ECONOMIC IMPACT OF COMMUNITY FORESTRY IN NEPAL: A CASE OF MID-HILL DISTRICTS OF NEPAL

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Abstract

The main objective of this study is to find the economic impact of community forestry. Specifically the study aims to indentify the elements of cost and benefits of community forestry and estimate the monetary value of costs and benefits. This study is basically based on secondary information including unpublished documents of Nepal Swiss Community Forestry Project (NSCFP). Due to the lack of refined data on the benefits and costs, first elements of costs and benefits were identified and estimation of monetary benefits and costs has been estimated with certain assumptions.

The study found that annual cost for the management of community forestry is about NRs. 119 thousand for each community forest user's group in the studied three districts. Of the total costs, about 64 % is borne by the forest user's group households mostly in the form of labour. The donor contributed about 16 % and the Government of Nepal contributed about 13 % of the total costs.Similarly the annual monetary benefits (only direct) per Community Forest User Group (CFUG) per year is NRs. 710 thousand. This indicates that the benefits are about 7 times greater than the costs even without considering the indirect benefits. Of the total about 80 % benefit comes from the forest products, about 11 % from time saving and about 7 % from employment generation due to better management of community forestry. It is also found that CFUGs are able to mobilize about NRs. 38 million and utililizing part of it for the development of community in different ways.

Key words: Community Forestry, Costs, Benefits, Poverty, Nepal

BACKGROUND

In the 1970s, Nepal's Government and a number of donor agencies began to be concerned about the accelerating degradation of Nepal's forests and the negative effects this was having on the environment. This led to local communities being given the rights to manage and use their local forests as the main strategy to reverse this trend. The subsequent successful conservation of Nepal's middle hill forests by bringing them under the sustainable management of local communities has been internationally recognized as a model development initiative. During the 1980s and 1990s the focus of Nepal's community forestry programme was on handing over national forest areas to local communities and supporting them to reforest degraded

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and bare areas and practice sustainable forest management. The priority was then to empower communities for not only protecting forests but also allowing them to benefit economically.

In the Hills of Nepal, forests are crucial component of farming systems and rural people's livelihoods. It provides fuel, construction materials and animal fodder, contributing to farmland fertility and to household monetary and non-monetary incomes. In the past twenty years, several landmark achievements have been made in the community forestry sector. Many donors supported Government and Civil Society Organizations to implement country forestry programme one of them is Nepal Swiss Community Forestry Program (NSCFP).

Since 1990, NSCFP has been supporting the implementation of the National Community Forestry Programme in *Dolakha, Ramechhap* and *Okhaldhunga* districts through multiple-partnerships modality with different actors with the aim of reducing poverty through forestry and thus contribute to the national poverty reduction strategy. It is mainly concentrating on four thematic areas namely forest governance, sustainable forest management, livelihoods improvement and pro-poor enterprise development programmes mainly for disadvantaged households and provide policy feedback.

Swiss funded NSCFP has helped to control the rate of deforestation in 184,756 ha of government owned national forest, improve the condition of 134,595 ha community forests, and contributed to the improvement of the sustainable livelihoods of 797,434 forest users (144,988 households) in the three districts (NSCFP, 2011). A total of 16,080 employments (90 days full time in a year) have been generated and contributed significantly to increase the income of 311,000 people living in poverty. At the moment Swiss has been supporting Government of Nepal and local communities for the strengthening of 1292 Community Forestry User Groups to protect and manage 319,351 ha. of forests in 4 districts (NSCFP, 2011).

Initially CFUGs were heavily supported by donor funded projects mainly for three types of activities, First, to train forest staff in order to set up CFUGs through a social mobilization process; second, to enable CFUGs to prepare appropriate forest operational plans; and thirdly to provide training to CFUG members to build their capacity and ensure institutional, ecological and economical sustainability.

In the last twenty years it is estimated that Swiss has invested nearly 34 million Swiss Franc in the three districts, government possibly have invested around the same amount   and more importantly the local communities must have invested almost 4-5 times more than the Swiss or the government to manage forests in these four districts (NSCFP, 2011).

The question now has been asked, how much benefit that community forestry has generated in return. It is in this context that this study is designed and an attempt is made to estimate the cost and benefit of Community forestry activities mainly in the three districts namely Dolakha, Ramechhap and Okhaldhunga.

OBJECTIVES OF THE STUDY

The main objective of the study is to find the economic impact of community forestry. Specifically the study aims to compare the benefits accrued from the program with the costs. For this attempt is made to identify all the parameters (elements) of the costs and benefits of community forestry and calculate them in monitory value with the available facts, figures and assumptions.

LITERATURE REVIEW

During the 1970's and 1980's economists developed the mechanism to estimate the benefits and costs for different development activities in different ways by different economists. Gittinger (1989) defines cast as anything that reduces an objectives and a benefit is anything that contributes an object. Similarly Pears (1983) has defined a benefit as any gain to any individual of a society. That gain may accrue in some monetary form or in some sense of secure of livelihoods, pleasure or happiness of the people. In the language of economics these gains are termed well-beings or utility gains and a cost, as anything that imparts a loss of utility or wellbeing. In welfare economics "costs" is always measured as foregone benefit or opportunity cost because these resources used in terms of costs could have been used to give well-being gains elsewhere.

