

# Can rural livelihood be improved in Nepal through community forestry ?

<sup>1</sup>Keshav Raj Kanel and <sup>2</sup>Durga Raj Niraula

This paper attempts to quantify the contribution of community forests to the community development and livelihood of people in Nepal. Based on 1,788 CFUG information of 12 districts, CF programme in Nepal was found to provide around NRs 2 billion annually, which accounts NRs 1,865/ha and NRs 1,346/households (presently, one USD equivalent to NRs 73). Forest product is the main source of the users income, which constitutes more than 83% of total income. They expend 28% of their income in forest development and management and 36% for community development activities at local level. Their operational cost is nominal, around 14% of total expenditures. A significant amount of voluntary labour is contributed for forest protection and development, which accounts around 92 million in a year. This study reveals that there is a great potentiality of CF development programme in Nepal, and hence, contributing to improve community development and to reduce rural poverty.

**Keywords :** Community forestry, livelihood, Nepal

**M**ost of the rural people in Nepal depend on traditional agriculture and livestock for their livelihood. Forest is the major component of farming system and plays a vital role in rural livelihoods by providing fuel, construction materials, and animal feed. Having an agro-based economy, Nepal has to develop and manage the existing forest resources to achieve the national goal of poverty reduction as mentioned in Tenth Five Year Plan (2002-2007).

Since last twenty five years, Nepal has been implementing Community forestry (CF) programme to address the problem of forest degradation. It is the forest management strategy that ensures the participation of local people, called community forest user groups (CFUGs), in the management of forest and allow them to derive forest goods and services for their benefits. CFUGs have enjoyed much autonomy in decision-making, such as access rules, forest product prices, mechanisms for allocation of forest products, user fees and other important policies are agreed by user assemblies (NORMS, 2003). This indicates that there is a good reflection of the concept of good governance in CF programme in Nepal.

Although CF programme has played a vital role in the economic and social life of the people, there is a lack of empirical evidence of its contribution in rural livelihood improvement at national level. This paper

attempts to quantify the contribution of CF in monetary terms to the livelihood of local people.

The annual income-expenditure of CFUG; annual harvest; the user participation in forest management and; cost benefits of CF etc. make the basis for financial aspect of CFUG. First, the concept of community forestry is discussed in connection to livelihood and community development. Though all five capitals of livelihood can be derived from CF however, this paper has mainly focused on the financial aspects of the livelihood. It is expected that the findings of this paper can serve as a basis for the evaluation of CF programme and in designing optimal policy in the forestry sector of Nepal.

## Concept of poverty and livelihood

Poverty and livelihood are two interlinked and interchangeable terms used frequently by the professionals. In general, livelihood comprises the capabilities, assets and activities required for means of living and improvement of capacities and assets/resources required for sustainable living (LFP, 2003). To sustain rural livelihoods, a range of activities are pursued including both the access to assets and the use to which they can be put and are mediated by social factors (social relations, institutions,

<sup>1</sup> Deputy Director General, Community Forestry Division, Department of Forest; krkanel@infoclub.com.np

<sup>2</sup> Assistant Forest Officer, Community Forestry Division, Department of Forest; drn2002@wlink.com.np

organizations) and by exogenous trends (e.g. economic trends) and shocks (drought, disease, floods, pests) (Ellis, 1999).

The world leaders meet in September 2000 and agreed on Millennium Development Goals (MDGs) to be achieved by 2015, using 1990 as a benchmark (UNDP, 2003). In Nepal, high proportions (38 %) of people are still below poverty line and are risking reduced livelihood options. The Tenth five year plan of Nepal (2002 - 2007) and the Poverty Reduction Strategy Paper (PRSP, 2002) aims to reduce the proportion of people under poverty to 32 % by the end of Tenth Plan period and 10% by the end of Twelfth Plan. In this perspective, every programme of forestry sector including community forestry has to contribute to the reduction of poverty in Nepal.

