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Commercialization of Non-timber Forest Products: Contribution to poverty reduction in Dolakha district, Nepal

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Dedication

Dedicated to my parents

Suman Gauli

and

Bhagabati Gauli

Declaration

I declare that the dissertation is an original work and no material in this thesis has previously been submitted at this or any other universities.

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Abstract

A large number of research studies in Nepal have shown the potential of non-timber forest products (NTFPs) in reducing poverty. However, most of the studies are focused on issues related to resource degradation, marketing and policy constraints, mainly in government-managed forests. Despite the growing number of studies, there are striking lacunae, particularly in community forestry. More than one-third of government-managed forests have already been transferred to local communities for management and utilization. This might open new opportunities for commercial management of NTFPs in community forests. This study investigates how NTFPs are being managed commercially in community forest user groups (CFUGs) and the role of NTFPs in poverty reduction.

A case study approach was followed for the study. Data were collected from three CFUGs of Dolakha district of Nepal, using both quantitative and qualitative approaches. The major data collection methods employed were key informant interview, household interview, focus group discussion and field observation. Qualitative data were analysed using the qualitative software Atlas.ti 5.0, whereas quantitative data were analysed using the Statistical Package for Social Science 15.0.

The results show that the role of external agencies is vital for low elite domination and execution of pro-poor programmes in CFUGs. In addition, organizing marginalized users into groups and building their capacity help to access the benefits of community forests. Likewise, poor and female-headed households are the most disadvantaged in a weak marketing environment. Furthermore, a positive relationship between the household cash income and food self-sufficiency can be found only where other alternative employment opportunities are available. Establishment of enterprises at local level and market linkage of NTFPs to enterprises assure users of timely sale of their products, thereby enhancing the participation of poor users in NTFP collection and benefit-sharing.

The study emphasizes *de facto* inclusion of representatives of marginalized members of groups in their executive committees to increase their influence over the committees' decisions so as to ensure egalitarian access over resources. Furthermore, pro-poor provisions in CFUGs are intended to increase the assets of poor people, thereby decreasing their vulnerability. Influence of external agencies on executive committee

helps to reduce the elite domination of decision-making processes and to encourage them to take pro-poor decisions. Despite the importance of NTFPs for rural livelihoods, existence of market assurance for timely sale of NTFPs at reliable prices is a determining factor in considering NTFP collection as a lucrative work. Likewise, reduction of rural poverty through NTFP management is possible if an enabling policy environment for establishing NTFP-based enterprises exists in those areas and if such enterprises are established.

Key words: Community forestry, Non-timber forest products, Pro-poor, Inclusion, Enterprise, Nepal

Zusammenfassung

Eine Vielzahl von Forschungsarbeiten in Nepal hat gezeigt, dass forstwirtschaftliche Nicht-Holz Produkte (non-timber forest products NTFP) zur nachhaltigen Armutsreduktion beitragen. Die meisten dieser Studien fokussierten thematisch die Zerstörung der Ressourcen, sowie Probleme der Vermarktung und politische Hindernisse in den von der Regierung verwalteten Waldgebieten. Im Bezug auf Wälder verwaltete durch lokale Kommunen war jedoch Forschungsbedarf gegeben: Mehr als ein Drittel des Staatforstes wurden bereits an lokale Gemeinden zur eigenständigen Bewirtschaftung und Verwaltung abgegeben. Dieser Schritt der Regierung beinhaltet ein hohes Potential für die Verwaltung und kommerzielle Nutzung von NTFP durch die ländliche Bevölkerung. Die Verwaltung der kommunalen Wälder obliegt in den meisten Fällen der ländlichen Elite, die die Nutzung von Nicht-Holz Produkten kontrolliert. Regierungs- und Nicht-Regierungsorganisationen konzentrieren seit einigen Jahren ihre Anstrengungen bei Dezentalisierungsreformen auf benachteiligte Bevölkerungsgruppen, vor allem Frauen und Arme, damit diesen der Zugang zu NTFP gewährleistet wird. Ziel der wissenschaftlichen Studie ist es, die verschiedenen Managementansätze und Bedürfnisse der lokalen WaldnutzerInnengruppen zu untersuchen. Die vorliegende Doktorarbeit untersucht somit zu einem wie NTFP durch die Nutzerinnen und Nutzer der Gemeindewälder (community forest user groups CFUGs) marktwirtschaftlich verwaltet werden und zum anderen welche Rolle NTFP in der Armutsbekämpfung spielen können.

Die Arbeit basiert auf dem Fallstudien-Ansatz wobei die Datensammlung in drei CFUGs im Dolakha District in Nepal mittels des Einsatzes von quantitativen und qualitativen Methoden durchgeführt wurde. Überwiegend wurden Interviews mit Schlüsselpersonen, Haushaltsbefragungen, Fokusgruppendifkussionen und Beobachtungen vor Ort verrichtet. Zur Analyse der umfangreichen qualitativen Daten wurde das Programm „Atlas.ti 5.0“ und zur Aufbereitung der quantitativen Daten die Computer-Software „SPSS 15.0“ herangezogen.

Die Ergebnisse der vorliegenden Arbeit zeigen, dass in CFUGs externe Akteure eine tragende Rolle spielen um die Dominanz von Eliten gering zu halten und armutsorientierte Programme umzusetzen. Organisation der marginalisierten

Nutzerinnen und Nutzer in Gruppen mit begleitender institutioneller Stärkung ihrer Kapazitäten erleichtert den Zugang zur Bewirtschaftung der Gemeindeforste. Auf die deutliche Benachteiligung von armen bzw. von Frauen geführten Haushalten hingewiesen wird ebenso hingewiesen. Die Entwicklung von lokalen marktangebundenen Unternehmen um NTFPs Produkte zeitgerecht zu Vermarktung kann ein positives Verhältnis zwischen Haushaltseinkommen und Ernährungssouveränität schaffen, da armen Nutzerinnen und Nutzen am Gewinn beteiligt sind.

Die Forschungsergebnisse betonen dass die Einbeziehung von Repräsentanten der marginalisierten CFUGs sowie die Einbeziehung von externen Regierungs- und Nicht-Regierungsorganisationen bei der Bestellung der Verwaltungsorgane der Gemeindewälder erforderlich sind. Insbesondere die Berufung der ärmsten Mitglieder einer ländlichen Gemeinde in die Verwaltungsorgane der Kommunalen Wälder ermächtigt jene, die Umsetzung von Programmen zur Armutsminderung zu forcieren. Die Vermarktung der NTFP ist in den entlegenen Gebieten Nepals ein wesentlicher Beitrag zur Sicherung der Existenzgrundlage. Determinierender Faktor ist jedoch die zeitgerechte Vermarktung und ein zuverlässiger Preis der NTFP.

Keywords: Gemeinschaftswälder, Nicht-Holz Produkte, Armutsorientiert, Einbeziehung, Unternehmen, Nepal

List of Acronyms

ANSAB	Asia Network for Sustainable Agriculture and Bioresources
CBS	Central Bureau of Statistic
DDC	District Development Cooperation
DFO	District Forest Office
DoF	Department of Forest
DoS	Department of Survey
ECARDS	Ecology Agriculture and Rural Development Society
FECOFUN	Federation of Community Forest Users of Nepal
GO	Governmental Organization
GoN	Government of Nepal
I/NGO	International/Non Governmental Organization
LFP	Livelihood and Forestry Program
MPFS	Master Plan for the Forestry Sector
NSCFP	Nepal-Swiss Community Forestry Project
NTFP	Non-timber Forest Product

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Thesis Structure

This thesis comprises three constituent parts. Part A presents the overall context, reviews the relevant literature on NTFP and community forestry, rational of the study, and details the theoretical and methodological approaches. Part B comprises three papers which are the results of this study. Part C comprises conclusion, theoretical and practical implications and recommendations.

Part A

1 General Background and Research Topic

1.1 Nepal in Context

1.1.1 Economy

The Nepalese economy is agrarian where almost three-fourths of the population depend on agriculture for their livelihoods (CBS 2001). Of the total population, 23.1 million (55.1%) earn less than US\$1.25 a day, with a Gini index of 47.3, showing high economic disparity (UNDP 2009). The per capita income is US\$440 (World Bank 2001) and human development index is 0.471, which is the lowest in the South Asian countries, except Pakistan (UNDP 2004). Although the agriculture sector contributes highest to the National Gross Domestic Product (40.1%), it is basically subsistence-based. Owing to very small landholdings, farmers have been finding it increasingly difficult to meet their subsistence and income needs from agricultural lands. The average landholding size per household is 0.96 hectare (ha) (CBS 2001). In addition, the low agriculture productivity is ascribed to most of the lands being rain-fed and undulating, mostly in the mid-hills and mountains, where erosion of top soil is very high. Moreover, agriculture, which comprises field, crop and livestock, is deeply imbedded into an agro-forestry interface (Dougill *et al.* 2001) and depends on forests for both grazing and fodder collection, supporting livestock that provide manure for fertilizing fields and animal products for feeding people (Dev and Hurford 2001).

Nepal comprises 3.9 million ha of forest, covering 27.3% of the country with a deforestation rate of 1.7% (FAO 2005). Mostly, the farmers of mid-hills depend on forest for fuelwood for cooking, fodder for feeding livestock and for agricultural inputs. The dependency of poor people on forest resources for fodder and fuelwood is much higher than that of middle and high income people (Rijal *et al.* 2011) as they either do not have sufficient private land or are landless. For those people, forest is not only a source for meeting subsistence needs but also a source of cash income. These people are involved in collecting and selling non-timber forest products (NTFPs). In some rural parts of Nepal, NTFPs account for more than 90% of the total household income (Bista and Webb 2006). In order to meet the needs of basic forest products for rural households as

well as conserving forests, the Government of Nepal (GoN) has given high importance to community forestry. For the past three decades, community forest user groups (CFUGs) in Nepal have been emerging as successful institutions for conserving forests and providing subsistence as well as commercial forest products to rural households (Acharya 2002).

1.1.2 History of community forestry

The concept of community forestry emerged after the government realized its inability to protect forests, basically after the nationalization of forests in 1957 (Hobley 1996). The national forestry conference, held in 1974, strongly recommended active participation of local people in forest management. That conference triggered a significant transformation of the mission of the Department of Forests (DoF) from forest protection to community-based forest management (Gilmour and Fisher 1991). Based on the recommendation of the conference, the government formulated the National Forestry Plan 1976 (Gautam *et al.* 2004). The plan provided a policy base for initiating community forestry development in the hills of Nepal (Acharya 2002). The Panchayat Forest Rules and the Panchayat Protected Forest Rules 1978 are the outcomes of the Plan, which had provision for handing over government forests to the local people for management. The Master Plan for the Forestry Sector (MPFS) 1988 also provided a policy context by emphasizing people's participation in forest management until the new Forest Act was promulgated in 1993. After an enabling policy environment for the development of community forestry was created by the Forest Act 1993 and the Forest Regulation 1995, the process of handing over of government-managed forests to local communities accelerated (HMG/N 1993 and 1995). The act provided full authority to the local people in managing, using and selling excess forest products (Acharya 2002). The Community Forest Development Guideline 2002 was another policy document which directs the representation of individuals from marginalized sections of society in management committees to make the committees more accountable to users (DoF 2002). Currently, Nepal has 16,937 CFUGs, covering 1.57 million ha of forest land and involving 2,075,944 households (HHs), i.e. 35.6% of the total households of Nepal (CFD 2011).

