us that the user households have heterogeneous socio-economic conditions and low pricing strategy is essential to increase the access of poor group households over the timber benefits. They further argued that the poor households have low purchasing capacity and cannot afford higher timber price. Following the statement of executive committee members, we also examined whether annually produced timber was equitably distributed across the social well-being groups or not. A social wellbeing grouping which was only developed by two community forests in order to subsidize the poor households and ensure the equitable forest benefits sharing were used to examine the timber distribution across the social well-being groups.

### 3.3. Collection and distribution of timber

The lowland community forests produced mainly three types of forest products namely timber, firewood, and fodder/grass on regular basis (Table 3).

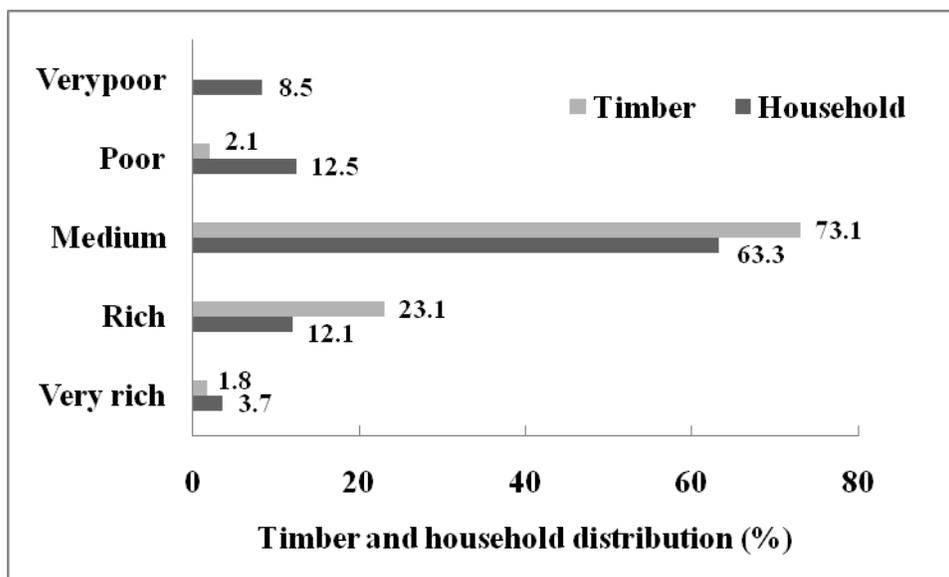
Table 3. Forest products types, collection and distribution methods in six CFUGs

	Collection methods		Disposal	
	Self-collection	CFUG-collection	Free of cost	Charged
Timber	-	√	-	√
Green firewood	-	√	-	√
Dry firewood	√	-	√	-
Fodder and grasses	√	-	√	-

Source: Field survey, 2006

In all six sample CFUGs, user households can collect dry firewood that is dead wood and fallen branches, twigs including leaf-litters and fodder/grasses free of charge directly from the forests based on their own demand. The user households however should follow the collection time, quantity limitation, and harvesting methods that may vary from forest to forest. Each community forest has its own collection times, which is normally 3–7 days and 2 to 3 times once a year and allow only one person from a household. Even four CFUGs have fixed the entry and exit points for easy monitoring. These controlled factors of collection