Squire and Tak (1975), Price and Nair (1984), Pant (1984),Gittinger (1989), Pears (1991) have presented the foundation and origin of cost and benefits, time discounting and decision rules, efficiency and distributive weights, risks and uncertainty that are associated while operating and managing a project. And also Dergavel and Mohns (1984) and Gurugharana (1990) had used the tools of cost-benefit analysis to find out whether the designed community forestry projects were feasible or not in terms of financial and economic point of view.

Soussan (1991) have identified costs and benefits which have arisen during the evaluation of Koshi Hill Community Forestry Project (KHCFP). The identified user costs are the time needed for group activities, reduced product availability, charges of forest products, reduced access to the forest, the environmental impact of displaced degradation of other government forest and opportunity cost of poor management regimes. Similarly the benefits were the reversal of degradation of community forests, other environmental benefits, increased security of access to products, increased future availability of products, improved social cohesion and demonstration effect of available user group formation. The evaluation team only mentioned " who gains and

who losses" due to community forestry. However, they did not quantify the value of these identified costs and benefits.

Maharjan (1993) also reviewed some basic concepts of identification, quantification and valuation of socio-economic and environmental costs and benefits of community forestry and equitable sharing mechanism on the middle mountains of Nepal. It is difficult to generalize and give monetary value of cost and benefit from this study in the present context.

There are very few studies that estimate the economic impact of community forestry in monetary terms. Recently Livelihood and Forestry Program (LFP), (2009) make an impact study of UK government funded Livelihoods and Forestry Program in Nepal. The study is based on the baseline survey of 2833 households from 154 LFP supported community forestry user groups conducted in 2003 and follow up impact study amongst 1,350 households from 54 out of 154 user groups from the base line study carried out in 2008. It shows that the contribution of community forestry is about 25.4 % to increase the income of the households (LFP, 2009). The study shows that the one of the contributing factor for the income to the users was the time saving due to the more availability of forest products and other income generating activities under the programme.

Another report estimates the economic benefit and costs for the multi-stakeholder Forestry Program (MSFP) in Nepal. Among others the report shows that benefits of community forestry come from direct extraction of timber, fuelwood, fodder, grass, leaf letter due to the improved sustainable forest management and some indirect benefit due to higher carbon sequestration, soil stabilization, reduced flood risks and improved biodiversity. The report finds overall benefit cost ratio of the program as 2.8 and internal rate of return as 16. 6 %, using a discount rate of 6 % (MSFP, 2011). The appraisal report also estimates the benefits of reduced corruption due to improved forest governance assuming reduction in corruption in MSFP communities from 20 to 15 % level over 10 years (MSFP, 2011).

Review of the available literature reveals that there is not any comprehensive analysis regarding the estimation of cost and benefits of community forestry. In the past attempts were made to identify the elements of costs and also to develop methodology for the estimation of cost and benefits. Using these methodologies some micro level study has been made collecting primary data. Some made attempts to estimate the contribution of community forestry for the change in income and poverty levels. However, still the estimation of monetary costs and benefits at some macro level is still lacking. Hence this study attempts to bridge the gap for finding economic contribution of community forestry by estimating the costs and benefits in NSCFP supported three hill districts of Nepal.

RESEARCH METHODOLOGY

In order to calculate the costs and benefits, the researcher relied primarily on secondary sources of information, including project reports of NSCFP and data provided by the staff of NSCFP project office. Since there was a lack of detailed information on the benefits and costs, some assumptions have been made in the course of estimation of these costs and benefits from Community Forestry. First we attempt to identify the elements of costs and benefits then the assumptions regarding the estimation of monetary cost and benefits are presented in the subsequent paragraphs.

Elements of Cost

In any community forestry the major elements of costs are:

Labour Contribution by the Community: The major item of cost is the labour contribution by users for the seedling production, plantation, protection of forest etc. Study shows that it is about 64 % of the total cost of the community forestry (Pokharel & Nurse, 2004).

Material and Financial Costs for the Protection of the Resources: There are also the direct explicit and tangible costs. The users are paying cash or kind to the forest watchers for the forest protection work.

Secondary Costs: This is also known as transaction cost. Soussan et al. (1991) have identified many secondary costs such as time commitment demanded by users for both the formation process and for users' activities after formation of community forestry. Reduction in number of cattle due to lack of grazing ground and increasing incidence of wildlife damage on agriculture and livestock can be taken as the example of such cost.

Social Costs: The social cost is the cost which society bears when its resources are used to produce a given commodity. If the community forestry prohibits the traditional users of the forest (e.g. charcoal formation by blacksmith, alloy extraction by the fisherman etc.) then the traditional users may face social costs. Such cost may reduce the welfare of the society.

Government Costs: Many government staff work and support to the community forestry for the preparation of operational plan and development of forest. Hence the staff time of government personnel and salaries of these personnel is the cost from the government.