### Community forests for livelihood improvement

Forest attributes such as diversity and abundance provide a range of goods and services to the people. In economic analyses, these goods and services are generally divided into *use value* (physical goods and recreational benefits) and *non-use values* (i.e. the ecological functions) (Grimble and Laidlaw, 2002). Livelihood promotion, sustainable management of community forest and good governance are closely linked concepts. Sustainable forest management provides multiple goods and services to the people, which can improve the livelihood. Good forest governance leads to the transparency and decentralization of resources and authorities, which in turn empowers the people including women and disadvantaged groups and results into better management of the forests and help maximize benefits to the people. The increasing forest benefit diversifies the livelihood assets and options. The inter-linkages of sustainable forest management, livelihood and good governance is shown in figure 1.

Forest can improve the welfare of communities by providing multiple goods and services. It is widely accepted that millions of rural people depend on forests for their livelihood and that forests provide a 'safety net' particularly important to the poor (Levang, 2003). Forests are also a significant source of

employment and income. For example, total forest-based employment is around 47 million full-time equivalents worldwide (ILO, 2002a). Formal sector employment is more than 17 million. Employment in the informal sector is much higher (34%) (Blomback and Poschen, 2003).

CF can provide all five livelihood capitals. Access to the forest products provides the natural capital. Income and employment through forest operations can generate the financial capital. The sustainable management of the CF improves agricultural production and maintains the biodiversity that in turn increases the livelihood assets to the people. The increased livelihood assets widen the choices and options to develop strategies of sustainable livelihood.

Many studies have shown that poverty is closely associated with low levels of education and lack of skills (Ellis, 1999). Training and extension programme organized through CF increases the skill and knowledge of the users and thus helps to select, design and implement the appropriate livelihood strategy for them (LFP, 2003). Improvement in income opportunities and human capital of the poor would naturally reduce their vulnerability to adverse shocks and would promote their livelihood. Forest policies, Forest Acts and CFUG rules, the CFUG organization, social relations and networks, inclusion through the active participation of women and disadvantaged groups and the practice of democratic process in decision-making increases the social capital of CFUG.

The CFUG funds (financial capital) and the CFUG institution (social capital) can be used to develop physical capital such as roads, drinking water supply, school, and irrigation canal at local level, which improve the well being of the people. These have important impact on poverty reduction and livelihood diversification by improving the markets, speeding the flow of information and resources and integrating local economy into national economy. It is expected that mobilization of local people in the whole process of planning, implementation and benefit sharing of CF ensure lower unit costs, better quality of work, greater transparency in fund utilization, greater local ownership and more long-term sustainability (World Bank, 2003).