time, allowable labor and predetermined entry and exit points are found decisive in reducing the potential inequality. On the other hand, given that timber and green firewood (actually byproduct of timber) have higher economic potential, community forests have practiced separate collection and distribution methods. Each CFUG carried out harvesting and logging work using hired workers. The hired workers principally should be the same CFUG members. But in four community forests they were hired from outside because of skilled labor scarcity. Before harvesting took place, government officials support the CFUGs to estimate the annual allowable cut based on sustained yield as outlined in the operational plan. They also provide training to the committee members on marking the selected trees, harvesting techniques so that falling trees do not do much damage to the forest ecosystem. Manual axes and handsaws were used to fell the trees, cross cut the logs, and saw into lumber. The sawn lumber is collected at a yard nearby the CFUG office and sold to the CFUG members. The six CFUGs produced a total of 556.5 m<sup>3</sup> of timber in fiscal year 2006. The timber was purchased by 1356 households, ranging from a minimum of 0.027m<sup>3</sup> to a maximum of 3.4m<sup>3</sup> at the price of NRs. 240/cu. Ft (NRs. 0.027/m<sup>3</sup>). In order to check the equitable distribution of timber benefits, we ranked all households of six CFUGs in ascending order; those who purchased the timber in fiscal year 2006, and the households were divided into five categories (I, II, III, IV, and V) at the interval of 20% from bottom to top respectively. The results showed that the bottom 20% households purchased only 4.7% of total timber produced, whereas the top 20% households purchased 47.4% in the fiscal year 2006. This result further revealed that one group (bottom) of household's shared small quantity of timber whereas large quantity of timber is consumed by the other (top). However, the result further posed a question, as to who purchased the higher quantity of timber, socio-economically better-off households or poor? In order to answer this question, we compared the distribution of timber across the social well-being groups of two community forests. The social well-being grouping was developed by respective community forest based on the visible criteria of land holding size, occupation, income sources, education, housing conditions and means of transportation of each household. The Sundari CFUG produced 91.4 m<sup>3</sup> of timber in the fiscal year 2006 and it was purchased by 266 households at minimum price fixed by the committee. The results disclosed that 21.0% of the total user households belong to very poor and poor groups, which purchased only 2.1% of the total timber produced. On the other hand, 63.3% of purchasers categorized to medium group purchased 73.1% of the timber produced. The remaining 15.8% households belonged to the rich and very rich groups, and these households purchased 24.9% of the total timber produced (Fig. 3).

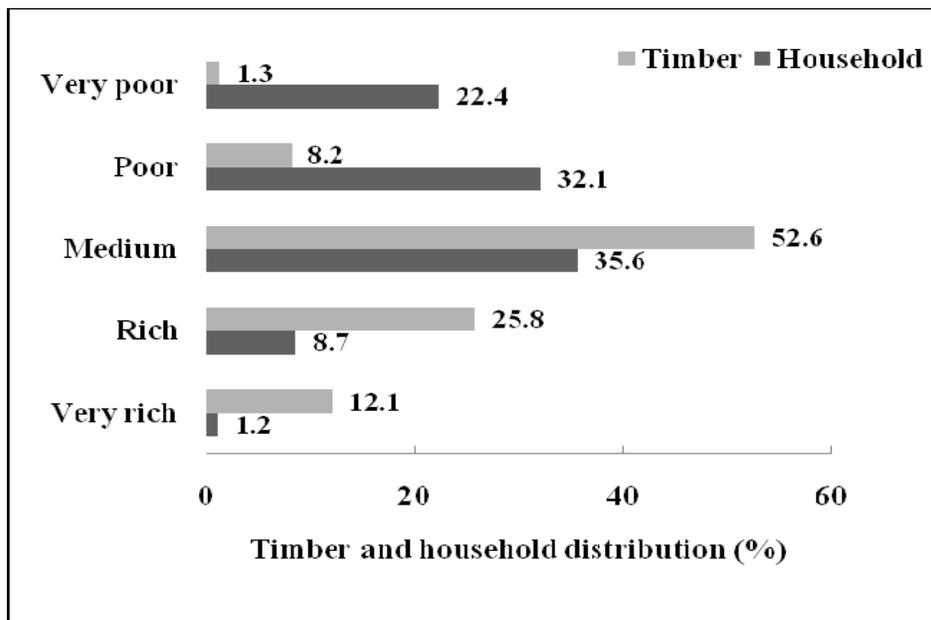


Source: Sundari CFUG, 2006

Fig. 3. Timber distribution by wealth ranking at Sundari CFUG in the fiscal year of 2006

Based on the timber quantity purchased by social well-being groups, the very rich, rich, and medium benefited most from the low pricing strategy. The inequality was found more severe in Chautari CFUG. The forest produced 90.3 m<sup>3</sup> of timber in fiscal year 2006 and it was purchased by 154 households. The distribution of timber across the social wellbeing groups disclosed that 54.5% of user households belonged

to very poor and poor groups, and these households purchased only 9.5% of total timber produced. The remaining 45.5% households belong to the medium, rich, and very rich groups and they purchased 90.5% of total timber produced (Fig. 4).