Donor Cost: Initially CFUGs were heavily supported by donor funded projects mainly for three types of activities, First, to train forest staff in order to set up CFUGs through a social mobilization process; second, to enable CFUGs to prepare appropriate forest

operational plans; and thirdly to provide training to CFUG members to build their capacity and ensure institutional, ecological and economical sustainability (Pokharel & Nurse, 2004). Hence there is also donor cost in community forestry where donors initiated and supported.

Assumptions

To estimate the monetary costs in NSCFP following assumptions are made:

- It is estimated that in middle hills districts 50-75%, depending on the type of districts, of government staff time is dedicated to the community forestry programme (Pokharel, Branney, Nurse and Malla, 2008).

- For the purpose of calculation of labour contribution the shadow wage rate is assumed as NRs 100 per day. Investment in forest watchers is assumed to be 365 person days per year per forest users group. 100 person days per year are spent for forest tending operations.

- The total cost for nursery operations and plantation establishment is equivalent to NRs 850 per ha of community forest per year (the average area per community forest is 90 ha.

- It is assumed that attendance at assemblies is 200 person days per year (each person spends 5-6 hours per assembly) for each user group. Similarly attendance in committee meetings is 60 person days per year (each person spends at least 2-3 hours). In the same way it is also assumed that 40 person days per year is spent for tole (hamlet) level meetings (Pokharel, Branney, Nurse and Malla, 2008).

Elements of Benefits

It is to be noted that the benefits that are accrued from community forestry can be categorized as direct and indirect. While direct benefits include increased availability of forest products, time saved, good governance, poverty reduction etc.. Among others, indirect benefits include the carbon sequestration, soil protection, and increase in land fertility, bio-diversity protection, watershed protection, land slide protection etc. Most of the benefits from community forestry are in indirect form and is difficult to estimate in monetary forms. However, some of the major elements of economic benefits are as follows:

a. Availability of Forest Products to the Community

These are direct and tangible benefits of community forestry. It includes the increase in availability of forest products such as fuel wood, timber, grass, leaf letter, bedding materials, green fodder, medicinal herbs and plants, poles etc. To estimate the quantity increased of these products LFP (2009) findings are used and for prices from NSCFP records are used.

b. Community Infrastructure Development

Most of the community forestry users group invest their fund for community infrastructure development of the society such as School building/roof Construction, Road/trail, Temple, Drinking water, Community meeting building, teacher salary, school furniture, health facilities, bridge, irrigation canals and ponds, electricity, toilet/ sanitation, water mill/ other mill, improved cooking stove etc. These investments would contribute for the economic and social growth within the community. It may have contribution for human development with better health and education. Though it is difficult to estimate the exact economic benefit from such development activities, we can estimate the economic benefit by assuming the contribution on income of the forest users by generating employment, and reducing poverty.

c. Employment Generation

The activities of the community forestry generate a lot employment within the CFUGs. To estimate the monetary benefits only the additional benefits is considered as the benefits from employment generation since the people may work even in other activities.

d. Time Saving

One of the important outcomes of community forestry is the increase in forest product that reduces the time for the collection of these products. Hence, the time is saved and the saved time can be utilized for income generating activities.

e. Good Governance

Good governance practice is one of the outcomes of the community forestry in Nepal. CFUGs have sensitized community members to have more inclusive governance with proportionate representation of women, dalits, and members from ethnic minorities and remote places. CFUGs have practiced systems of public auditing, public hearings and two-way communications and information flow both vertically and horizontally. These groups also contribute for corruption control, encroachment and reduce the forest offences and illegal logging by patrolling of forest. It is the only one institution at the local level in which elected village people govern since more than last 10 years. CFUGs democratically select or elect CFUG committees annually thus institutionalize democratic practice. CFUGs form networks and federations which have become strong nested organizations to safeguard users' rights.

f. Poverty Reduction

Much of the activities of community forestry are pro-poor. It is mandatory to invest about 35 % of the income of the community forestry in pro-poor programs. During the course of the study it is found that many programs of community forestry are directly related to poverty reduction. Hence attempt is made to estimate the economic benefit due to these activities.

g. Resource Mobilization and Increase in Income

Community forestry mobilizes a lot of resources. CFUGs generate the resources from the sale of the forest products to the users group and outside with the better management of forests. Such resources are utilized for the development activities of the community. Hence it may have contribution in the income and employment within the community.

h. Other Benefits

Other benefits include the rural and human development i.e. education, health and other social activities. This may have positive impact on income and employment of the rural poor within the community.

Assumptions

The monetary benefit from NSCFP is estimated with the help of following assumptions.

- The quantity of forest product supplied from the community forestry to the households is in similar rate to that of LFP. Hence the quantity supplied per household in LFP area is used to estimate the total quantity of forest products available in the NSCFP area. The price for these products in the NSCFP area is taken from NSCFP record.

- It is estimated that a total of 16080 employments (90 days full time in a year) had been generated by CFUGs due to the activities supported by NSCFP (Pokharel, Branney, Nurse & Malla, 2008) in studied three districts. LFP (2009) estimates that only 30 % additional benefit will be generated by the additional employment. It is estimated that the wage rate is Rs.150 (100 to 200) per day per person. However, the cost is estimated assuming only Rs. 100 per day per person. Thus, for the unanimity in estimation of cost and benefit we estimated the benefit also considering the Rs.100 as daily wage rate per person per day.