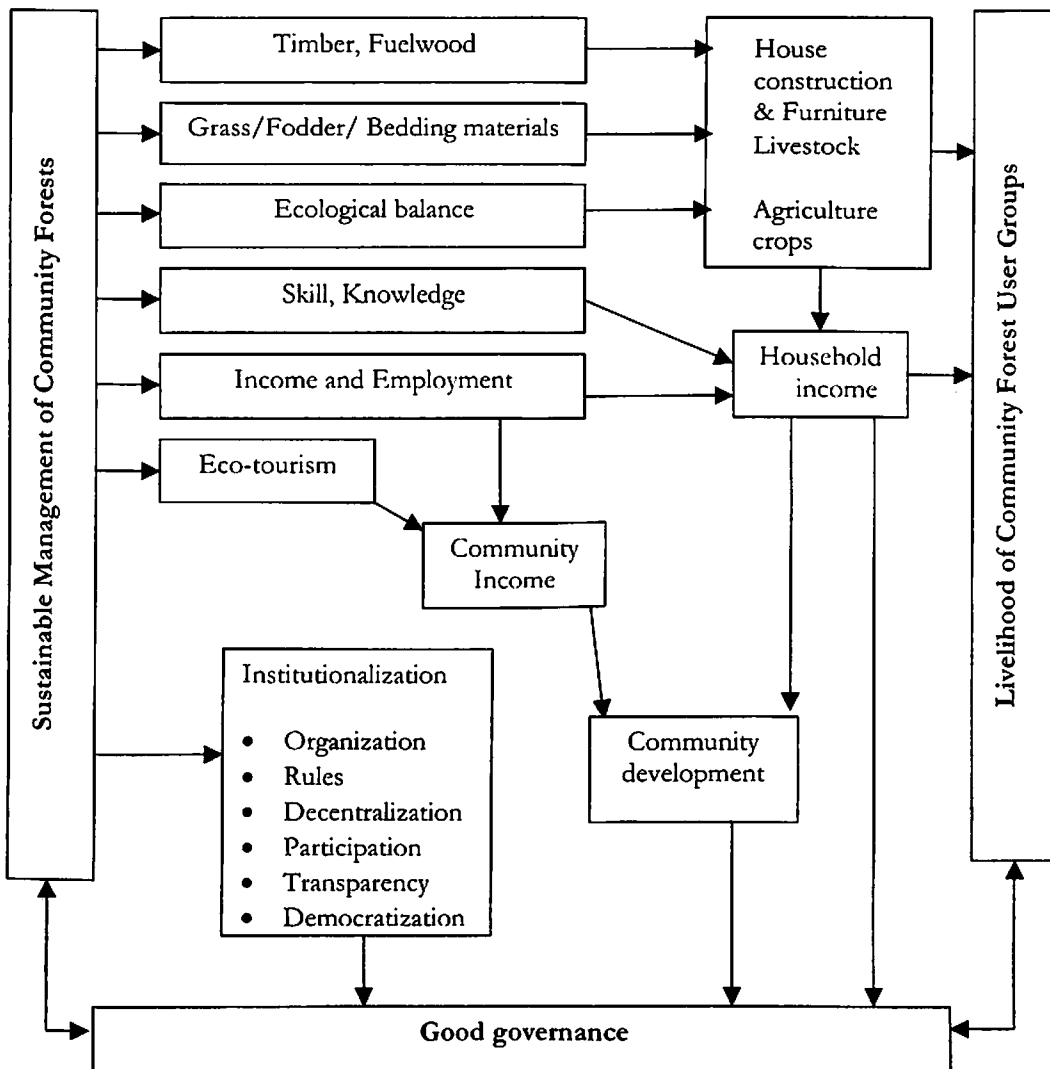
**Methods**

The data for this paper have been collected from 1,788 CFUGs from 12 districts of Nepal. The data regarding the forest products harvested and used internally within CFUG members and sale outside, the annual income and expenditure of CFUGs are collected from the districts through District Forest Offices (DFOs). Of the 12 districts, Ilam, Dhankuta, Nuwakot, Syangja, Palpa, Pyuthan and Jumla are considered as Hill/Mountain districts and Siraha, Rupandehi, Dang, Surkhet and Kanchanpur are considered as Terai, Siwalik and Inner Terai districts. The districts are selected based on ecological zone, physiographic region, development region and the support from different donors. Sampled districts are divided into two groups, Hills/Mountains, and Terai, Siwalik and Inner Terai. In this paper, Hills/Mountains are referred to as ‘Hill region’ and Terai, Siwalik and Inner Terai are referred as ‘Terai region’.

Among 1,788 CFUG data, 247 are in Terai region and 1,541 in Hill region.