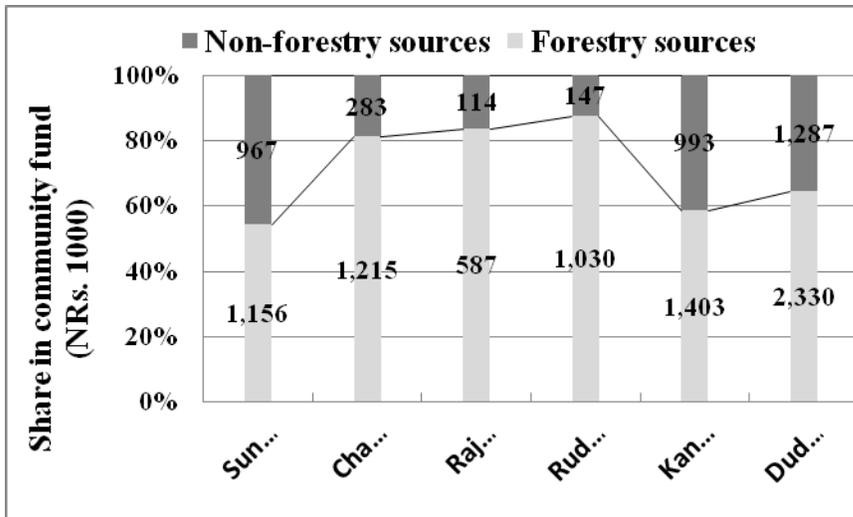
Source: Chautari CFUG, 2006

Fig. 4. Timber distribution by wealth ranking at Chautari CFUG in fiscal year 2006

The most advantaged group was the very rich, then rich and medium respectively similar to the Sundari community forest. From these two cases, the results revealed that the low timber pricing strategy was fixed considering the poor purchasing capacity of socio-economically weak households. However, better-off households purchased larger quantity of timber and they greatly benefited from the strategy.

### 3.4. Role of timber price in community fund collection and livelihood improvement

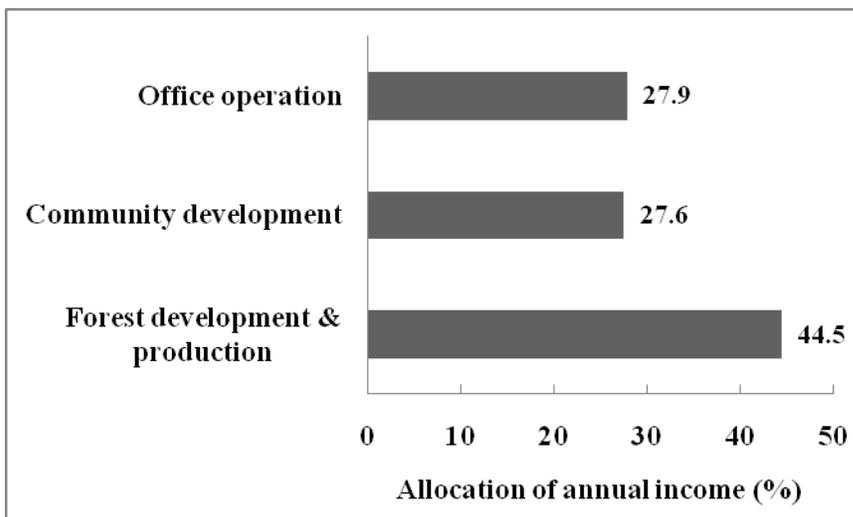
The lowland community forests are found rich for economic value and therefore the timber price is found decisive to increase or decrease the community fund collection by CFUGs. In order to assess pricing effects on livelihood improvement activities, first we differentiated the sources of annually collected community fund of sample community forests in fiscal year 2006. We found mainly two types of income sources to each CFUG namely forestry and non-forestry sources. The forestry sources included mainly sale of timber, green firewood, and other nominal medicinal products, while the non-forestry sources included membership fee, registration fee, and fines. The forestry sources contributed higher than non-forestry sources in all CFUGs. Moreover, we also observed that timber is the main source of community fund collected in all community forests; though the quantity and quality may depend on the composition of forests and tree species (Malla, 2000). The CFUGs normally sold their timber to member households; however, two CFUGs sold their surplus timber to an outsider through an auction. In fiscal year 2006, the community fund collection of six CFUGs from the forestry sources accounted for 60% to 93% of the total income (Fig. 5).