- Following the findings of LFP (2009), we assume that the time of 33 days per household per year is saved due to better forest in NSCFP supported areas.

- It is estimated that in the forestry sector the average bribery rate is 20 % (Poudel, Keeling & Khanal, 2006) and the good governance with 10 years of community forestry can reduce at least 5 % bribery within the community forestry area. As the NSCFP already completed 20 years it is assumed that an average of 2.5% of bribery rate has been reduced due to NSCFP in all activities within the community forestry area.

- The community forestry has contribution for the reduction in poverty. As many activities of the NSCFP are targeted to poverty reduction the benefits that derived in this is assumed as direct benefits. For the estimation of this we considered the change in per capita GDP data from HDR of different years. To estimate the

monetary benefits we considered only time saved, employment generation, value of forest products, impact of good governance and poverty reduction.

- In addition to these benefits there are some other benefits. However, it is difficult to give monetary value for these benefits. We assume that monetary value of other benefits will be about 1 % of the above total direct monetary benefits.

Estimation of benefits and costs was a cumbersome task, especially with benefits like environment conservation, carbon sequestration, bio-diversity conservation, soil protection, protection of landslides etc. Since no data are available to calculate these benefits in monetary terms, they have been left out from the monetary estimation of benefits.

Moreover, since the study is based on secondary information triangulation by household survey could have generated useful information. The socio-economic impact has not been calculated, and it would have been best to meet the CFUGs in person to gather their experience from the project. Focus Group Discussions would have also given a real picture. However, based on the available information, the paper attempts an in-depth analysis of the benefits and costs in monetary terms as possible.

ESTIMATION OF COSTS AND BENEFITS OF COMMUNITY FORESTRY

Estimation of Costs of Community Forestry

Costs of community forestry has been covered mainly from three sources namely staff time of government personnel and government operational and development cost; financial and technical support of donors; and voluntary labour of local Community Forestry user Groups and their members.

Of the total estimated running cost of NRs 119,100 per year for a CFUG, 71% is self-funded by the CFUGs, 16% from donors and 13% from government (Table 1, Pokharel & Nurse, 2004). Therefore, the value of the CFUG contribution is higher than that of government and donors combined.

Donor investment (16% of the total) represents approximately NRs 18,600 per CFUG. This is spent partially through government ('red book' funding) and the remainder directly with CFUGs. This sum includes expenditure on human resource development (scholarships and training of various types), infrastructure, vehicles and other recurrent costs. Government investment (13% of the total) represents about NRs 16,000 per CFUG. This covers a limited programme of activities but the bulk is for staff salaries expenses. It can be estimated that in middle hills districts, 50% of staff time is dedicated to the community forestry programme.

Table 1: Sources of Costs of Community Forestry (per FUG Per Year)

Contributor	NRs	%
Donor	18,600	16
Government	16,000	13
FUG (labour)	76,500	64
FUG (cash for forest % community development)	8,000	7
Total	119,100	100

Source: Pokhrel and Nurse, 2004

CFUG investment (71% of the total) represents about NRs.76,500 in labour costs (largely as opportunity costs)[1] per CFUG plus a further NRs.8,000 per CFUG through expenditure from their own cash funds. CFUGs spend around 25% of their cash funds on forest development activities - equivalent to NRs.2,500 per CFUG (per year). CFUGs spend a further 36% of their funds on community development activities like drinking water supply, school buildings, temples and trails. This is a further investment of NRs. 5,500 per CFUG per year (Pokharel, Branney, Nurse & Malla, 2008).

Estimation of Benefits from Community Forestry

Community forestry (mainly Community Forest User Groups –CFUGs, the main vehicle of community forestry at the local level) has generated the following benefits as indicated below:

Direct Benefits

a. The Contribution of Community Forestry to Make Available of Forest Product to the Community.

The LFP (2009) has estimated the demand and supply of the forest products to the community. The following table shows the estimation of the total supply of the forest product in the NSCFP area based on the LFP (2009) findings. Prices are taken only net benefits that households received.[2] Table 2 shows that the total benefit from the extraction of forest product is about Rs.505, million within the NSCFP area in a year. Average benefit from the extraction of forest product for each forest users group is about Nrs. 0.6 million[3] in a year. The FUG receive highest benefit from firewood and lowest benefit from the leafleter. The quantity and the total value received from the herbs is

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1 For the purpose of this calculation the shadow wage rate is assumed as NRs.100 per day. Investment in forest watchers is 365 person days per year; attendance at assemblies is 200 person days per year (each person spends 5-6 hours per assembly); attendance in committee meetings is 60 person days per year (each person spends at least 2-3 hours); 40 person days per year is spends for tole (hamlet) level meetings; 100 person days per year are spent for forest tending operations (all figures per CFUG).

2 Net benefit is calculated by taking the difference of actual payment and market price. Prices of the forest products was provided by the NSCFP project office.