**Data analysis**

Since the objective of this paper is to quantify the CF contribution to the livelihood of the people, the detailed statistical analysis is not performed. The results are discussed based on simple frequency analysis. The data of forest products harvested (quantity), CFUG income and expenditure are discrete values and used directly for analysis. The price of forest products provided by the concerned DFOs is referred as ‘user value’ in this paper. The monetary value of forest products is also calculated using stumpage price, which is based on the government royalty rate, and excludes the cost of collection, transportation and overhead cost. There are many plant species in the community forest and royalty rate are different for different species. For



**Figure 1: Inter-linkages of community forestry, livelihood and governance**

this reason, weighted average rate is calculated based on the national proportion of tree species found in the CF. The royalty rate is multiplied by the proportion of species found in CF and added up to get the weighted average stumpage price of timber<sup>3</sup>. For example, *Shorea robusta* (Sal) comprises 34.13% of trees in the CF of Nepal and its royalty rate is NRs 250 per cubic feet. Similarly, NRs 1, NRs 0.5, NRs 10 and NRs 3 per kilogram of fuelwood, per kilogram of grass/fodder/bedding materials, per kilogram of *Acacia catechu* (Khair) and per kilogram of pine resin respectively, are considered as stumpage price. In general, half of their corresponding market price is taken as the stumpage price for fuelwood and grass/fodder/ bedding materials to exclude collection and overhead cost. Since, there are varieties of species with different prices, only user price is considered in case of 'medicinal and herbal products' and 'other forest products' valuation.

There are 13079 CFUGs in Nepal by April 2004. They comprise of 1,471,466 households and covers 1,061,723 hectares (ha) of forestland. Total CFUGs are broken down into two groups, Hill and Terai regions. There are 12,127 CFUGs in Hill region, which comprises 929,152 ha of forests and 1,264,957 households. Out of 1,788 sampled CFUGs, 1,541 CFUGs are from Hills. Similarly, there are 952 CFUGs in Terai region of Nepal, which consists of

206,509 households and manage 132,570 ha of forestland. A total of 247 CFUGs are sampled from this region. Extrapolation of the information from 1,788 CFUGs provides the national figure.

## Result and discussion

### Forest products harvested and used

The value of forest products is calculated by using both user and stumpage price as mentioned earlier. The quantity of forest products harvested and used internally by the CFUG members and sold outside is given in Table 1. Proportion of the value of forest products shown in the table is based on their stumpage price. Among the forest products, timber generates the highest percentage (69.26 %), followed by fuelwood (18.42 %) and grass/fodder and bedding materials (10.10 %). Higher proportions of forest products are used internally by CFUG members (79.10 %). Khair, medicinal and herbal products, pine resin and other unidentified (miscellaneous) forest products are also collected from community forest but their share is very low in terms of money value.

In both Terai and Hill regions, majority of forest products are used internally by CFUG members (86 % and 76 % respectively). Whereas, Khair, medicinal and herbal products and pine resin are sold outside.

Table 1: Forest products harvested, used by CFUG and sold outside in Nepal

Forest products	Used /sale	Quantity	User price (NRs)	Stumpage price (NRs)	Percentage
Timber (cu ft)	Internal	8,007,879	28,684,781	930,275,342	73.21
	External	2,930,742	356,547,535	340,464,335	26.79
	<b>Sub Total</b>	<b>10,938,622</b>	<b>643,388,315</b>	<b>1,270,739,677</b>	<b>69.26</b>
Fuelwood (kg)	Internal	335,639,314	30,175,738	335,639,314	99.31
	External	2,331,724	9,797,217	2,331,724	0.69
	<b>Sub Total</b>	<b>337971038</b>	<b>39,972,955</b>	<b>337,971,038</b>	<b>18.42</b>
Grass/Fodder/Bedding materials (Kg)	Internal	370,644,865	14,226,944	185,322,433	10.10
Khair (Kg)	External	3,130,982	37,040,774	31,309,818	1.71
Medicinal/herbal products* (Kg)	External	95,477	1,529,197	1,529,197	0.08
Pine resin (Kg)	External	1,347,791	7,303,183	4,043,373	0.22
Other forest products* (Kg)	External	372,882	3,881,586	3,881,586	0.21
Total	Internal		331,243,462	1,451,237,089	79.10
	External		416,099,491	383,560,033	20.90
	<b>Total</b>		<b>747,342,954</b>	<b>1,834,797,122</b>	<b>100.00</b>