Source: Auditing report of respective CFUGs, 2006

Fig. 5. Shares of forestry sources in community fund collection in fiscal year 2006

The higher share of timber in community fund collection indicated that the price has a decisive role in community fund collection. It further reveals that a small increment in the timber price may increase the community fund significantly and vice versa. On the other hand, we also assessed the usage areas of collected community fund in order to understand its implication in relation to livelihood improvement of user households. The assessment revealed that each CFUG used its collected community fund for three main areas of forest management, community development, and CFUG office operation (Fig. 6).



Source: Auditing report of respective CFUGs, in fiscal year 2006

Fig. 6. Average allocation of community fund

The results showed that 44.5% of total community fund is used for forest management and development activities for example timber harvesting, logging, sawing, and other forest development activities such as seedling production in nurseries and plantations. Forest development costs mainly include seedling production and plantation activities. But none of the CFUGs has carried out plantation activities in fiscal year 2006. Therefore, they utilized their fund only for harvesting, logging and timber production works. Considering the sustainability of forests, the government has made it obligatory to all CFUGs to spend at least 25% of total annual income in forest development activities. However, the results showed that most of the CFUGs failed to meet the government's standard if they did not count their timber harvesting and production costs as a part of forest development. The CFUGs used 27.6% of community fund for

community development activities. They included drinking water scheme, rural road construction, school support, and gravelling, which varied from forest to forest based on the demands of each local community. Overall, these activities have positive support to livelihood environment improvement and have direct effects to keep the households intact in forest management activities. In addition, the households that did not benefit from direct use of forest products such as firewood and timber, the community fund directly benefited them. Similarly, these CFUGs have used remaining 27.9% for CFUG office operation on daily basis. This office operation cost was a prerequisite for day-to-day office activities; however, the increased trend of transaction costs may raise the question of efficiency of CFUGs as observed by [Dhakal and Masuda \(2007b\)](#).