3 Total forest users group within three districts are 886 in 2005.

only about NRs. 7 million and it is NRs 0.008 million for each forest users's group. Such low value is mainly because of unfavorable regulatory environment for herbs and various NTFP. There are various hurdles for harvesting and sale of herbs, therefore CFUGs have a tendency to under utilize products and many are found not to have maintained proper records and reported the quantity as well. The evidence of which is that CFUG data indicates that 87% CFUGs are managing forest actively and harvesting products regularly, but only 111 CFUGs (12%) have been reported to have utilized the herbs generating income (see Table 2).

Table 2: Value of Forest Products Extracted from CF in NSCFP Supported Districts

Type of the product	Mean supply (Per HH)[4]	Total quantity supplied by CF[5]	Average price per unit (NRs.) in Dolakha, Ramechap and Okhaldhunga districts		Average Price (net benefit) Rs.	Total Value (in 'million Rs)
			FUG price	Local market price		
Herbs[6] (kg)		71392	50	150	100	7.1
Timber[7] (Cu.ft)*	6.2	553288	70	210	140	77.5
Poles (Nos)#	2.2	196328	50	100	50	9.8
Leaf litter (bhari)	56	4997440	1	2	1	5.0
Fire wood (bhari)	47	4194280	20	100	80	355.5
Grass (Bhari)	99.9	8915076	5	10	5	44.6
Tree fodder (bhari)	12	1070880	5	10	5	5.4
Total						**504.9**

Source: Researcher calculation

4 The quantity of mean supply for timber, poles, leaf litter, fire wood, grass, tree fodder is taken from LFP (2009)

5 Total FUG membership households in three districts are 89240 in 2005. It is assumed that to get the full benefits from CF it takes at least 5 years. Hence only the FUG membership households formed upto 2005 can reap the benefit from CF.

6 Methodologically it is unrealistic to estimate the average volume of herbs per households. Again regulatory environment for herbs and various NTFP is not conducive and there are various hurdles for harvesting and sale of herbs, therefore CFUGs have a tendency to under utilize products and many are found not to have maintained proper records and reported the quantity as well. CFUG data indicates that 87% CFUGs are managing forest actively and harvesting products regularly, but only 111 CFUGs (12%) have been reported to have utilized the herbs generating income. Based on the income generated by these CFUGs the quantity of herbs is estimated only as 71392 kg. in the NSCFP area.
 The average price per kg as herbs ranges hugely from high value low volume to low price high volume but to simplify the calculation, only 5 types of major herbs are considered to calculate the average price namely Resin(40% volume), Lokta and Argheli (25% volume), Chiraito (15% volume), Machino (10% volume) and the rest mixed species of herbs (10% volume).

7 Only the price of 3 major species namely Sallo, Uttis and other mixed species including Sal is considered. Sallo constitutes almost 50% of the volume extracted and the average CFUG price is NRs 80 and market price is about NRs 240. It is estimated that about 75% Sallo timber is sold outside CFUG. Similarly, Uttis constitutes 30% of the total volume sold outside CFUGs mainly for veneer, all sold outside CFUGs, for which the local CFUG price is estimated to be NRs 55, whereas market price is almost double i.e. NRs 110. All the rest species constitutes about 20% volume of the total timber extracted, the CFUGs' average price for these species is estimated to be NRs 60 against the market average price price of all the mixed species NRs 240. It is estimated that about two third volume is sold outside the groups.

b. Community Infrastructure Development

CFUGs have contributed on the construction and maintenance of physical infrastructure such as drinking water schemes, community buildings and wooden bridges. Data from 692 CFUGs in the three districts of Dolakha, Ramechhap and Okhaldhunga show that over the last 6 years CFUGs have contributed about NRs 10 million (40% of their cash income) to physical infrastructure and other rural development activities not including additional voluntary labour contributions. About half of the CFUGs have contributed to education and more than one third to road construction. CFUGs have invested in scholarship for poor children, teacher's salaries, school buildings and furniture. CFUGs have invested their funds and labour for the construction of roads and trails (see example below).

Table 3: Contribution of CFUGs to Physical Infrastructure

Type of infrastructure	% of CFUGs	Investment NRs	% of investment
School building/roof Construction	47	18,58,665	19
Road/trail	36	962,339	10
Temple	28	661,664	7
Drinking water	26	883,146	9
Community building	24	26,94,075	28
Community utensils	16	705,269	7
Teachers salary	15	699,339	7
School furniture	11	319,323	3
Health facilities	6	87,372	0.9
Bridge	6	174,778	2
Irrigation channel & pond	3	185,300	2
Electricity	2	241,320	3
Toilet/sanitation	2	59,365	0.6
Water mill/other mill	2	54,711	0.6
Telephone/communication		745	0.008
Improved cooking stove		9,600	0.1
Total		**9,597,013**	

Source: *NSCFP (2006) The review, analysis and development of the NSCFP monitoring system, Consultant report, NSCFP, Ekantakuna, Kathmandu.*

These infrastructure developments may have contributed towards the decrease in poverty and employment generation. The following paragraphs show the estimation of the contribution of NSCFP for employment generation and reduction of poverty.