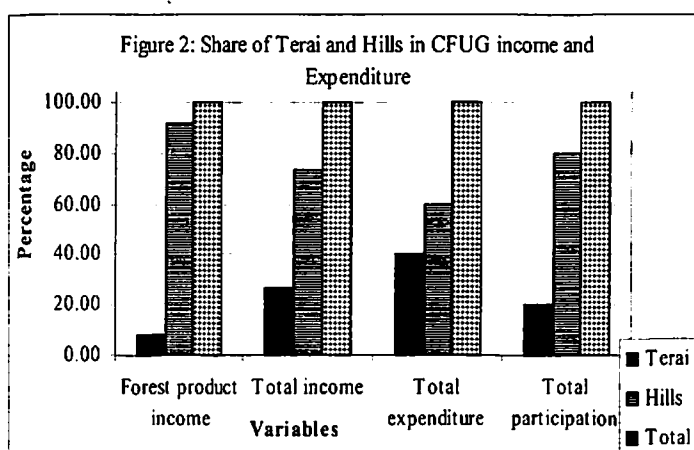
Note: \* Price based on CFUG records

<sup>3</sup> Weighted average stumpage price of timber: Sal 34.13% (NRs 250); Pines 24.03 % (NRs 50); Other hardwoods 41.83% (NRs 45) = NRs 116.17 / cu ft. Presently one USD is equivalent to about 73 NRs.

## Income and expenditure

The annual income for CFUGs are presented in Table 2. Based on user price, annual income of CFUGs in Nepal is NRs 913.8 million. Forest products are the major source of CFUG income, which constitutes around 82% of total income. It is even higher in Hills (90.40%), but not so high in the Terai (59.15 %). The second largest source of CFUG income is from 'other sources', not identified clearly that accounts for 35.29%. CFUGs are also receiving grants from government and non-government organizations, the fees of their members, fine and punishment and entrance fees paid by the visitors. But these sources contribute insignificantly in their total income. The share of Terai and Hills in CFUG income, expenditure and participation is shown in Figure 2. If we value the forest products by stumpage price, the annual CFUG income reach to NRS 1.9 billion.

The annual expenditure of the CFUG are given in Table 3. The data shows that CFUG are spending



28.46 % of their income in forest protection and management. It is higher than the mandatory level mentioned in Forest Act and Regulation (at least 25%). CFUG expense in training and extension, which is a basic activity to develop human capital of the CFUG members, is only a small fraction (2%). It may be due to high level of support from government agencies and NGOs. The community development comprises the highest proportion of CFUG expenses (36%), which includes school support, road construction and other community infrastructure

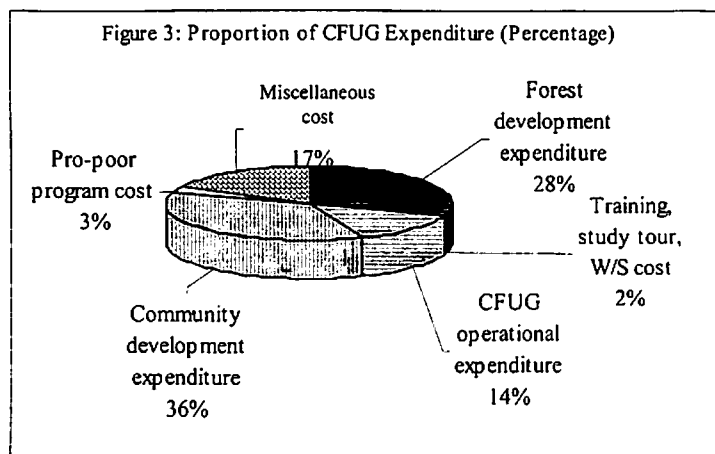
Table 2: Annual Income (NRs) of CFUGs in Nepal