## **4. Discussion**

### **4.1. Forest products pricing and decision-making capacity**

In the lowland, the government of Nepal has transferred a part of national forests to the local CFUGs with sufficient management authority including pricing decision of forest products. However, the CFUGs practiced low timber pricing strategy and the inequality problems were created while sharing the forest benefits. Because the lowland is characterized by heterogeneous socio-economic conditions and the equitable distribution of common property resources is a big challenge to the area. The low pricing strategy which is decided by CFUG aims to distribute the forest benefits equitably among the user households and also improve their livelihood, but the outcomes are controversial. Our main concern was why lowland CFUGs fix the low price. Although they gave three reasons for the low pricing (production costs, purchasing capacity of poor group households, and community fund for community development and office operation), we observed that a number of other hidden reasons are behind the low pricing strategy of forest products particularly timber. First, the CFUGs have a feeling that they are autonomous over whatever decision they want to take. Second, the local households volunteer to conserve and manage the forests and thus a favorable timber price is expected in return. Third, the migrated households are accustomed to free rider usage of common property resources as they were living in and around the forests. Fourth, the executive committee members are poorly aware on marketing information, timber value itself, and more importantly demand and supply relation in price fixation. The lack of decision-making capacity among the CFUGs is a big drawback to lowland CFUGs. The CFUGs do not follow the marketing rules where the intersection of demand and supply determine the price of goods and services. The executive members also seemed unaware of what types of effects arise from the low pricing strategy in equitable benefit sharing and livelihood improvement of user households. Since the Chi-square test ( $\chi^2$ ) showed no close relationship between social attributes of executive members and timber pricing decision, we can come to a point that the executive committee members have poor decision-making capacity on forest products pricing strategy. They also do not follow the supply part of forests and demand part of user households, whenever the supply part is almost fixed as annual allowable cut determine the annual harvesting quantity. On the other hand, the results of Chi-square also counter the assumption that the lowland executive committee is mainly selected from the elite social status and fixed the low timber price in order to capture the important and major parts of forest benefits. Therefore, the empowerment of CFUGs and more specifically executive committee members in decision-making are essential for better pricing decisions on forest products. The compatibleness between decisions made by CFUGs and community forestry objectives are also prerequisites for successful implementation of lowland community forestry. Otherwise, unilateral decentralized forest policy may devalue the value of forest products such as timber rather than increase the equity and efficiency of local institutions.

### **4.2. Social heterogeneity and equity problem**

The lowland is characterized by three distinct features: the forests have higher economic potential; surrounding households have heterogeneous socio-economic conditions and the government has a decentralized forest policy. The lowland community forestry aims equitable benefit sharing and livelihood improvement of user households through local forest management. The lowland CFUGs are facing dilemma of greater support to poor group households and larger amount of community fund collection. Citing the reason of equitable access of poor group households, the CFUGs practiced low pricing strategy, which contradicts the aim of a larger community fund collection. In addition, user households have diverse socioeconomic conditions; thus, the low pricing strategy created a suitable environment to grab larger

quantities of timber benefits by better-off households. Even though the low pricing strategy was designed to help poor group households, the access of better-off households is increasing at higher rate than poor households. The reason is that the better-off households always have higher disposable income and ability to afford greater quantity of timber. The results of timber distribution among the user households and across the social well-being groups also supported this argument. On the other hand, the large-scale of community fund is essential for livelihood improvement activities. However, the poor households cannot afford higher prices. Despite the low timber pricing strategy, why poor households did not purchase large quantities of timber is a wondering part of the study. We have also tried to find the answer to this question. Our supposition was either the current price is still expensive to poor group households or they do not need greater quantity of timber at whatever price. We received mixed answers from the respondents. They said that the current price is expensive to some poor group households so they cannot afford, while others replied that the poor households do not need greater quantity of timber like the richer households. Therefore, for those who do not need greater quantity of timber, the low pricing strategy is worthless. It just supports the better-off households to grab higher quantities of timber. On the other hand, those who feel the current price is still expensive indicated that they require a price reduction. However, the low price may further increase access to better-off households, if we do not fix the maximum ceiling of timber quantity that a household can purchase. To solve the problem of access and inequality, price discrimination is one of the options as the user households have heterogeneous socio-economic conditions. The low price for poor group households and higher price for better-off households not only increases the access of poor but also decreases the over-exploitation by better-off households, and the prevailing inequality may reduce and control. From the timber distribution records in the fiscal year 2006, the major parts of timber were purchased by better-off households. If the CFUGs fix the relatively higher timber price to them, the community fund may increase and control the ever increasing demand of forest products of immigrant households. However, the price may not be always the predicting factor because consumption of forest products also depends on various socio-economic factors (Adhikari et al., 2004; Mamo et al., 2007). Although, the decision made by the executive committee always aims at greater support to user households, it may sometimes pose difficulties to poor households whose basic livelihoods largely depend on local forest resources. For example, the low pricing strategy was designed considering the access of poor group households, but the better-off households benefited immensely. Similarly, price discrimination also raises a question why better-off households need to pay higher price for forest benefits whenever the user households have to equally bear and share the costs of forest conservation and management irrespective of their social well-being status in the community.