1.1.3 Community forestry and pro-poor programmes

Since 1978, there have been several legislative changes for creating an enabling policy environment for handing over management responsibility from government to local people. 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 and bare areas and practise sustainable forest management (LFP 2009) essentially to protect the environment. However, the Forest Act 1993 and the Forest Regulation 1995, which granted full authority to users in the management of forest resources, provided a 'breakthrough' in the development of community forestry (Acharya 2002). It recognized the dominant role of the local people in the decision-making process for forest management and benefit-sharing. The Community Forestry Development Guideline 2002 is another cornerstone in the history of community forestry.

Community forestry is considered to be one of the successful conservation programmes of Nepal (Gautam *et al.* 2002; Kanel and Kandel 2004; Pokharel and Suvedi 2007). It is reported that diversity of both fauna and flora increased as a result of community forestry (Subedi 2006). The programme was successful not only in converting barren land into lush green forest land, especially in the mid-hills (Luintel *et al.* 2009), but also in reducing poverty of the users (LFP 2009).

In addition to conservation, in recent decades, the community forestry programme has been focusing on poverty reduction of the users through livelihood improvement. Particularly after the recognition of the importance of forestry for people's livelihoods and its potential for poverty reduction by the Tenth Plan (2002-07) (NPC 2002), there was a shift in the priority of community forestry from forest conservation to poverty reduction through sustainable forest management (LFP 2009). In addition, the Three-Year Interim Plan (2007-10) explicitly mentions that each CFUG will have to spend 35% of its income on pro-poor programmes. In recent years, CFUGs have been conducting various programmes such as community forest land allocation for income-generating activities, soft loans, or the provision of forest products free of charge or at subsidized rates to poor CFUG members. In addition, various community development activities such as support for constructing school buildings, irrigation systems, drinking water

infrastructure, or road construction, conducted through CFUG fund, have also supported poor users either directly or indirectly (Luintel *et al.* 2009).

In spite of many success stories of community forestry, a few authors have expressed their doubts about its pro-poor role. Community development activities such as school building construction, irrigation investments, road construction are often considered pro-poor (Rosenzweig and Foster 2003). However, Pokharel (2009) does not agree with this view as many poor people do not have the capacity to send their children to school or own agricultural land for irrigation and thus are unable to benefit from such development activities. Furthermore, Malla *et al.* (2003), Bhandari and Ubrig (2008) and Thoms (2008) question the egalitarian distribution of benefits from community forests among different socio-economic groups. CFUGs are often criticized for being dominated by the local elite who take decisions in their own favour (Thoms 2008). As a result of the weak voice of the poor users in the decision-making process of CFUGs, their needs and concerns are less heard (Rishi and Gauli 2005). For instance, poor CFUG users need cash income rather than fodder, grass and leaf litter as they possess little land and livestock holding, but the management committee often bans the collection of cash-earning forest products, such as NTFPs for the sake of conservation (Gauli and Hauser 2011).

1.1.4 Community forestry and NTFP policies

NTFPs are products other than timber produced in forests (Belcher 2003). In Nepal, the importance of NTFPs was acknowledged, first, by the MPFS of 1988 as a result of the policy-making process within the forestry sector. The MPFS discusses the objectives of conserving and utilizing a few NTFP species which are more or less industry-oriented products (Subedi 1999). It was the Forest Act 1993 and the Forest Regulation 1995 which gave significant attention to the importance of NTFPs for poverty reduction. The Forest Act 1993 and the Forest Regulation 1995 have provisions for conservation and utilization of various NTFPs in community forest, and in Annex 3 of the latter document royalty rates of 234 different NTFPs are presented.

The Ninth Plan (1997-2002) puts high emphasis on the promotion of NTFPs within the framework of community forest for generating income and employment for local people.

When judged against the impact of these plans, these are not properly translated into practice on the field (Subedi 1999). Legislation does not embody the objectives of the NTFP policies (Larsen *et al.* 2000). Although community forests plays a potential role in managing and using NTFPs for poverty reduction, the scope and opportunities for NTFP management within CF are not clearly spelled out in the existing forest regulations (Kanel 2000).

Table 1. Major NTFP-related policy documents and provision for NTFP management

Policy/Act/Regulation	Provision for NTFPs
Master Plan for Forestry Sector (1989)	<ul style="list-style-type: none"> ♦ Development aim for seven groups of NTFPs ♦ Emphasis on creation of jobs and processing facilities ♦ Cultivation of many wildy collected NTFPs
Forest Act (1993) and Forest Regulation (1995)	<ul style="list-style-type: none"> ♦ Gives the CFUGs the rights to collect revenue from their forest products ♦ Bans collection, use, sale and export of two NTFPs ♦ Bans on export of eight NTFPs in raw form
Ninth Five Year Plan (1997-2002)	<ul style="list-style-type: none"> ♦ Encourages poor and marginalized families in cultivation of NTFPs in CF land for income generation ♦ Provides for training for to development of human resources for NTFP management
Tenth Five Year Plan (2002-07)	<ul style="list-style-type: none"> ♦ Incorporates NTFPs in CF on priority basis
NTFP Policy (2004)	<ul style="list-style-type: none"> ♦ Gives priority to women living below poverty line in the cultivation of NTFPs in CF land ♦ Stresses involvement of poor, marginalized and women in each step of NTFP value chain

Following continuous pressure from different international and national governmental organisations (I/NGOs), and also realizing the importance of NTFPs for poverty alleviation, the GoN, for the first time, in 2004, issued a comprehensive NTFP Development Policy (HMG/N 2004). This policy emphasizes cultivation and management of NTFPs in CFs, giving priority to poor, marginalized and women living below the poverty line. The GoN has yet to develop acts, rules and guidelines for implementing this policy. Table 1 presents a synopsis of the provisions of various legislation and plans related to NTFP subsector development.

1.1.5 NTFPs and their commercialization

In Nepal, more than 700 species of NTFPs are identified, out of which 161 are traded (Subedi 2006). Although Nepal has a long history in of NTFP trade, its commercial importance was explored basically after the work of Edwards (1996). Edwards (1996) analyses the supply chain of NTFPs in Nepal and finds that almost all harvested NTFPs are exported to India in unprocessed form with a fairly complicated supply chain with low economic return to the harvesters (Maraseni *et al.* 2006). Olsen (2005b) estimates that, each year, Nepal harvests and trades 7,000 to 27,000 tons of NTFPs, with a value of US\$7–30 million. In 2008, the GoN earned US\$0.55 million from NTFPs, which accounts for 6.5% of the total revenue from the forestry sector (DoF 2006). The source of almost all harvested NTFPs is wild. Nevertheless, in recent years, a few species such as *Swertia chiraita*, *Asparagus racemosus*, etc are being cultivated (Pandit and Kumar 2010), but the volume of production is very low compared to that from the wild. While large quantities of NTFPs come from government-managed forests, in recent decades, CFUGs are also producing NTFPs (McDougall *et al.* 2008). In addition, the GoN has prioritized 12 different NTFPs for commercialization through cultivation (DoF 2006). Among many traded NTFPs of Nepal, *Daphne spp.* and *Edgeworthia gardenieri* (used for making handmade paper), *Pinus roxburghii* (used for making resin), lichen (used for making dyes), *Nardostchya Jatamanshi*, (used for making perfumes), are the NTFPs that are being commercialized in recent decades (Paudel 2004; Olsen 2005a; IRG 2006).

1.1.6 NTFPs and poverty reduction

A large number of scientific publications have highlighted the importance of NTFPs for the rural poor and their dependence on NTFPs for maintaining rural livelihoods (Neumann and Hirsch 2000; Davidar *et al.* 2008; Singh *et al.* 2010). Rijal *et al.* (2011) emphasizes the role of NTFPs as a cornerstone in the livelihood strategies of rural poor households. For many rural people living in, or close to, forests in Nepal and elsewhere in developing countries, NTFPs are one of the major sources of cash income (Olsen and Larsen 2003; Shackleton and Shackleton 2003). Bista and Webb (2006) show that, up to 90% of cash income of the rural poor in Nepal come from NTFPs. Similarly, Singh *et al.* (2010) shows that NTFP contributes almost 79% of the total household income of farmers in Bangladesh. Marshall *et al.* (2003) argues that the commercialization of NTFPs not only provides multiple benefits to community members but also strengthens

community organizations and improves social justice by increasing involvement of disadvantaged members of the community in economic activities. Furthermore, Shackleton and Shackleton (2003) categorize the 'safety net' role of NTFPs at two levels. First, the role of NTFPs in assisting households to cope with adversities, such as death of household head, droughts, floods, disease leading to crop failure or death of livestock. In these situations, the increased use of NTFPs is basically a coping strategy and they termed it as an 'emergency net'. Second, the role of NTFPs as an integral aspect of direct household provisioning, which they termed as 'daily net'. Using NTFPs everyday results in cost saving for households with low cash income by enabling them to reinvest the saved money in other essential livelihood strategies, such as agriculture, health and food (Paumgarten 2005).

In spite of the availability of a great amount of literature highlighting the importance of NTFPs for the livelihoods of the poor, only a few of them illustrate that poor are less dependent on, or benefited from, NTFPs. Ambrose-Oji (2003), a study conducted in Cameroon, shows that NTFPs do not contribute significantly to the livelihoods of the poor, but to those of higher middle class (Mcelwee 2008). In addition, Gubbi and MacMillan (2008) strongly question the poverty alleviation role of NTFPs. It illustrates that the poor benefit less from NTFPs compared to middle and higher income class people. Furthermore, almost all collectors neither wish to continue harvesting NTFPs if alternative livelihoods options are available nor will like their children to become NTFP collectors. According to them, the distraction of the poor from NTFP collection was the result of low economic returns from NTFPs. In addition, Gubbi and MacMillan (2008) state that for the collectors living in or around protected areas—mostly poor people who do not possess the needed political status to influence forest officials, there was a risk of being caught as the act of collection was considered illegal. They conclude that NTFP collection is unlikely to generate positive outcome for poverty reduction. However, although Belcher and Schreckenberg (2007) accept the relatively low economic returns from NTFPs, it highlights its importance and mentions that its timing may complement that of other activities, providing an income at critical times of the year and/or in years when other activities fail (Schreckenberg *et al.* 2002; Shackleton 2006).

1.2 Rationale and Research Problem

Trade in NTFPs in Nepal has a long history; however, it started to draw the attention of policymakers and development agencies only in the past few decades. Although national policy documents such as the Master Plan for Forestry Sector 1989, the Forest Act 1993 and the Forest Regulation 1995 have provisions for NTFP management in forests, they are weak in terms of use of NTFPs for poverty reduction. The Tenth Plan 2002-03 is the one that explicitly mentions the role of NTFPs for poverty reduction. Mostly the research works on livelihood importance of NTFPs (Olsen and Larsen 2003; Pandit and Thapa 2004; Bista and Webb 2006; Rijal *et al.* 2011) are focused on government-managed forests. These forests are often considered as open access (Pandit and Thapa 2004) and having non-pro-poor management. However, on one hand, community forestry in Nepal is considered as a vehicle for poverty reduction (Pokharel *et al.* 2007) and, on the other hand, there is a striking lacunae of literature that explain the management of NTFPs in community forestry for poverty reduction. In contrast to government-managed forests, community forest is an intensive management unit where institutional arrangements and output of different socio-economic dimensions matter a lot for building an enabling environment for the poor people to benefit from NTFPs.