Income source	Terai	%	Hills	%	Total	%
Forest product sale	143,305,329	59.15	604,074,653	90.40	747,342,954	81.78
GO / NGO grants	4,040,627	1.67	4,040,627	0.60	11,416,005	1.25
Fine/punishment	1,921,990	0.79	2,981,133	0.45	4,903,186	0.54
Membership fees	5,062,717	2.09	6,688,963	1.00	11,751,743	1.29
Entrance fees	2,359,803	0.97	2,417,298	0.36	4,777,105	0.52
Other income	85,487,836	35.29	27,040,978	4.05	112,528,839	12.31
Last year balance	90,253	0.04	20,999,190	3.14	21,089,495	2.31
<b>Total income</b>	<b>242,268,556</b>	<b>100</b>	<b>668,242,844</b>	<b>100</b>	<b>913,809,327</b>	<b>100</b>

Table 3: Annual expenditure (NRs) of CFUG in Nepal

Items	Terai	%	Hills	%	Total	%
Forest watcher	27,488,708	14.99	18,674,938	6.83	46,163,638	10.10
Silvicultural operations	31,108,914	16.97	52,773,342	19.29	83,882,297	18.36
Training, study tour, workshop	2,908,653	1.59	5,838,382	2.13	8,746,974	1.91
Stationary	3,780,050	2.06	26,556,550	9.71	30,336,610	6.64
Building construction	12,097,447	6.60	17,875,924	6.53	29,973,406	6.56
Rent/equipment	2,004,638	1.09	1,902,831	0.70	3,907,482	0.86
Salary/allowance	13,893,684	7.58	5,494,599	2.01	19,388,310	4.24
Meeting/assembly	7,520,316	4.10	1,390,590	0.51	8,910,853	1.95
Other group operational	0	0	226,268	0.08	226,267	0.05
School support	11,120,118	6.07	23,872,342	8.73	34,992,472	7.66
Road construction	995,638	0.54	22,361,760	8.17	23,357,394	5.11
Other infrastructure	18,518,452	10.10	57,491,735	21.01	76,010,178	16.63
Pro-poor programme	1,608,566	0.88	11,041,367	4.04	12,649,878	2.77
Miscellaneous	50,301,431	27.44	28,096,062	10.27	78,397,488	17.16
<b>Total cost (NRs)</b>	<b>183,346,615</b>	<b>100</b>	<b>273,596,690</b>	<b>100</b>	<b>456,943,246</b>	<b>100</b>

development. CFUG operational cost is the third biggest CFUG expenses. Stationary, equipment, rent, allowances etc are included under this heading. CFUG spend a high proportion of money (17.16%) under miscellaneous headings, which is the unidentified area of expenses. CFUGs are spending their money for pro-poor programme, although it is very low (3%). Pattern of CFUG expense is shown in Figure 3.



### Participation of CFUGs in forest protection and management

CFUGs are contributing through their voluntary labor in forest protection and management. It accounts a higher fraction of their contribution than stipulated in the forest legislation. People generally spend whole day for forest protection and silvicultural operations, whereas only few hours are spent in meeting and assembly. On an average eight hours in a day is considered as one man day and its value is calculated using average rate of NRs 65 per day. The proportion of CFUG contribution in terms

of man days and its money value is given in Table 4. On average, nearly forty percent (42.12%) of their contribution is for the protection of CF. It is even higher in Hills (47.59%), followed by participation in meeting and assembly (19.43%) and in forest products harvesting (19.07%). There is a different figure for the Terai. Only one fifth (20.59%) of their participation is for forest protection whereas, 41.10% for forest product harvesting. Similar to CFUG expenses, participation in training, study tour and workshop is also very low (0.47%). This indicates lower priority of CFUG for the development of human capitals. The participation in community development activities is not significant (4.96%). They are willing to spend more money but lower labor contribution in infrastructure development.