c. Employment Generation

There are many activities within the community forestry which generates employment among the users. It is estimated that a total of 16,080 employments (90 days full time in a year) had been generated due to the activities of NSCFP (Pokharel et al 2008). LFP (2009) estimates that only 30 % additional benefit will be generated by the additional employment from community forestry. It is assumed that the wage rate is Rs. 100 per day per person. Hence the total benefit within the NSCFP area per year from the employment generation will be NRs.43.4 million[8]. The average benefit for each FUG from the employment generation comes to be NRs0.05 million.

d. Time Saved

One of the objectives of promoting community forestry is to make the basic rural household needs of firewood, fodder and other forest products more easily available. As forest grows these products will be more easily available and this may help to save time to collect these products and households from FUGs can spend such saved time in other income generating and productive activities. Study made by LFP (2009) shows that annually the time of 33 days per household of forest users per year are saved due to the easy access of forest product due to community forestry. In the absence of primary data regarding the time saved within the NSCFP we may take this time as the same in the NSCFP area since the nature of the community forestry is similar in both of the projects. With this assumption the value of time saved in NSCFP area will be Rs.295 million. However in rural households all the saved time is not utilized for direct income earning activities. Study shows that nearly 50 % of the saved time is used for agricultural activities, and only 24 % of saved time is used for direct income generating activities (wage income) (LFP, 2009). Considering this as direct income contribution due to time saved the net benefit from time saved will be Rs.71 million for the total households within the NSCFP area. The benefit from the time saved for each FUG comes to be NRs.80 thousands only.

e. Good Governance

Good governance is one of the outcomes of the community forestry in Nepal. NSCFP has improved the governance at CFUG and has influenced through its demonstration effect at the local level from many ways. CFUGs for example have sensitized community members to have more inclusive governance with proportionate representation of women, dalits, and members from ethnic minorities and remote places. CFUGs have practiced systems of public auditing, public hearings and two-way communications

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8 The total employment generation within the NSCFP area in a year is 16080 with 90 days full time. Hence total benefit from employment generation will be 16080*90*100*0.3 =NRs. 43.4 million.

and information flow both vertically and horizontally. These groups also contribute for corruption control, encroachment and reduce the forest offences and illegal logging by patrolling of forest. It is the only one institution at the local level in which elected village people govern since more than last 10 years. CFUGs democratically select or elect CFUG committees thus institutionalize democratic practice. CFUGs form networks and federations which have become strong nested organizations to safeguard users' rights.

As a democratically selected or elected body and representing from all segments of the society it contributed towards the good governance not only within the forest users group, but also within the VDC level. One study (Poudel, Keeling and Khanal, 2006) shows that in Nepalese forestry sector the bribery[9] rates are 5-35 %. Hence the average bribery rate in the Nepalese forestry sector is about 20 %. There is some evidence that the bribery rate is decreased at some rate within the NSCFP area. However, we do not have any factual record of this. MSFP appraisal report 2011 estimates about 5 % bribery rates will be reduced within the area after 10 years of community forestry due to good governance. Considering that the NSCFP already completed 20 years we can assume that at least 5 % bribery rate have been reduced after 2000 A.D. Hence we can assume the average of 2.5 % annual bribery rate is decreased due to good governance adopted by NSCFP for the whole project life period The total annual government budget allocated in the NSCFP area at the local level is NRs 107million (MoLD, 2011). Hence the additional amount available for the local development due to the good governance adopted by NSCFP will be NRs. 2.1 million per year. However, only 78 % of the total households is within community forestry it is further assumed that only 78 % of this benefit will come to NSCFP area i.e NRs. 1.64 million. Thus the benefit of good governance is about NRs. two thousand per year per CFUG.

f. Poverty Reduction

Poverty reduction is one of the objective of the NSCFP. There has been a lot of attempts to conceptualise poverty and to develop methodologies to reach to the poorest of the poor (see Pokharel, and Carter, 2007). At least 35 % of the income generated from the community forestry must be spent for the benefit of the poorest group within the community. CFUGs have supported their members for income generating activities related to vegetable farming, livestock, horticulture, fishery and bee keeping together with construction and maintenance of water irrigation canal. These activities have also contributed for the reduction of poverty within the NSCFP area.

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9 Here bribery means forcefull payment (illegal payment) to the different government officials for their official duty. For detail see Poudel et al 2006. Here the benefit from good governance is assumed to be available for the local level in all activities. Hence the benefit is estimated not only within community forestry but for all activities of the local government. As such the additional resource available for the community due to good governance is estimated by considering the total government fund available within the local government level.

A study in NSCFP area indicates that CFUGs has a number of provisions to offer to the poorest and the discriminated people. An example is given below, the number and percentage must have increased tremendously since then.

Table 4: CFUG Provisions for Poor and Socially Excluded Household Members

Provisions for poor and socially excluded	Number of CFUGs	% of CFUGs
Forest products in equity basis	279	61
Groups' fund	255	56
Skill training	203	44
Housing and health	187	41
Scholarship	85	18
Land allocation	65	14
Employment as watcher	45	10
Share to enterprise	37	8

The above table shows that many CFUGs within the project area providing different goods and services targeting for the poor and socially excluded households for the improvement of their situation. Hence we can say that NSCFP have some contribution to uplift the economic situation of the poor households within the project area. It is reported that CFUGs in Swiss supported districts serve as a vehicle to contribute to poverty reduction (Pokharel and Carter, 2007).