The available literature on community forestry mainly focuses on the management of subsistence forest products (Adhikari *et al.* 2004b; KC 2004; Adhikari and Lovett 2006). These authors argue that poor people are unable to utilize much of the subsistence forest products such as leaf-litter and fodder because of their low landholding sizes and few livestock (Adhikari *et al.* 2004a). Furthermore, they are deprived of getting benefits from timber—a valuable forest product—as they have poor household infrastructure which seldom need timber for construction (Maharjan *et al.* 2009). In addition, almost all CFUGs in Nepal prohibit individual trading in timber, both within and outside the community. In contrast, Davidar *et al.* (2008), a study conducted in protected areas in India, argues that extraction of forest products is not correlated with either the wealth status of households or distance to the forest. However, the influence of such socio-economic variables may not be the same on extraction of commercial forest products such as NTFPs from community-managed forests.

NTFPs in Nepal are being traded for years. They are mostly exported to India in unprocessed form. The value chain of NTFPs is complicated and involves a series of actors from collectors to exporters (Edwards 1996). It is frequently argued that most collectors are the weakest actor in the value chain as they have limited market information, thereby low bargaining power. One of the frequently proposed options to strengthen the stake of collectors in the value chain is value addition at local level through establishment of enterprises. In order to deliver more benefits to collectors, the Herbs and NTFP Development Policy 2004 emphasizes enterprise establishment. Only a few studies explain the benefits of the enterprise for poor households (ANSAB 1999; Subedi 2006; Pandit *et al.* 2009). These studies basically focus on change in household income as a result of NTFP-based enterprises; however, they are weak in explaining the socio-economic factors behind the changes.

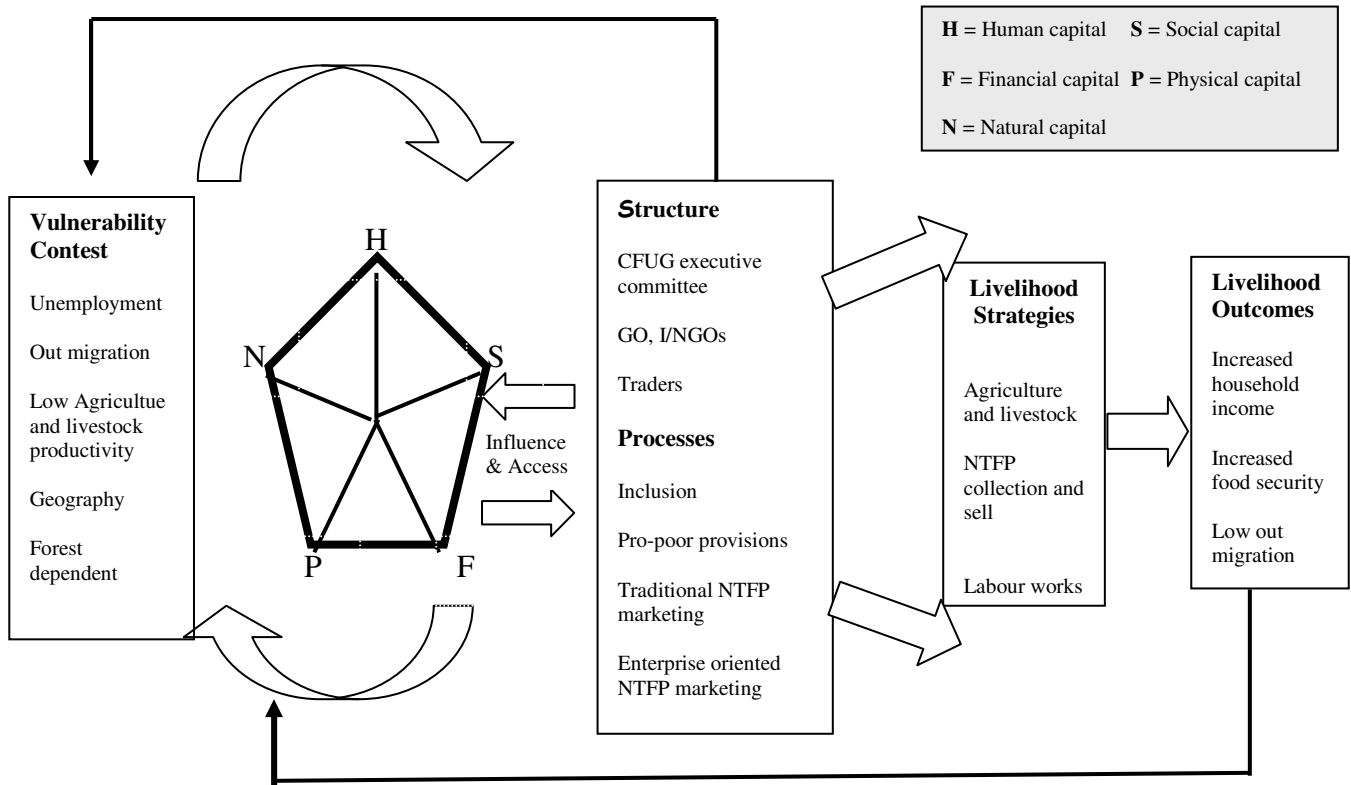
1.3 Objectives

In order to fill the gaps mentioned in the rational section, this study intends to achieve the following objectives:

- 1) To understand the institutional arrangements within CFUGs that enable and facilitate the pro-poor management of NTFPs;
- 2) To understand the access of CFUG users belonging to different economic classes to NTFP resources; and
- 3) To analyse the role of NTFP enterprises on household income.

1.4 Study Framework

This study follows the sustainable livelihood framework, adopted from DFID (2000). (Fig. 1). The first paper of this study, which corresponds to the first research objective of this thesis, analyses the institutional arrangement in the CFUG for pro-poor NTFP management of natural capital it has. The paper analyses the role of the CFUG executive committee, external agencies, such as GOs, I/NGOs and traders, in the inclusion of poor and marginalized people in decision-making forums, such as executive committee, provisioning for pro-poor programmes and marketing arrangements of harvested NTFPs from community forests.



(Adopted from DFID 2000)

Fig. 1: Sustainable livelihood framework for the study

The second paper, which corresponds to the second research objective of this thesis, analyses the vulnerability context of the households and the structure and process in the CFUG for building an enabling environment for accessing livelihood assets, particularly natural capital and the resultant changes in the livelihood outcomes. Furthermore, the paper analyses and discusses the relationship between the natural capital and other forms of household capital such as physical, social, financial and human. The third paper, which corresponds to the third research objective of the study, analyses the process of NTFP marketing and the changes in the livelihood outcome, particularly household income.

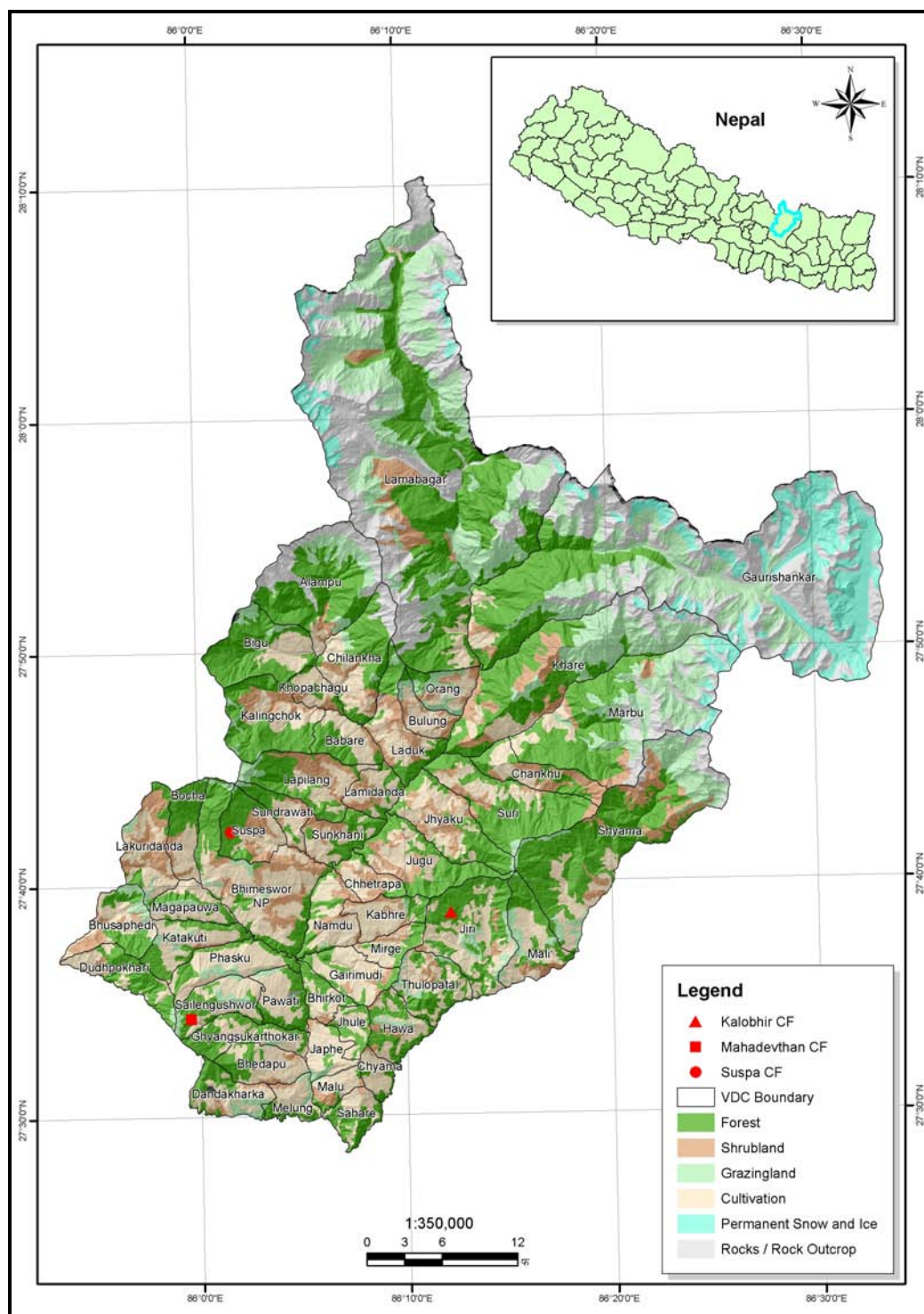
1.5 Methods and Techniques

1.5.1 Study sites

The study was conducted in Dolakha district of Nepal. Nepal, lying between China to the north and India to the south, occupies an area of 147,181 sq. km., covering 0.1% of the earth's land area (CBS 2001). Geographically, it can be divided into three ecological zones: mountains (35%), mid-hills (42%) and the terai (23%) (CBS 2001). It has a population of 23.1 million, with an annual growth rate of 2.2% (Ibid). The population is distributed unevenly across the geographical zones. According to the 2001 census, 7.3%, 44.3% and 48.4% of the people live in the mountains, mid-hills and terai regions respectively.