#### **4.3. Financial mechanism and livelihood relations**

From the phenomenon of lowland community forestry, three kinds of goods and services namely: money, labor, and forest products are inter-exchanged (Fig. 7).

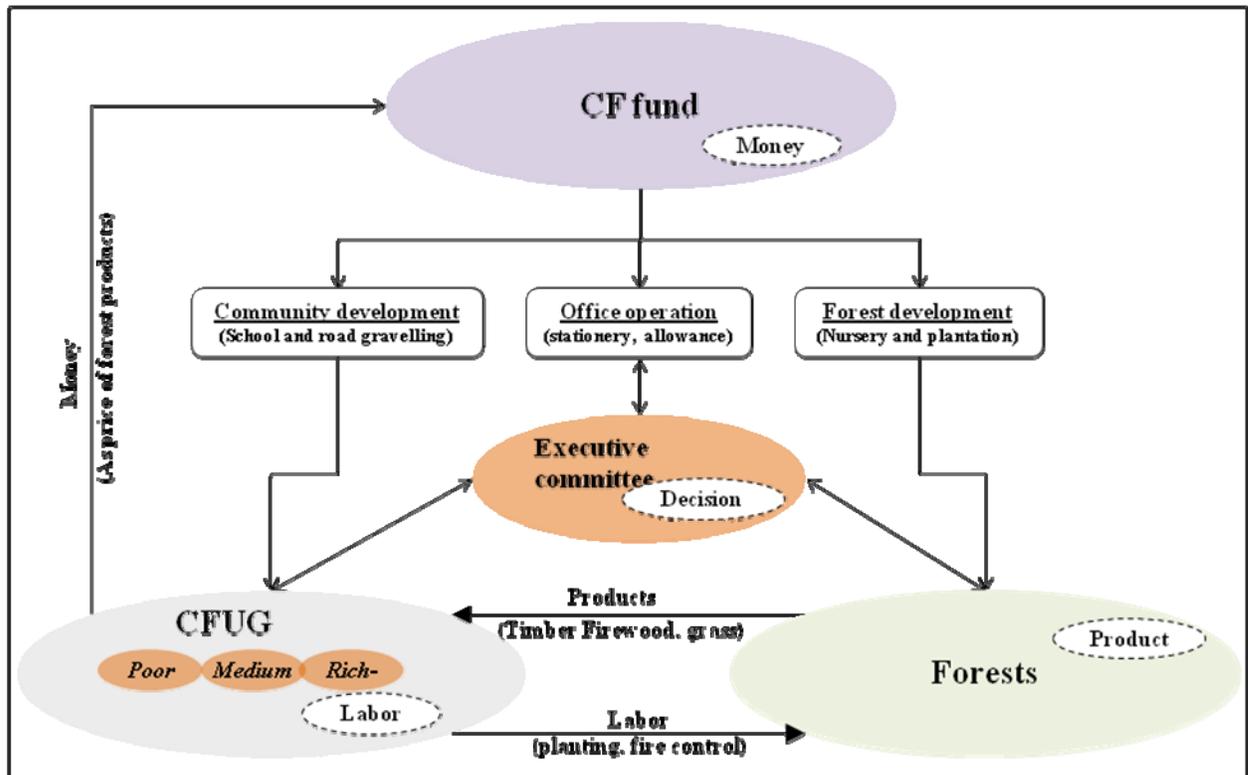


Fig. 7. Forests and livelihood relations in community forestry

The CFUG members who are poor, medium and rich by social status do volunteer contribution for planting and logging works and in return they get daily needs of forest products such as dry firewood and fodder/grass free of charge. Similarly, the households pay for timber and other valuable forest products to the committee and the money is collected for the community fund, which is used for community development, office operation, and forest development activities. Partially, the fund returns back to the user households in terms of community development such as school support and road gravelling. The community fund, which is used for community development activities, benefits the user households in two ways. First, the fund used for community fund in various community development activities creates a number of daily to seasonal employment opportunities. Second, development activities such as school, gravelling of road, and drinking water scheme make people's life efficient and comfortable. Similarly, the forest development activities also create similar types of daily wages to seasonal employment opportunities on one side and improved forest conditions on the other. The crucial point is, though the households pay the timber rent, it is collected for the community fund, and returns back to them with broader benefits of livelihood opportunities. The CFUG committees independently fix the price, collect a community fund, and utilize it. The CFUGs are autonomous to manage their own financial resources collected from the sale of forest products. The CFUGs are exempted to pay government royalty rate. However, the 25% of total community fund should be used for forest development activities. However, the CFUGs are losing a huge amount of annual income from their low pricing decision. For example the timber which market price ranges from NRs. 670 to NRs. 953/cu. ft. the CFUGs fixed it NRs. 240/cu. ft. on average (of six community forests) which is 2.8 to 4 times cheaper (Fig. 2). Moreover, the timber sold to user households at below market price is mostly purchased by better-off households (Figs. 3 and 4). Despite the fact low price, timber alone shares two-thirds of total community fund collection (Fig. 5). The study infers that pricing of forest products has wider effects on equitable benefit sharing, community fund collection and livelihood improvement of forest users. Since the current price is too much cheaper than other timber selling-agents, lowland CFUGs can increase the timber price and can collect a large-scale community fund. Such increased financial resources can be used either to manage the forests or carry out community development activities and generate income focusing to poor and marginalized households of the society. Theoretically also the study insists that fixing price of goods and services is crucial for equitable benefit