Although people perceive various benefits that they have received from community forestry, there are no systematic data on poverty level prior and after the project activity. Study show that one rupee in the hands of a poor person is worth 1.5 times as much as in the hands of average tax payers (MSFP, 2011). Thus transferring money to the targeted poor may contribute 50 % more benefit. As we do not have data on the population of poverty reduction due to the NSCFP we will attempt to estimate this with the help of national figure.

The 1995/96 household survey shows that the people below poverty line were about 40.7 % in the in Hills of Nepal and it is only 28.6 in 2009 (NPC, 2010). This shows that the total decrease in poverty in the Hills of Nepal is 12.01 % and the annual average decrease in 0.8 %. The total population within the study area is about 797,434. We assume that only 0.8% population lifted up in the hills of Nepal hence the total population lifted up from the poverty in the study area is 6379 (797434*0.008). The LFP (2009) estimates that about £35 (Rs. 4446) will be required to bring one person out of poverty. Hence total monetary benefit by the people bringing out of poverty in the study area will be NRs. 28 million (6379 *4446). However, it is not all from the contribution of community forestry. The direct contribution of forestry sector to the GDP is estimated about 9.45 % without considering indirect benefits. However, the

LFP survey shows that about 25% of the income comes from the community forestry activity to the users households. Hence taking average of GON estimate and the LFP estimate we can assume that about 17 % of the income comes from the community forestry. Hence the annual contribution of NSCFP for the poverty reduction will be about NRs.4.8 million within the whole study area and NRs.0.005 million per forest users group.

g. Other Benefits

In addition to the above benefits CFUGs contribute for conservation of watershed, soil, river bank, water springs. It has also helped to reverse the rate of deforestation, increase the forest cover and forest density including plantation and regeneration encroachment and reduce the forest offences, forest fire control through fire line and supervision, grazing control, climate change adaptation and mitigation. CFUGs have also promoted eco -tourism and nature awareness by constructing picnic and recreational spots, temples and eco-clubs. CFUGs have constructed community forest nurseries, established plantations, protected and sustainably managed natural forests and have started establishing forest based enterprises.

It is difficult to measure monetary benefits from these activities of NSCFP. Some of these activities might have contributed for poverty reduction, employment generation or increase in the income and human development of the community. However, we assume that about one percent of the total direct monetary benefit come from other benefits.

Table 5: Estimated Monetary Benefits from the Community Forestry

Items	Annual Monetary Benefits within NSCFP (in Million NRs.)	% of total benefit	Total CFUGs	Annual benefit per CFUG (in Million NRs.)
Benefits from Forest Products	504.9	80.0	886	0.6
Employment Generation	43.4	6.9	886	0.05
Time Saved	71.0	11.1	886	0.08
Good Governance	1.64	0.2	886	0.002
Poverty reduction	4.8	0.8	886	0.005
Other Benefits (1% of the above)	6.3	1.0	886	0.007
Total	632.04	100	886	0.71

Source: *Researchers' calculation*

Table 5 shows that the average annual direct benefit for each FUG is about NRs 0.7 million within the NSCFP area. Benefits from the forest product have the highest contribution (80%) in the total direct benefit followed by time saved (11.1%).

Increase in Income

The level of income of the users group is increased may be due to many reasons. However, community forestry also have some contribution for the increase in the income of the CFUG households. The data from the study area also shows that there is tremendous increase in income of the people i.e. in an average the per capita income of the people within NSCFP area is just doubled in fifth phase to that of third phase without considering inflation (NSCFP, 2009). The contribution of community forestry to economic benefits are reported as follows. Some of these benefits are accounted in direct benefits in the previous pages.

> - Community Forest User Groups (CFUGs)[10] generate fund through the sale of forest products and other sources. They manage their own account and have financed loans to their members in rural areas
> - CFUGs harvest timber and non-timber annually; supply grass and various forest products and have offered services to rural communities
> - CFUGs have generated employment through collection, processing and marketing of products and have started to establish enterprise that generate rural employment

Although people perceive many economic benefits from community forestry as mentioned above, there is no reliable disaggregated data of all types of people in various well being ranking categories to find the contribution of community forestry for the increase their household income in relation to the income generated by forest user's groups. Table 6 below shows the total resource mobilization of CFUGs in three Swiss supported districts. The table shows that about NRs. 38 million resource is mobilized by the CFUG of three districts of NSCFP area.