The Dolakha district is located about 150 km east of Kathmandu, the capital city of Nepal. It lies between 27°28'N to 28°00'E and 85°50'N to 86°32'E. The district is one of the 20 Himalayan districts of Nepal. It covers 2,164.12 sq. km. of area, with an altitude varying from 732 m. to 7,148 m. from mean sea level (DFO 2007). The district is rich in plant biodiversity (Shrestha and Dhillion 2003). The district exports many valuable NTFPs such as *Jatamashi*, *Lokta* (*Daphne bholua*), *Argeli* (*Edgeworthia gardneri*), *Panchaule* (*Dactylorhiza hatagirea*), etc (DFO 2009). In addition, the district has 28 NTFP-based value addition enterprises (DFO 2009). Some of the successful enterprises are essential oil distillation and Nepali handmade paper enterprises. The essential oil distillation enterprises extract oil from *Machino* (*Gaultheria fragrantissima*); likewise, handmade paper enterprises produce paper from *Lokta* and *Argeli*. The market for both products is Kathmandu.

Many CFUGs in the district have been managing NTFPs commercially (Paudel 2004). Revenue from the trade in NTFPs produced in their forests is one of the good and sustainable sources of cash income. Moreover, a few CFUGs are shareholders in essential oil distillation and handmade paper enterprises (Thapa 2009). In addition, for the households in remote areas of the district where alternative cash income sources are limited, income from the sale of NTFPs supports them to a significant extent in running their livelihoods.



(Source: DoS 2000)

Fig. 2: Map of study district indicating study CFUGs

In order to select the study CFUGs, the District Forest Office (DFO), a number of NGOs and CFUGs were visited and their personnel as well as several traders were consulted. Three CFUGs, Suspa, Kalobhir and Mahadevthan, were finally selected based on three criteria: (1) forest had been handed over to the CFUGs at least five years ago; (2) the

CFUG was managing the NTFPs commercially; and (3) the distance between the CFUG and the closest major town varied across the three sites.

Suspa lies near the largest headquarters, Charikot, which is also the largest town in the district, whereas Kalobhir lies very close to Jiri Bazaar, the second largest town in the district. Among the three CFUGs, Mahadevthan lies farthest from any town. The users of Kalobhir are economically better-off than those of Suspa and Mahadevthan because Kalobhir lies closest to a town and hence enables users to sell their labour and agricultural goods more easily. Moreover, a few of its households run businesses in Jiri Bazaar. The poorest user households were identified through participatory well-being ranking in Suspa and Kalobhir, and through an *ad hoc* process in Mahadevthan. Identification in all CFUGs was approved by their general assemblies, the highest decision-making body in CFUGs.



Fig. 3: A part of settlement of Mahadevthan CFUG (left) and Suspa CFUG (right).

(Photos by Kalyan Gauli)

In Suspa and Kalobhir, external agencies, mainly the DFO, Nepal-Swiss Community Forestry Project (NSCFP) and the Asia Network for Sustainable Agriculture and Bioresources (ANSAB), provided technical support for inventorying forest products, preparing NTFP management plans, strengthening market linkages and conducting pro-poor programmes, whereas in Mahadevthan, they were only involved in the handing over of the forest to the community and in conducting some forest management training. However, from the year 2009, ANSAB, DFO and District Development Committee (DDC) have been supporting the CFUG in sustainable management of NTFPs and

market linkage of *Lokta* by establishing an enterprise. Currently, Mahadevthan is a shareholder of a handmade paper enterprise which was recently established near the CFUG.



Fig. 4: A man harvesting *Lokta* in the forest of Kalobhir CFUG (left) and handmade paper enterprise in Kalobhir CFUG

(Photos by Kalyan Gauli)

The NSCFP has been working in the district since 1990 with the objective of reintegrating marginalized communities in the mainstream of community forestry development. ANSAB has been working for NTFP-based pro-poor enterprise development in the same district since 1998. The DFO has largely supported the administration and, in some cases, co-financed the activities of other external agencies.

1.5.2 Research strategy and approaches

Considering the nature of study, the study followed the descriptive research design. The study tries to describe how NTFPs are being managed in the CFUGs. Case study research (Neuman 2006) was selected as the research strategy as it allows researchers to connect the micro level, or the actions of individual people, to the macro level, or large-scale social structures and processes. This is the most suitable strategy for this study because the issue was pro-poor commercial management of NTFPs in CFUGs, which could not be adequately understood outside the context effects of NTFP management in specific CFUGs. Case study research has been widely used in exploring forest management, and it has demonstrated its ability to capture the complexities involved (Ojha and Bhattra 2003; Acharya 2005). However, a part of the study is the panel type of longitudinal research, as described by (Neuman 2006). The aim was to explore the effects of the NTFP-based enterprise on NTFP income of collectors of different

economic groups. The panel study compares the NTFP income of collectors in the absence and in the presence of an enterprise.



Fig. 5: Wealth ranking of the users of Mahadevthan CFUG with key informant (left) and group discussion with the poorest users in Kalobhir CFUG (right)

(Photos by Kalyan Gauli)

Both qualitative and quantitative research approaches were used to complement each other (Neuman 2006). The qualitative approach of inquiry refers to the collection of information in the form of expression of views or feelings. This approach is mainly concerned with generating theories and hypotheses by extending the topic from specific to general (Creswell 2009). The qualitative researcher is likely to collect, analyse and interpret data simultaneously, going back and forth between these steps (Neuman 2006). The approach is more flexible, encourages the participants to freely express their views, is applicable to a wide range of situations and purposes, and can be modified in the course of use if new situations appear (Punch 2005). On the other hand, quantitative approach involves gathering statistical information and is more concerned with statistically testing hypotheses and theories (Ibid). A quantitative researcher will very carefully record and verify information, almost always in the form of numbers, and will usually transfer data into a computer-readable format (Neuman 2006). This approach is favoured especially when it is necessary to determine the relationships between the different variables describing the research problem. Nevertheless, selection of any approach depends more on the research problem and the objective of the study rather than on the underlying theory of the approach (Punch 2005).



Fig. 6: Interview with key informant (NTFP Trader) (left) and household interview with NTFP collector in Suspa CFUG (right)

(Photos by Kalyan Gauli)

Under qualitative approach, key informant interview, focus group discussion and informal discussion are the methods used to collect data, whereas under quantitative approach, free listing and household interview with semi-structured questionnaire were used. Qualitative approach was used to collect data for the first paper, whereas quantitative approach was used for the second and third papers. Detailed process of data collection is described in the respective papers in this thesis.

1.5.3 Data analysis

The first paper of this thesis is basically based on qualitative data. The data obtained from focus group discussions, key informants interview, informal discussion and field notes were transcribed, translated into English and analysed, using a mixed approach that comprised both inductive and deductive coding, as suggested by Miles and Huberman (1995). The coding was followed by a cause and effect analysis between the codes, and, finally, the factors influencing the institutional arrangements were identified. The qualitative data analysis software Atlas 5.0 ti, was used to analyse the data. The quantitative data obtained from free listing for the first paper was analysed, calculating frequency in Microsoft Excel.

The second and third papers are mostly based on quantitative data. The data obtained from household survey was analysed using statistical package SPSS 15.0. For the second paper, backward multiple linear regression was carried out, taking income from NTFPs

as a dependent variable and household cash income, household size, travel time and food self-sufficiency as independent variables, as described by (Field 2009). For the third paper, Wilcoxon signed-rank test was used to see whether there was a significant change in the NTFP and household cash income before and after the establishment of an enterprise. Likewise, Spearman correlation between NTFP income and different socio-economic attributes such as household cash income, household size, food self-sufficiency and travel time to NTFP sites was carried out to understand the distribution of NTFP income benefits among the households.

The validity of the findings of this research was done through the triangulation technique. For example, data obtained from household survey were crosschecked in group discussions and key informant interview and *vice versa*. Presentations of the findings in different scientific forums also supported to validate the findings.

2 Overview of Theories, Insights and Practices

2.1 Contribution of NTFPs to Poverty Reduction

Following the estimation of Peters *et al.* (1989) showing that NTFP collection can give higher economic returns compared to timber, NTFPs started to draw global attention for their potential for poverty reduction (Youn 2009). Forest policies of the developing countries as well as the donors working in those countries started giving attention to using NTFPs for livelihood improvement of poor people living close to, or in, the forest. NTFPs are being used for subsistence as well as commercial purposes (Pyhala *et al.* 2006) and for making important contributions to livelihoods (Paumgarten and Shackleton 2009). Shackleton and Shackleton (2003) has found that, in Africa, NTFPs are widely used by rural households for both direct household provisioning and income generation, with poorer households using and benefiting more from these products than wealthier households. Similarly, in Nepal, (Rijal *et al.* 2011) illustrates that 44-78% of household cash income of poor households comes from NTFPs. He further highlights the role of NTFPs as a cornerstone than merely as a gap-filler, particularly for poor households. Furthermore, L'opez-feldman *et al.* (2007) also highlights the importance of income from NTFPs in reducing poverty and income inequality, as NTFP collection requires neither high level of skill nor resources, both of which are always scarce for poor people, and so it has always been an attraction for poor people (Quang and Anh 2006). In other words, this is where poor people can compete with better-off people.

In the same vein, Marshall *et al.* (2003) highlights the multiple benefits from commercialization of NTFPs. It not only generates income but also strengthens community organizations and improves social justice, presumably by increasing the involvement of disadvantaged members of the community in economic activities. Belcher and Schreckenberg (2007) critically analyses the potential of commercialization of NTFPs for poverty reduction and concludes that it is a useful means of contributing to improved livelihoods, particularly of marginalized forest-dependent poor. However, at the same time, they warn about the challenges associated with the commercialization as it requires a long-term and multidisciplinary approach that ranges from providing support to both technical and social aspects of natural resource management to understanding

how markets function from local to international level (Belcher and Schreckenberg 2007). Ros-Tonen and Wiersum (2003) also emphasize the role of NTFPs in poverty alleviation and stress that the role of NTFPs can be crucial for the households living in very remote areas as they can play an important role in meeting subsistence needs as one of the scarce sources of cash income and as a safety net in periods of food crisis. However, according to them, for the areas close to urban markets, NTFP collection cannot be a livelihood option unless the collectors have secure tenure rights and a fairly strong value chain in place (see also Edwards 1996).

2.2 Theories on Dependency

People depend directly or indirectly on natural resources in their daily lives. Mostly, rural poor people living close to forests who do not have other sufficient income sources depend on forests for essential forest products, including NTFPs, to sustain their livelihoods (Olsen and Larsen 2003; Heubach *et al.* 2011). Lack of productive assets, particularly land and livestock, makes poor households depend on NTFPs. Quang and Anh (2006) critically analyse the dependency factors on NTFP collection. They found that poor people living close to market centres are more dependent on the collection of commercial NTFPs than their counterparts living far away. According to them, weak market of NTFPs in very remote areas discourages poor people from NTFP collection. In contrast, Ghate *et al.* (2009) illustrates that households living close to markets are less dependent on NTFP collection, whereas the opposite is true for households living far from the market centre as they lack market-based off-farm and off-forest employment opportunities. Another study, Paumgarten and Shackleton (2009) has found that the poor are the most dependent on NTFP collection and sell greater varieties of NTFPs and buy fewer products than the wealthy. In addition, households with low food self-sufficiency are most dependent on NTFP collection to run their livelihoods, whereas wealthy households depend less on it (Pyhala *et al.* 2006). Moreover, Paumgarten (2005) highlights that during times of shock and stress such as failure of agricultural crops because of flood, drought, hailstorm, etc and loss of household breadwinner, rural households are more dependent on NTFPs. In such times, the role of NTFPs as a safety net is widely acknowledged by researchers (Shackleton and Shackleton 2003; Paumgarten 2005). Furthermore, Heubach *et al.* (2011) illustrates that poor households are relatively more dependent on NTFPs for fulfilling their basic needs than wealthy

households. However, the latter extract more NTFPs in quantitative terms and have significantly higher cash returns than poorer ones. This is mainly due to significantly greater land holding.