Total income of CFUGs both using user price and stumpage price and their expenditure in terms of per ha of forest land and per household (HH) of CFUG members has been presented in Table 5. The data illustrate that CFUG income based on stumpage price of forest products is more than double of that based on user price in Nepal. Regional variation is higher. It is more than triple in Hills but almost the same in the Terai, indicating higher user price in Terai. Including the value of user participation in annual CFUG expenses we can derive annual cost of forest management. Both per ha and per HH income are higher than corresponding costs in Nepal. However, the difference is narrower in the Terai region of Nepal.

Table 4: Participation of CFUG members in forest protection and management

Area of participation	Terai person days (No)	Terai %	Hills person days (No)	Hills %	Total person days (No)	Total Value (NRs)	Total %
Participation in forest protection	105,861	20.59	962,958	47.59	1,068,816	69,473,032	42.12
Participation in silvicultural operations	50,339	9.79	303,764	15.01	354,114	23,017,405	13.95
Participation in forest product harvesting	211,358	41.10	272,495	13.47	483,858	31,450,744	19.07
Participation training, study tour, W/S	2,319	0.45	9,527	0.47	11,836	769,372	0.47
Participation in CFUG meeting and assembly	97,515	18.96	395,550	19.55	493,078	32,050,090	19.43
Participation in community dev.	46,810	9.10	79,133	3.91	125,951	8,186,800	4.96
<b>Total participation</b>	<b>514,203</b>	<b>100</b>	<b>2,023,427</b>	<b>100</b>	<b>2,537,653</b>	<b>164,947,443</b>	<b>100</b>

Note: NRs 65 / person day

Table 5: Per unit CFUG income and expenditure (NRs) in Nepal

Variables	Terai	Hills	Total
Annual income/ha (user price)	1,827	697	841
Annual income/ha (stumpage price)	1,915	1,854	1,865
Annual income/HH (user price)	1,173	512	607
Annual income/HH (stumpage price)	1,229	1,362	1,346
Annual cost/ha	1,635	436	586
Annual cost/HH	1,050	320	423

## Conclusion

As an agro-based economy, the livelihood of the people is closely linked to the forestry in Nepal. The livelihood of the people can be obtained from the use and sale of forest products and services. Increasing livelihood assets through CF can decrease vulnerability, which in turn increases diversity in income and production. This paper has quantified the value of forest products in financial terms. Based on stumpage price (royalty rate), CF in Nepal can generate NR 1.8 billion a year, which is about the same as the total annual budget of the Ministry of Forests and Soil Conservation. It is based on the annual harvest of timber, fuelwood, pine resin and some medicinal and herbal products. There are many other products, such as bamboo, lokta (Nepali paper), edible fruits and tuber and other non-timber forest products (NTFP), which are not included in this calculation. Besides, many people argue that CF in Nepal is managed in a conservative way, meaning that the level of harvest is lower than the annual increment. In addition, there are various forest services, including climate regulation, soil and water conservation, aesthetic and religious values, which have positive impact on the livelihood of the people. Therefore, the above figure (NRs 1.8 billion) is only a fraction of total forest benefits supplied from the forest. Total benefits of CF would obviously be many times higher if all these products and services are included in the analysis

CF supplies benefits to CFUG members and they are investing money and voluntary labour in the protection and management of their CF. Annual income and cost of management based on per unit area and per household of CFUG, indicates that income from major forest products is higher than the cost of management, even based on user price. User price is a subsidized price; hence it does not reflect the real worth of the forest products. Therefore, stumpage price is used to compare the

cost and benefits of CF management. CFUG are investing NRs 586 per ha in managing their CF, including their participation. They are receiving NRs 1,865 per ha annually. Furthermore, CF can provide environmental, social, institutional and physical benefits. Considering all these benefits, it can conclude that CF is financially viable, environmentally sound and socially acceptable option of forest management in Nepal.