sharing and livelihood improvement while managing the common property resources particularly high value forests through collective action. The comprehensive studies on collective action in the past (Wade, 1988; Ostrom, 1990) were focused on institutional arrangements and design principles. The study also insights the lacking of equity and livelihood objective parts through pricing and valuation of resource in community-based forest management. The pricing seems critical to address the poverty reduction issues and maintain social justices in common property resource management through equitable distribution.

## 5. Conclusions and recommendation

We found that the lowland CFUGs have practiced low pricing strategy of forest products aiming at greater access of user households over the forest benefits. However, given that user households have heterogeneous socio-economic conditions, the rich households were greatly benefited from the strategy and it has also created inequality problems in benefit sharing. The better-off households purchased greater quantity of timber at below market price though the low pricing strategy was designed considering to the socio-economically weak households. Similarly, the low pricing strategy of timber is also defective for collecting adequate community fund and carrying out enough livelihood improvement activities at local level. Being that the timber has higher economic potential in the local market, the harnessing of full timber price is crucial to increase the community fund and carry out livelihood improvement activities. However, the user households have heterogeneous socio-economic conditions and therefore the full price might not be a suitable option to maintain equity and social justice while sharing forest benefits. Therefore, price discrimination across the wealth groups is the more appropriate option to reduce the prevailing inequality and side by side to increase the community fund. However, it requires social well-being classification of user households and their strong commitment to implement it. The constant facilitation of local forest officials to the CFUGs is also equally crucial. In addition, we also observed a problem in decision-making capacity of lowland community forestry institutions (CFUGs). Therefore, it is also recommended to reform the government policy and empower the decision-making capacities of local institutions along with transferring forest resource harvesting, pricing and distribution of forest products to them. Otherwise, the unilateral decentralized forest policy for example community forestry program may devalue the high-value resources rather than increase the value and improve the livelihoods of user households. The case is highly crucial where forest resources have higher economic potential and user households have heterogeneous socio-economic conditions.

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