2.3 Theories on Poverty

According to the World Bank (2000), almost half of the world's population, that is 2.8 billion, are living on less than US\$2 a day and one-fifth, i.e. 1.2 billion, are living on less than US\$1 a day. The studies show that most of the rural NTFP collectors fall below the US\$2 level of poverty line (Singh *et al.* 2010; Nahuelhual *et al.* 2008). These figures are shocking information for those who are working to reduce poverty. Although US\$1 per capita per day is a widely accepted benchmark of poverty, income is only one indicator of the results of poverty among many others. In line of defining poverty, the European Commission (2001) (cited in UNDP-APDIP 2004) suggests inclusion of, on top of income, deprivation of basic capabilities and lack of access to education, health, natural resources, employment, land and credit, political participation, services and infrastructure. An even broader definition of poverty sees it as being deprived of the information needed to participate in the wider society at local, national or global level (ZEF 2002). Likewise, the World Bank (2000) defines poverty as 'pronounced deprivation in well-being'. Haughton and Khandker (2009) further elaborates the term 'well-being', defined by the World Bank with two approaches: first, well-being as the command over commodities, so better-off people do have greater command over resources. This approach sees poverty largely in monetary terms. The second approach is access to basic needs such as food, shelter, health and education. This view goes beyond the traditional monetary view of poverty. Furthermore, Sen (1997) states that well-being comes from a capability to function in society. In order to increase the capability, inclusion of the poor people in decision making forum in the society is necessary. Gauli and Hauser (2009) find that the inclusion of poor people in decision making forums of CFUGs enhances well-being of the people through the management of NTFPs in community forests (Rai *et al.* 2006; Bohora 2008).

Different authors have defined poverty differently. For instance, Reardon and Vosti (1995) refer to 'asset poverty' where there is restriction on livelihood strategies because

of poor asset available with them and ‘welfare poverty’ where there is absolute restriction on household consumption. Sen (2003) differentiates between social poverty, which is an outcome of inequality, and geographic poverty, which refers to the households in an area with low geographic capital. Available literature on NTFP show that rural NTFP collectors’ households are characterised by all above types of poverty (Neumann and Hirsch 2000; Olsen and Larsen 2003; Paumgarten 2005; Belcher and Schreckenberg 2007; Paumgarten and Shackleton 2009). Gubbi and MacMillan (2008) find that NTFP collectors are characterised by a low socio-economic status with poorly developed skills and restricted access to the resources required to invest in storage, processing, and marketing. Likewise, Edwards (1996) find that most of the valuable NTFPs in Nepal are harvested from high altitude areas and the collectors are characterised with geographic poverty as they possess very limited market access (Maraseni *et al.* 2006). In line of defining poverty, Carter and Barrett (2006) define the poverty trap to explain chronic poverty. According to them, poverty trap is a critical minimum asset threshold below which families are unable to successfully move ahead economically over time. They are the ones who are ruined, who can do no better than hang on and who are offered no viable prospects for economic advance over time. Likewise, Bhandari (1992) states that, for developed countries, a failure to come up to a desired level of living is called poverty.

2.4 Theories on Vulnerability

Poverty and vulnerability have two-way causality effects. Philip and Payhan (2004) find them interlinked in such a way that each causes the others. The term vulnerability refers to exposure to shocks and stress, and the difficulty in coping with them (Dhanani and Islam 2002). The ability to cope with vulnerability is highly dependent on assets, and the possession of, or access to, liquid assets are particularly important to avoid impoverishment (Balisacan and Fuwa Undated). Many factors such as poor health, poverty and hunger, low level of education, gender inequality, fragile and hazardous location, lack of access to resources and services, contribute to vulnerability (Philip and Rayhan 2004). NTFP collectors, in general, possess less livelihood assets, hence are considered as vulnerable people (Timko *et al.* 2010). These people are either remotely located and do not have access to market and finance or are less educated and do not have adequate skills to get jobs in the market even though they are located close to the

market. As a result, they consider NTFP collection a suitable job, compared to others, as they do not need to be necessarily knowledgeable and skilful for this.

Hulme and Shepherd (2003) illustrate that vulnerability can be seen as a risk that a household will suddenly (perhaps also gradually) reach a position it is unable to cope with, leading to catastrophe (hunger, starvation, family breakdown, destitution or death). In addition, vulnerability can be closely linked with asset ownership. Moser (1998) explains reciprocal relationship between vulnerability and asset. The more assets the people possess, the less vulnerable they are and are less depend on NTFPs (Singh *et al.* 2010). In other words, vulnerable people are more likely to depend on NTFP extraction when they experience shocks such as agriculture failure or the loss of the households head. However, Delacote (Undated) has warned that if the vulnerable households are many and the forest capacity is small this may leads to a tragedy-of-the-commons that can trap the less skilled households into NTFP extraction and deprive them of other development opportunities.

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Part B

Paper I

Pro-poor commercial management of non-timber forest products in Nepal's community forest user groups: factors for success

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I and Michael Hauser worked out the concept. I collected data from the field, conducted the data analysis, and produced a first draft of the paper. I revised the draft paper with inputs from Michael Hauser. The paper was accepted for publication in the Mountain Research and Development on September 2009 with minor revisions. The paper was one of the featured articles of the issue.

Pro-poor Commercial Management of Non-timber Forest Products in Nepal's Community Forest User Groups: Factors for Success

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This article explores the factors that influence pro-poor commercial management of non-timber forest products (NTFPs) in 3 community forest user groups (CFUGs) in the Dolakha district in Nepal.

Management of NTFPs through CFUGs is an important poverty-reduction strategy in rural Nepal. National policy documents encourage management of NTFPs by CFUGs for commercial purposes, particularly by involving marginalized communities. It is therefore important to understand the existing mechanisms of their involvement. We followed a case study approach and collected data through key informant interviews, focus group discussions, formal and informal discussions, participant observations, and study of secondary data, such as the constitutions and operational plans of the CFUGs. Because institutional arrangements varied across the 3 study CFUGs, the ability of marginalized people to benefit from the

commercial management of NTFPs also differed. Results suggest that the involvement of external agencies, and the consequent conducting of NTFP-based pro-poor programs, positively influences commercial management of NTFPs and minimizes elite domination. Likewise, inclusion of representatives of marginalized people in the CFUG executive committees empowers them to lobby with external agencies for pro-poor programs. Furthermore, the geographic location of the community forest limits the involvement of external agencies and marketing of NTFPs. Therefore, because members of CFUGs in remote areas are heavily dependent on collection and sale of NTFPs for their livelihoods, we suggest increasing the focus of external agencies in such areas and including marginalized people in CFUG executive committees.

Keywords: Community forest user groups (CFUGs); inclusion; institutional arrangements; NGOs; non-timber forest products (NTFPs); pro-poor programs; Nepal.

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Introduction

In Nepal, non-timber forest products (NTFPs) have great conservation and economic value. NTFP-related economic activities can contribute up to 90% of a rural household's income (Bista and Webb 2006). The importance of NTFPs is also reflected at the national level. In 2002, the government earned US\$ 1.11 million in revenue from the sale of NTFPs or almost 18% of the total revenue from the forest sector (HMG 2003). Olsen (2005) estimates that from 7000 to 27,000 tons of NTFPs, with a value of US\$ 7–30 million, are harvested and traded in Nepal every year. In recognizing this economic value, the Ninth Five-Year Plan (1997–2002) recommended sustainable NTFP management for poverty reduction (NPC 1997). The Tenth Five-Year Plan (2002–2007) aimed to further strengthen this by incorporating NTFP management plans in the operational plans of community forest users groups (CFUG) (NPC 2002).

CFUGs are the local institutions authorized to manage, consume, and sell excess forest products,

including NTFPs, from the forests handed over to them by the government. NTFP management in community forestry is considered one of the approaches for reintegrating marginalized communities in the mainstream of development (HMG 2004). In the socioeconomic context of Nepal, marginalized communities refer to communities that are marginalized because of historical discrimination on the basis of caste, ethnicity, and sex. For the purpose of reintegration, a growing number of CFUGs are including NTFP management plans and provisions for the betterment of such communities in their operational plans and constitutions. These documents have to be approved by the district forest office (DFO).

Commercial management of NTFPs for livelihood improvement has been well researched in Nepal and elsewhere. The factors that determine the commercialization of NTFPs are mostly socioeconomic, technical, financial, and political in nature, or are related to market access (Marshall et al 2003; Nygren et al 2006). Most of the studies focus on commercial collection of, and

TABLE 1 General characteristics of the selected CFUGs.

CFUG attribute	Name of CFUG		
	Suspa	Kalobhir	Mahadevthan
Year handed over	1998	2000	1995
Forest area (ha)	635	545	207
Forest type	Mixed: containing pine, rhododendron, and oak species	Mixed: containing pine, rhododendron, and oak species	Mixed: containing pine, rhododendron, and oak species
Number of households	303	215	125
Major ethnic group	Thami	Jirel	Newar
Sources of income	Agriculture, livestock, forest resources, public sector employment, labor in foreign countries	Agriculture, livestock, forest resources, public sector employment, labor in foreign countries, business	Agriculture, livestock, forest resources, labor in Kathmandu
Representation of marginalized users in the CFUG committee	Dalit ^{b)} and women	Dalit, women, and poor	Women
Number of poorest users' households	26	19	3
NTFPs traded ^{a)}	Lokta (<i>Daphne bholua</i>), <i>argeli</i> (<i>Edgeworthia gardneri</i>), <i>machino</i> (<i>Gaultheria fragrantissima</i>), <i>allo</i> (<i>Giardina diversifolia</i>), mushrooms	Lokta (<i>Daphne bholua</i>), <i>argeli</i> (<i>Edgeworthia gardneri</i>), <i>machino</i> (<i>Gaultheria fragrantissima</i>), <i>allo</i> (<i>Giardina diversifolia</i>), <i>chiraito</i> (<i>Swertia chiraita</i>), mushrooms	Lokta (<i>Daphne bholua</i>), <i>simta</i> (cone of <i>Pinus</i> spp), <i>jhyau</i> (raw lichen), <i>chiraito</i> (<i>Swertia chiraita</i>), <i>sugandawal</i> (<i>Valeriana wallichaii</i>)
Time required to reach the nearest town from the CFUG	About an hour on foot	About 10 min on foot	About 1 h 30 min on foot, then 3 h by public transport
Associated enterprises	Bhimeshower Handmade Paper enterprise situated at Boch, 30 km from the CFUG, <i>machino</i> distillation enterprise situated within the CFUG	Everest Gateway Handmade Paper enterprise, situated within the CFUG	None
External agencies involved ^{c)}	ANSAB, ECARDS, DFO, FECOFUN, NSCFP	ANSAB, ECARDS, DFO, FECOFUN, NSCFP	DFO, FECOFUN, NSCFP

^{a)} The scientific names of the NTFPs were identified with the help of NTFP experts at ANSAB (Source: field study 2007/2008).

^{b)} Dalits are so-called untouchable or low-caste people according to Hindu religion.