Table: 6 Resource Mobilization by the CFUG

Status of CFUG fund	Dolakha	Ramechap	Okhaldhunga
Annual income (NRs in '000) including carried over	18,259	12,120	7,623
Annual expenditure (NRs in '000)	6,262	3,916	1,988
Annual balance and saving (NRs in '000)	11,997	8,204	5,635

Source: *NSCFP record*

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10 About 1.6 million households.(8 million people – nearly 30% of the country's population) are organized in 14,227 community groups which have been protecting and managing 1.2 million ha – about 20% of the state forest land

Few micro level studies attempted to estimate contribution of community forestry for the increase in household income of the forest user group members. LFP (2009) estimates that the forestry program has contributed about 25 % of the increase in income of the forest users group due to the activities conducted by the LFP. The total GDP contribution by the forestry sector is estimated to be about 9.45% without considering non-monetary benefits like environmental benefits (MoF, 2010). Though almost all the activities of NSCFP are similar to that of the Income Generating Activities of the LFP for practical purpose we may take the average of 25 and 9 % for the estimation of contribution of forest for the income generation to the forest users group.

The districts covered by the NSCFP lies in Central Hills and Eastern Hills. The per capita GDP growth during 1999-2006 by ecological belts can be found in HDR. The following table shows the estimation of increase in income due to NSCFP during the period of 1999-2006.

Table 7: Estimation Process of Increase in Income in NSCFP Area

	Eastern Hills	**Central Hills**
Total Change (Per capita Growth of GDP During 1999-2006)	1344-1012 =332 US$	2461-2059= 402 US$
Annual Average in US $	47	57
Annual Average in Nrs (@ 1 US$ =71Nrs)	3367	4020
Contribution of Forest sector for the increase in income (lower estimates)	562	683
Contribution of Forestry sector for the increase in Income (Higher estimates)	842	1005

Source: *Researcher's estimation*

Thus we can estimate that the total per capita contribution of NSCFP for the increase in income per year in an average is Rs.622.5 [(562 + 683)/2]. The total population within the study area is 797,434. Thus the total increase in annual income is about NRs.496.4 million. However only 78 % of the total households of the NSCFP area are within the community forestry. Thus only 78 % of the total benefit come to the CFUG households. Hence the total increase in income that is within the community forestry area is NRs.387 million. The increase in income due to community forestry for CFUG is NRs.0.44 million. It is nearly half of the direct benefit that CFUG receive annually from CF. This estimation is just for reference. However if we consider the contribution of community forestry as 25 % to the increase in income as estimated by LFP (2009) the total increase in income due to the contribution of community forestry comes to be NRs. 574 Million. Thus the contribution of community forestry for the increase in income of each CFUG comes to be 0.65 million and that is nearer to the direct monetary benefits for each CFUG (Table 8).

Table 8: Impact of NSCFP on Increase in Income

Items	Total Monetary annual Benefit within NSCFP (in million Rs)	Total CFUGs	Annual benefit per CFUG in Million NRs
Total Increase in income due to community forestry (with lower estimates)	387	886	0.44
Total increase in income due to community forestry (with higher estimates)	574	886	0.65

Table 8 shows that the increase in income due to CF is NRs. 0.44 million to 0.65 million per CFUG per year in NSCFP area. The estimation of this change in income is just for the reference. Since the increase in income from CF may be due to the extraction of forest product, employment generation, time saved, good governance and poverty reduction activities. All these benefits are estimated under the headings of direct benefit. This estimation of increase in income supports our estimation of direct monetary contribution of community forestry.

CONCLUSION

In the process of calculating the costs and benefits from the project, it can be seen that the project has had multiple benefits that outdo the costs that have been incurred. The benefits are not only related to income and poverty reduction, but has a host of other benefits including increased in availability of forest products including herbs and timber. Moreover, there is an improvement in the practice of good governance ever since the project has started. In addition to having transparency, the project has included people from disadvantaged communities in its decision making position. About 80 % of the total benefit is the benefit derived from the extraction of forest products.

The time saved is another major benefit from the project. Through NSCFP, the basic rural household needs of firewood, fodder, and other forest products have become easily available which saves a lot of time of the FUGs, which they can use for other income generating activities. It contributes about 11 % of the total benefits.

A lot of development has been done after the project launch in the three districts. The development work ranges from construction of school building, community building and roads and trails to improving the supply of drinking water, health facilities, and electricity. A lot of scholarships have been provided to students from primary,

secondary, higher secondary, undergraduate and postgraduate students. All these have helped in uplifting the socio-economic status of the FUGs in the three districts.

From the above analysis we found that the cost for each forest users group per year is NRs.0.1 million and the benefit per forest use group is about NRs.0.71 million per year. However, the benefits may not have been received from the community forestry at least up to 5 years after the initiation of the program. For simplicity we can assume that till 1995 the benefits from the community forestry was nil to all households. However, after 1995 CFUG started receiving the benefit from community forestry. Hence for the estimation of benefits we consider the number of forest users group and the CFUG households of 2005. It is mainly because about 80 % of the total benefits come from the forest product and it takes time to increase the forest product for the extraction of benefits.

The findings of the study show that total benefit is about 7 times greater than total cost to the CFUG in NSCFP area. However, there may be much more benefits due to the indirect benefits from CF which we could not estimate in monetary terms. Additionally, the community forestry program has other benefits like conservation of the environment, carbon sequestration, soil conservation, eco-tourism, etc. We were not able calculate these benefits due to the reliable data. It is one of the area for further research to estimate the cost and benefit from community forestry including indirect benefits.

Acknowledgement

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