As the CFUG are investing a significant amount of money in community development, including school support, road constructions, water supply and so on, it could support them to diversify their livelihood options. School provides education to their children and hence enhances their capabilities in designing and implementing livelihood activities more efficiently. Road facility increases their access to markets for inputs and products supply. Similarly, irrigation increases the agricultural production. Similarly, drinking water supply scheme provides drinking water, thus reduces the risk of water born disease. Thus, the financial income, and the human and institutional capacity developed through the CF programme has a significant impact on the livelihood of the people. In this regard, community forestry is a development engine at local level.

## Recommendations

Following are the recommendations of this study;

- Coverage of all forest products that can be supplied from the forest in calculating the values of CF is necessary to derive the result closer to the reality. It is recommended to cover all forest products and environmental services in future study.
- It is obvious that CF programme can contribute to develop all five livelihood capitals as discussed earlier. Ensuring good governance through institutionalization of CFUG, decentralization of

authority and resources, participatory and transparency in decision-making and resources allocation and accountability in responsibility will help develop social capital. It is recommended that a separate complete study be carried out to cover all five livelihood capitals.

- Although this paper shows the overall CF benefits that can accrue to all CFUG members, it cannot segregate the benefits accruing to the poorest family of the CFUGs. Therefore, it is strongly suggested to carry out a study primarily focused on benefits channelled to the poorest of the poor from the CFUG fund.
- If a CFUG has fund in its accounts, it will be better to invest for skill enhancement and pro-poor focus programme within their CFUG members. Since poorer users are more vulnerable than better-off, the pro-poor focused programme within the CF should be designed and implemented so that it can greatly contribute to their livelihoods. Of course, they should not forget to invest in intensive forest management, which maximizes the benefits to them.
- Gender, equity and power relations are key cross cutting issues in the sustainable livelihood approach. Gender is an integral and inseparable part of rural livelihood because men and women have different assets, access to resources, and opportunities. Women may have lower education due to discriminatory access to education, and their access to productive resources as well as decision-making tends to occur through the mediation of men. This issue is not covered in this paper but it is recommended to be pursued this issues in the future.

## References

Blomback, P. and Poschen, P. (2003): Decent work in forestry? Enhancing forestry work and forest-based livelihood. Congress proceedings, A.

Forests for People; XII World Forestry Congress. Quebec City, Canada.

Conway, T., Moser, C., Norton, A. and Farrington, J. (2002): Rights and Livelihoods Approach: Exploring policy Dimension, Natural Resource Perspectives, DFID.

Ellis F. 1999: Rural livelihood Diversity in Developing Countries: Evidence and Policy Implications, Overseas Development Institute. <http://www.odi.org.uk/nrp/40.html>

Grimble, R. and Laidlaw, M. (2002): Biodiversity Management and Local Livelihoods: Rio Plus 10 Natural Resources perspective, 73, 2002 DFID. <http://www.odi.org.uk/nrp/73.pdf>

ILO. (2002a): Social and labor dimensions of the forestry and wood industries on the move. Report for the UILO F and wood Industries Meeting, September, 2001.

Levang, P., Dounias, E. and Sitorus, S., (2003);, Out of the Forest, out of the Poverty. Paper abstract submitted to International Conference on Rural Livelihoods, Forests and Biodiversity, Bonn, Germany.

LFP, (2003): Livelihoods Baseline Qualitative Report. Livelihoods and Forestry Programmeme, Nepal.

NORMS, DEV/ODG (2003): Social Structure, Livelihoods and the management of Common Pool Resources in Nepal. Overseas Development Group (ODG), University of East Anglia, Norwich and Natural and Organizational Resources Management Services (NORMS), Kathmandu, Nepal.

NPC / HMGN, (2003): The Tenth Plan Summary (PRSP). National Planning Commission, His Majesty's Government of Nepal.

UNDP (2003): Human Development Report, 2003. <http://www.undp.org/mdg/>

World Bank, (2002): Poverty and vulnerability in South Asia. Human Development South Asia Region.