^{c)} ANSAB, Asia Network for Sustainable Agriculture and Bioresources; ECARDS, Ecology Agriculture and Rural Development Society; DFO, District Forest Office; FECOFUN, Federation of Community Forest Users of Nepal; NSCFP: Nepal-Swiss Community Forestry Project.

trade in, NTFPs in government-managed forests. Such forests often have free access and non-pro-poor management (Olsen and Larsen 2003; Ghimire et al 2008). However, poverty reduction is one of the objectives of community forestry (Pokharel 2009). Pro-poor commercialization of NTFPs in community forestry, that is, delivery of optimum benefits to poor users, must be an

integral part of NTFP management. Such management is determined by the institutional arrangements in the CFUG and consists of both formal and informal rules for managing resources. Acharya (2005) mentioned that the development of different institutional arrangements in CFUGs is influenced by various factors such as resource characteristics, community dynamics, and occupation

TABLE 2 Importance and uses of selected NTFPs in the three study sites.^{a)}

Local name of NTFP	Frequencies			Uses
	Suspa CFUG	Kalobhir CFUG	Mahadevthan CFUG	
<i>Lokta</i> (bark of <i>Daphne bholua</i>)	7	6	8	Making Nepali handmade paper
<i>Argeli</i> (bark of <i>Edgeworthia gardneri</i>)	10	8	NA	Making Nepali handmade paper
<i>Simta</i> (cone of <i>Pinus</i> spp)	NA	NA	10	Making souvenirs
<i>Jhyau</i> (raw lichens)	NA	NA	9	Coloring textiles, preparing medicines
<i>Chyau</i> (raw mushroom)	7	9	6	Vegetables
<i>Machino</i> (leaf of <i>Gaultheria fragrantissima</i>)	7	NA	NA	Essential oil used in medicines

^{a)} NA, not applicable.

type. Furthermore, Hertog and Wiersum (2000) added the economic value of NTFPs to the list of factors.

However, it is still unknown which of these factors in particular influences such arrangements for pro-poor commercialization of NTFPs in CFUGs. Therefore, this article presents our analysis of the factors at 3 levels of NTFP management: production, marketing, and benefit sharing. The production level describes the arrangements for managing NTFPs within the forest, the marketing level deals with their marketing within the district, and benefit sharing deals only with NTFP-based pro-poor programs in CFUGs.

General overview of the study site

The study was conducted in the Dolakha district, which is located about 150 km east of Kathmandu, the capital city of Nepal. It lies between 27°28'N to 28°00'E and 85°50'N to 86°32'E. The district is 1 of the 20 mountainous districts of Nepal. Many CFUGs in the district have been managing NTFPs commercially (Paudel 2004). For selecting study sites, DFO, a number of nongovernmental organizations (NGOs), and CFUGs were visited, and their personnel were consulted, as were several traders. Finally, 3 CFUGs, Suspa, Kalobhir, and Mahadevthan, were selected based on 3 criteria:

1. Forests had been handed over to the CFUGs at least 5 years ago.
2. The CFUGs were managing the NTFPs commercially.
3. The distance between the CFUG and the closest major town varied across the 3 sites.

A general overview of the study sites is presented in Table 1.

Suspa lies near the largest headquarters, Charikot, which is also the biggest town in the district, whereas Kalobhir lies very close to Jiri Bazaar, the second largest town in the district. Among the 3 CFUGs, Mahadevthan lies farthest from any town. The users of Kalobhir are better off economically than those of Suspa and Mahadevthan, because Kalobhir lies closest to a town, so that its users can sell their labor and agricultural goods more easily. Moreover, a few of its households run businesses in Jiri Bazaar. The poorest users' households were identified through participatory well-being ranking in Suspa and Kalobhir, and through an ad-hoc process in Mahadevthan. Identification in all CFUGs was approved by the general assemblies, the highest decision-making body in CFUGs.

In Suspa and Kalobhir, external agencies, mainly the Nepal-Swiss Community Forestry Project (NSCFP) and the Asia Network for Sustainable Agriculture and Bioresources (ANSAB), provided technical support for inventorying forest products, preparing NTFP management plans, strengthening market linkages, and conducting pro-poor programs, whereas in Mahadevthan, they were only involved in the handing over of the forest to the community and in conducting some forest management training. The NSCFP has been working in the district since 1990, with the objective of reintegrating marginalized communities in the mainstream of community forestry development. The ANSAB has been working in the same district since 1998 on NTFP-based pro-poor enterprise development. The DFO has largely supported the administration and, in some cases, the financing of activities initiated by the other external agencies. The external agencies that supported the studied CFUGs are presented in Table 1.

FIGURE 1 Nonmembers of Kalobhir CFUG cleaning *lokta* bark after harvesting from Kalobhir community forest. (Photo by Kalyan Gauli)



Methods

The study used a case study approach. Data were collected between October 2007 and April 2008, with qualitative and quantitative social science methods as used by Acharya (2005). In the first step, free listing exercises, as described by Weller and Romney (1988), were administered to 10 persons, NTFP collectors and CFUG committee members, from each CFUG to identify the NTFPs important to the forest users. Informal discussions with the CFUG members were conducted before the free listing exercise to identify the appropriate collectors and committee members. These collectors and committee members were asked to mention the forest products that they and other users were collecting from community forests. NTFPs, plant-based forest products other than timber, fuelwood, and fodder, with frequencies higher than 5 were considered important and, therefore, were selected for the study. This study did not consider fuelwood and fodder as NTFPs because none of the operational plans of the studied CFUGs had mentioned them as NTFPs.

In the second step, institutional arrangements associated with pro-poor commercial management of NTFPs and factors that influence such arrangements were identified for each of the selected NTFPs by reviewing the CFUG records and key informant interviews. Eighteen key informants were sampled through the snowball method (Bernard 2002) from various groups of stakeholders and were interviewed by using a checklist. The key informants consisted of 2 NTFP collectors and 2 CFUG committee members from each CFUG, 2 traders, 2 entrepreneurs, 1

NGO representative, and 1 DFO staff member from the district. In addition, informal discussions, observations, and group discussions were used for information collection (Acharya 2005).

Several triangulation loops were used to cross-check the selection of key informants and the collected information. All interviews and group discussions were recorded on a digital voice recorder, and the recorded information was transcribed into Microsoft Word. The transcript was then coded by using Atlas.ti 5.0 qualitative analysis software. As suggested by Miles and Huberman (1994), a mixed approach that comprised both inductive and deductive coding was induced. Before coding, a list of the codes was drawn up, and additions were made to the list as work progressed. This was followed by a cause-and-effect analysis between the codes, and, finally, the factors influencing the institutional arrangements were identified.

Results

Important NTFPs for community forest users

Frequencies of NTFPs and CFUG documents showed that NTFPs important to the users were those in trade. These NTFPs were important sources of income for both users and CFUGs. The important NTFPs, their frequencies, and uses are shown in Table 2.

Lokta (*Daphne bholua*) and *argeli* (*Edgeworthia gardneri*) bark are used to make Nepali handmade paper. This paper has a big market within Nepal and also in the United States and Europe. *Simta* (cone of *Pinus* spp) is exported to India without any value addition, whereas

TABLE 3 Institutional arrangements at different NTFP management levels and factors influencing them.^{a)}

NTFP management level	Institutional arrangements	Factors ^{b)}		
		Involvement of external agencies	Economic status of users	Alternative employment
NTFP management within community forest	Presence of detailed NTFP management plan	*	*	NA
	Restriction or permission to outsiders to collect NTFPs	NA	*	*
NTFP marketing	Agreements for regular marketing	*	NA	NA
NTFP-related pro-poor programs	Allocation of community forestland to the poorest	*	NA	NA
	Support for the poorest for purchasing shares of enterprises	*	*	NA

TABLE 3 Extended.

NTFP management level	Factors ^{b)}			
	Distance to NTFP sites	Established market linkages	Inclusion of representatives in CFUG committee	Geographic location of the CFUGs
NTFP management within community forest	NA	NA	NA	*
	*	NA	NA	NA
NTFP marketing	NA	*	NA	*
NTFP-related pro-poor programs	NA	NA	*	NA
	NA	NA	NA	NA

^{a)} NA, not applicable.^{b)} The asterisk (*) indicates the influence of the factor on the respective institutional arrangement.

jhyau (raw lichen) is processed, mostly in the Terai region (a strip of flat land that stretches from east to west in the south of Nepal and bordering India), and exported to India. In addition to being used for household consumption, mushroom had a market nearby. Similarly, *machino* (*Gaultheria fragrantissima*) was distilled locally to extract essential oils and sold in Kathmandu.

Arrangements for managing NTFPs within the forests, their marketing, and pro-poor programs

Arrangements for managing NTFPs differed across the 3 study sites. The operational plans of both Suspa and

Kalobhir had detailed management plans for most of their important NTFPs. The descriptions included harvestable age, size, and quantity; harvesting months or seasons; and royalties on individual NTFPs. Such details were lacking in Mahadevthan, where only the names of NTFPs, their harvestable quantities, and royalties were mentioned. The former 2 CFUGs had been harvesting and selling NTFPs almost regularly as per their operational plans, whereas such activities were irregular in the latter. In all CFUGs, the users were allowed to harvest specific NTFPs only when the CFUG committee opened the forest for this purpose. None of the CFUGs allowed outsiders to

harvest NTFPs, the only exception being *lokta* in the case of Kalobhir (Figure 1). By contrast, none of the operational plans had provisions for mushrooms, so both users and nonusers were eligible to collect them.

Suspa and Kalobhir, partners in the community-based NTFP enterprises that also signed agreements to supply NTFPs to enterprises, had an ensured market for some NTFPs (Table 1). Mahadevthan, however, had no market linkages with any enterprise and depended mostly on individual traders to sell its NTFPs. All 3 CFUGs levied taxes on NTFPs exported from their CFUGs and deposited the revenue collected into their community fund. This fund was mainly used for forest and/or community development activities, such as hiring forest guards, constructing roads, building school infrastructure, etc. Upon approval by the general assemblies, both Suspa and Kalobhir conducted some NTFP-based pro-poor programs for the poorest households identified. For instance, in Suspa, 2 of the 26 poorest users' households were shareholders in a paper enterprise, and 4 were shareholders in a distillation enterprise. Similarly, all 19 of the poorest users' households in Kalobhir were shareholders in a paper enterprise. In addition, a subgroup of the poorest users' households in Kalobhir is cultivating *argeli* on community forestland. By contrast, Mahadevthan had no pro-poor program.

Factors influencing the arrangements for pro-poor commercial NTFP management

The study identified 7 determining factors that influence the pro-poor commercial management of NTFPs in the CFUGs. These factors are the following:

1. Involvement of external agencies;
2. Economic status of users;
3. Distance to NTFP sites;
4. Alternative employment;
5. Established market linkages;
6. Inclusion of representatives in the CFUG committee; and
7. Geographic locations of the CFUGs.

The influence of these factors on institutional arrangements at the 3 levels of NTFP management in CFUGs is presented in Table 3.

NTFP management in community forest: In contrast to Mahadevthan, external agencies were involved in a wide range of activities and played a significant role in drawing up NTFP inventories and formulating NTFP management plans in Suspa and Kalobhir, both of which are more accessible than Mahadevthan. Underscoring the importance of support from external agencies, a committee member of Suspa said:

It would have been very difficult for us to draft our constitution and operational plan if there was no support from ANSAB (an NGO). DFO has few rangers and they have to look after many CFUGs.

Mahadevthan, where external agencies were hardly involved, did not have a detailed NTFP management plan. Moreover, it could not sell NTFPs for 2 years because it could not renew its operational plan in time.

The lack of technical or financial resources, or both, in the CFUGs and an absence of such support from external agencies hampered preparation of an inventory and management plans. The involvement of external agencies was further determined by the geographic location of the CFUG. According to NGO personnel, a lack of financial and human resources made it difficult to conduct programs in remote CFUGs.

The economic status of users, alternative employment opportunities, and distance to NTFP sites determined the involvement of users in harvesting NTFPs. In Kalobhir, where the economic status of users was relatively good and alternative employment opportunities were relatively easily available, users' involvement in harvesting NTFPs was low and even lower for the forests far from the village. According to some key informants, an estimated 20% of the users were involved in harvesting *argeli*, whereas the figure for *lokta* was less than 5%. Users had to travel up into the hills for about an hour to reach the *lokta* forests, whereas they could reach the sites for *argeli* in about 10 minutes. A committee member of Kalobhir explained the reason for low involvement of users in *lokta* collection:

Who wants to do hard work? Collecting lokta is not an easy task. Since Jiri Bazaar is close to the village, most of the users collect firewood from the forest and sell it in the market to get instant money. For lokta, one has to climb the mountains, harvest it, clean it and dry it; it is a difficult and time-consuming task.

However, the annual audit report of Kalobhir for 2007 showed that royalty on *lokta* is one of its major sources of income. Therefore, the committee allowed outsiders to harvest *lokta* and levied a tax on the harvested quantity. In Suspa and Mahadevthan, about 40% and 90% of the users, respectively, were involved in NTFP harvesting (Figure 2). Because these CFUGs were located far from cities, their users had poor access to employment in the cities; hence, a large number of them were involved in the collection of NTFPs to sustain their livelihoods. Because of the users' high dependence on NTFPs, both Suspa and Mahadevthan had strictly forbidden outsiders to collect NTFPs from their forests.

According to some key informants from all CFUGs, mushrooms were found in forests during the monsoon season. Although most users consumed mushrooms as a subsistence vegetable, few, particularly those in Kalobhir

FIGURE 2 A user of Mahadevthan CFUG collecting *simta* in his community forest. (Photo by Kalyan Gauli)



and Suspa, sold them in nearby cities to supplement their household income. For most of the economically better-off users, mushrooms did not play much of a role in their livelihoods, neither as a commercial product nor as a subsistence product. Consequently, mushrooms were

overlooked in management plans and were an open-access NTFP.

Marketing of NTFPs: Established market linkage was the most important factor in the successful marketing of NTFPs in the CFUGs studied. Because the paper (Figure 3) and *machino* distillation enterprises were located close to Suspa and Kalobhir, they had easy access to markets for their NTFPs. In addition, they had ensured a market for some of their NTFPs by signing agreements to supply raw materials to these enterprises. Consequently, these CFUGs actively managed and regularly marketed these NTFPs. Mahadevthan, however, had neither an enterprise nearby nor an agreement with any enterprise; hence, it depended on individual traders operating in the area. At the same time, the CFUG could not harvest and sell NTFPs according to its operational plan because of irregular service from traders. In the voice of a collector:

Sometimes traders do not come; so it is risky to harvest NTFPs without an order; if we cannot sell them in time, they get spoiled.

In the case of Mahadevthan, district-level traders purchased NTFPs from the village traders and sold them to Kathmandu-based traders or enterprises. However, they did not do this regularly; therefore, the village traders did not buy them when there were financial constraints or a lack of demand. In such situations, trade in NTFPs could not take place.

FIGURE 3 Bhimeshower Handmade Paper enterprise situated at Boch, Dolakha. (Photo by Kalyan Gauli)



FIGURE 4 Poorest users of Kalobhir CFUG participating in their monthly meeting. (Photo by Kalyan Gauli)



NTFP-based pro-poor programs: In the CFUGs studied, inclusion of users from marginalized communities in executive committees and involvement of external agencies were the two most important factors in the execution of pro-poor programs. In Kalobhir, the poorest users were organized into a subgroup (Figure 4), one of whose members was an ex officio member of the executive committee of the CFUG. In a group discussion with some of the poorest users of Kalobhir CFUG, one member expressed that:

We can now ask the committee for financial support more easily. We are happy because we have got a piece of land in the community forest to cultivate argeli. Now we have a platform to talk directly to the representatives of the donor when they visit our CFUG. Earlier, we did not know who came and for what.

The poorest users raised their voices at committee meetings through their representatives and ensured that

NTFP-related activities did benefit them. Despite the identification of the poorest users in CFUGs, Suspa and Mahadevthan did not have their subgroups or representatives on their executive committees. Furthermore, they did not have any NTFP-related pro-poor program that involved all the poorest users in the CFUGs. For example, only 6 of the 26 poorest users in Suspa had shares in enterprises, whereas none in Mahadevthan benefited from any pro-poor programs.

Although both Suspa and Kalobhir were executing some NTFP-based pro-poor programs, most of the non-poor users, including CFUG committee members, did not favor such programs. One committee member of Suspa commented on the poorest users thus:

They are not actually poor; no one is rich in the village, all are poor. If the so-called poor worked hard like us, they would not be poor. We have to spend community funds for them as the DFO and NGOs ask us to do so.

Where there was extensive involvement by external agencies, their facilitative and financial support resulted in the execution of one or the other pro-poor program. In Kalobhir, external agencies helped all 19 of the poorest users to purchase shares in the handmade paper company and provided technical and financial support to cultivate *argeli*. Similarly, in Suspa, the 6 poorest users were partially supported in purchasing shares of local enterprises. A survey of their meeting minutes also showed that they mostly requested external agencies to support pro-poor programs.

Discussion

The first step toward pro-poor commercial NTFP management in CFUGs is to draw up a detailed inventory, at least of the NTFPs most important to the community, along with sustainable harvesting plans for them. This requires technical and financial resources, which CFUGs generally lack, whereas those of the DFO are insufficient (Ito et al 2005). Consequently, CFUGs depend heavily on NGOs to develop such plans. Among the CFUGs studied, Suspa and Kalobhir developed such plans with support from NGOs. Banjade et al (2007) also highlights the important role of external agencies in the development of community forestry by providing material and technical support. In addition, NTFPs such as mushrooms that have less commercial and subsistence value for economically better-off users do not have management plans. This could be because these users are usually decision-makers in CFUGs (Thoms 2008), and forest products of little interest to them may not get adequate attention for management. This finding contradicts the findings of Christensen et al (2008), who maintain that economically better-off users are more involved than poor users in collecting mushrooms. However, it also shows that poor users are the ones who collect mushrooms for commercial purposes. Because mushrooms are available only intermittently during the monsoon, their contribution to subsistence may not be significant for economically better-off users. Consequently, they get less management priority. Hertog and Wiersum (2000) also showed that the management of an NTFP, *Zanthoxylum armatum*, in a CFUG changes from open to regularized access as its economic value increases.

The second step toward pro-poor commercialization is easy access to the market for NTFPs. Suspa and Kalobhir, being shareholders in community-based NTFP enterprises, had ensured markets and, therefore, were harvesting and selling NTFPs regularly. In contrast, Mahadevthan, being dependent on individual traders, could not trade its NTFPs regularly. When village traders are not aware of the market for an NTFP, they cannot approach collectors. Furthermore, collectors cannot take the risk of collecting and storing NTFPs, because some NTFPs are easily spoiled. Establishing and operating processing enterprises in rural areas can involve many

challenges related to finance, technology, coordination with external markets, etc (Subedi 2006). In such cases, involvement of external agencies could be inevitable. However, the tendency of external agencies to work in accessible areas could be a constraining factor in establishing such enterprises in remote areas.

The third and most crucial question for pro-poor commercial management of NTFPs in CFUGs is: Who gets the benefit? Nepal's community forestry program is frequently criticized for being dominated by the elite (Thoms 2008), due to fewer benefits for poor users compared to those who are better-off (Pokharel and Nurse 2004). Although the concept of inclusion of marginalized people in the decision-making forums of CFUGs is not new, "participation" of marginalized people is always a matter of discourse (Giri et al 2008). Including representatives of the poorest users, along with their empowerment by means such as forming and strengthening subgroups, as in Kalobhir, could be one of the best strategies for increasing the influence of the marginalized in CFUG decisions. This might be one of the reasons for the execution of some pro-poor programs, for example, the allocation of community forestland to the poorest for cultivating *argeli* in Kalobhir.

A similar approach is recommended by Gauli and Rishi (2004), in which importance is given to including the poor in the executive committee, along with capacity-building training for the poor separate from those for the dominant groups in the community. Although NTFPs are considered to be the wealth of the poorest, they may not be lucrative enough for them in some cases (Banjade and Paudel 2008). In such cases, involving these poor in the harvesting of NTFPs to reduce their poverty may not be the correct approach. Instead, making them shareholders in enterprises could help reduce poverty in the long run because they may have to wait for a few years to get a return on their share. In addition, further strengthening the poorest users by forming subgroups, as in Kalobhir, could benefit all the poorest users.

CFUGs in Nepal have a top-down social structure (Malla et al 2003), where the non-poor generally look at pro-poor programs unfavorably. However, being a CFUG committee member is a matter of social prestige. The members can exploit their positions to build personal relationships with external agencies that work with their CFUGs and with other agencies in the district (Pokharel et al 2007), apart from benefiting from training, workshops, and tours organized by them. Malla et al (2003), a study carried out in 2 districts in western Nepal, mentioned that almost 80% of the participants in training and workshops conducted by DFOs, which are mostly better paid and out-district, are committee members. Hence, committee members want regular involvement by external agencies in their CFUGs so that they can benefit from such programs. In such cases, external agencies can influence committee members to develop and implement pro-poor

programs. This argument is supported by Paudel and Vogel (2008), who mentioned that external agencies are able to convince rich users to launch pro-poor programs in CFUGs. This highlights the importance of the involvement of external agencies in orienting CFUGs toward the poverty reduction approach.

Conclusion

NTFP management in community forestry has become one of the most highlighted poverty reduction approaches in recent years. This study found that the role of external agencies is important in pro-poor commercial management of NTFPs in CFUGs. Because a patron-client relationship exists between external agencies and committee members, external agencies can convince committee members to implement pro-poor programs.

At the same time, a community structure dominated by the elite becomes more visible when there is little influence from external agencies. This results in neglect of pro-poor programs.

Based on our results, we argue that external agencies should focus more on remote CFUGs where alternative employment opportunities are limited and a large number of users depend on NTFPs for their livelihoods. The importance of including representatives of marginalized users in the executive committees of CFUGs to increase their influence over committee decisions cannot be ignored. Formation of subgroups of marginalized users, and building their capacity, not only helps them raise their voices strongly in the decision-making forum of CFUGs but also provides opportunities for them to interact directly with external agencies and to voice their concerns.

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Paper II

Commercial management of non-timber forest products in Nepal's community forest users groups: who benefits?

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I and Michael Hauser worked out the concept. I collected data from the field, conducted the data analysis, and produced a first draft of the paper. I revised the draft with inputs from Michael Hauser. The paper was accepted for publication in the International Forestry Review on March 2011 with minor revisions.

Commercial management of non-timber forest products in Nepal's community forest users groups: who benefits?

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SUMMARY

Forest policies in Nepal encourage community forest users to commercialise non-timber forest products for income generation. This study sought to understand the ability of forest users to increase their household income benefit through commercial non-timber forest product management by conducting a multiple linear regression analysis. Furthermore it compares the income generation potential of traditional to enterprise-oriented approaches. Results indicate that, in the enterprise-oriented approach, low wealth category households derived income benefits only when they had equitable access to forests and a reliable market. The findings also show that, under the traditional approach, income benefits are the highest for rich households and the least for female-headed poor households. In contrast, the enterprise-oriented approach strengthens the role of disadvantaged poor households. The study concludes that commercialisation of non-timber forest products does not automatically result in equitable income benefits for everyone, whereas, locally-crafted rules and norms do.

Keywords: Non-timber forest products, multiple linear regression, income benefits, commercialisation, Nepal

Gestion commerciale des produits forestiers autres que le bois dans les groupes d'utilisateurs des forêts communautaires du Népal: qui en profite?

K. GAULI et M. HAUSER

Les politiques forestières au Népal encouragent les utilisateurs des forêts communautaires à commercialiser les produits forestiers autres que le bois comme source de revenus. Cette étude a cherché à comprendre comment les utilisateurs de la forêt peuvent accroître leur bénéfice de revenus des foyers à l'aide d'une gestion commerciale des produits autres que le bois, en utilisant une analyse de régression linéaire multiple. Il compare également le potentiel de la génération de revenus des approches traditionnelles jusqu'à celles orientées vers l'entreprise. Les résultats indiquent que, dans l'approche orientée vers l'entreprise, la catégorie des foyers à faibles revenus ne dérivait des bénéfices financiers que lorsqu'ils jouissaient d'un accès équitable à la forêt et d'un marché sûr. Les résultats montrent également que, dans l'approche traditionnelle, les bénéfices financiers sont les plus importants pour les foyers aisés, et les moindres pour les foyers démunis tenus par des femmes. En contraste, l'approche orientée vers l'entreprise fortifie le rôle des foyers désavantagés. L'étude en conclut que la commercialisation des produits forestiers autres que le bois ne résulte pas automatiquement en des bénéfices de revenus équitables pour tous, alors que des règles et normes conçues localement peuvent elles aboutir à un résultat équitable.

El manejo comercial de productos forestales no madereros entre los grupos de usuarios de los bosques comunitarios de Nepal: ¿quiénes son los que más se benefician?

K. GAULI y M. HAUSER

Las políticas forestales en Nepal fomentan la comercialización de productos forestales no madereros entre los usuarios de bosques comunitarios, con el fin de generar ingresos suplementarios. Este estudio intentó comprender la capacidad de los usuarios forestales para aumentar los ingresos de sus hogares a través del manejo comercial de productos forestales no madereros, mediante la realización de un análisis de regresión lineal múltiple. Además de esto, el artículo compara el potencial para generación de ingresos de los métodos tradicionales con métodos de enfoque más empresarial. Los resultados indican que dentro de un enfoque más empresarial los hogares de categoría baja de riqueza sacaron beneficios a nivel de ingresos sólo cuando tenían un acceso equitativo a los bosques y un mercado seguro. Las conclusiones muestran también que con métodos más tradicionales, los beneficios a nivel de ingresos eran mayores para los hogares ricos, mientras que los hogares pobres encabezados por mujeres eran los que se beneficiaban menos. En contraste, el enfoque empresarial proporciona mayores posibilidades para los hogares pobres y desventajados. El estudio concluye que la comercialización de productos forestales no madereros no tiene como resultado automático una distribución equitativa para todos de beneficios a nivel de ingresos, en comparación con las regulaciones y normas creadas en la misma comunidad.

1. INTRODUCTION

Owing to the potential of non-timber forest products (NTFPs) to reduce rural poverty, policymakers and development agencies in Nepal have been paying growing attention to such forest products. The government of Nepal also has considered commercial management of NTFPs as a poverty reduction approach (NPC 1997 and 2002) and has endorsed a NTFP development policy (HMG 2004). NTFPs are products other than timber produced in forests (Belcher 2003). They include annual and perennial plants as well as game. These days, there are seldom any forest-related development workshops and seminars in Nepal that do not address the management of NTFPs (Banjade and Paudel 2008). Researchers fuel this trend by highlighting the importance of NTFPs for poor people's livelihoods. For example, Neumann and Hirsch (2000) note that, in developing countries, the poorest of the poor depend on NTFPs for food, medicine, shelter, cash income and other uses. Bista and Webb (2006) mention that as much as 90% of the total income of households in rural Nepal comes from NTFP-related trade.

At the same time, critics warn that the high dependency of rural people on NTFPs, coupled with inappropriate harvesting practices, degrades the NTFP resource base. This is a particular challenge in government-managed forests, which in practical terms function as open access forests (Pandit and Thapa 2004). Several researchers, including Ostrom *et al.* (1999), have examined government and community management approaches to sustainable natural resource management and observed that, in particular, the latter relies heavily on strong, locally-crafted rules as well as evolved norms.

A large number of observers consider Nepal's community forestry programme successful in conserving forest resources, including NTFPs, especially in mid and high hills (Gautam *et al.* 2002, Kanel and Kandel 2004, Pokharel and Suvedi 2007). The government of Nepal, therefore, continues to handover accessible national forests to local communities. Community forest user groups (CFUGs) have become the principal agents of forest management. CFUGs have the authority to manage, consume and sell excess timber and NTFPs from the forest under their management. There is increasing evidence of the positive ecological impact of community management on the NTFP resource base (Gauli and Baral 2008). In this context, a growing number of policymakers and development agencies advocate for community-owned NTFP management regimes.

The ability to secure the NTFP resource base does not automatically imply equal income benefit opportunities for all CFUG members. Access of the poorest in the community to forest resources is still a matter of discourse (Pokharel and Nurse 2004). Many authors fear that poor people are deprived of getting economic benefits from community forestry and that the benefits are channelled to the better-off households (Banjade *et al.* 2006, Malla *et al.* 2003). This is not only the case in Nepal. In Tanzania, for example, Schreckenberg and Luttrell (2009) and Vyamana (2009) criticise the role of community-based forest management for not being able to

reduce poverty. Discussions in Nepal, however, mostly focus on subsistence forest products such as timber, fuelwood, fodder and leaf litter (Adhikari *et al.* 2004, Adhikari and Lovett 2006, KC 2004).

These authors argue that poor people are unable to utilise much of the subsistence forest products such as leaf litter and fodder because of their low landholding sizes and few live-stock (Adhikari *et al.* 2004). Furthermore, they are deprived of getting benefits from timber – a valuable forest product – as they have poor household infrastructure which seldom need timber to construct (Maharjan *et al.* 2009). In addition, almost all CFUGs in Nepal prohibit individual trading in timber, both within and outside the community. In contrast, a study conducted in protected areas in India, argues that extraction of forest products is not correlated with either the wealth status of households or distance to the forest (Davidar *et al.* 2008). However, the influence of such socio-economic variables may not be the same on extraction of commercial forest products such as NTFPs from community-managed forests.

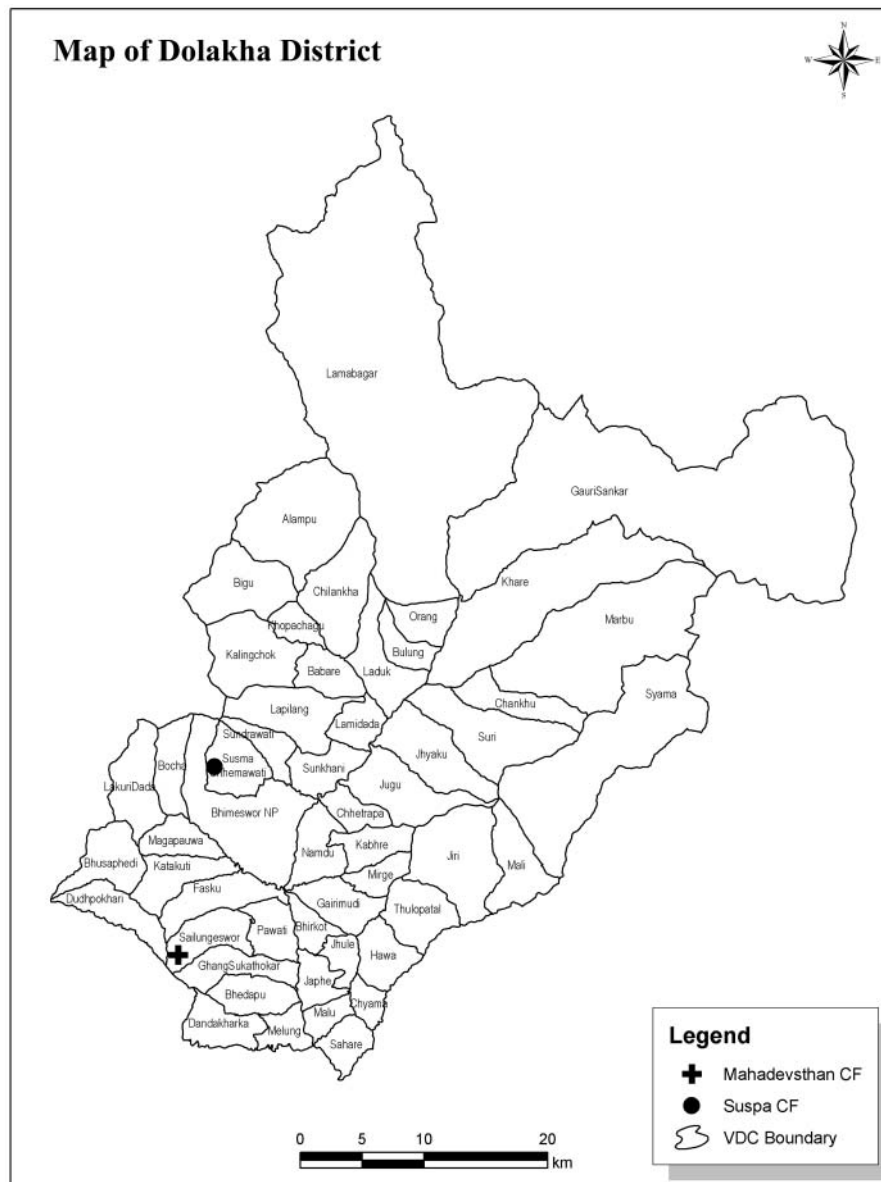
Most of the NTFP literature on Nepal focuses on issues related to resource degradation, marketing and policy constraints, mainly of NTFPs in government-managed forests (Larsen 2002, Larsen and Olsen 2007, Pandit and Thapa 2004). Despite the growing number of NTFP studies, there are striking lacunae, particularly in community forestry. Furthermore, NTFPs are being managed commercially in Nepal's community forests with several approaches ranging from traditional to enterprise-oriented. The traditional approach refers to situations where CFUGs do not have detailed management plans and exclusively depend on middlemen to sell their NTFPs. On the other hand, the enterprise-oriented approach refers to situations where CFUGs have detailed management plans and direct market linkage with enterprises (Subedi 2006). This study compares these two different approaches to understand the influence of socio-economic variables such as household income, household size and food self-sufficiency on household NTFP income.

2. METHODS

2.1 Selection and overview of study sites

The study was carried out in Dolakha district, which is located about 150 km east of the capital city, Kathmandu. The district is one of the twenty Himalayan districts of Nepal and is rich in plant diversity (Shrestha and Dhillon 2003). Many CFUGs in the district have been managing NTFPs commercially (Paudel 2004). Two case study sites were selected in consultation with district forest office personnel, field staff working with non-governmental organisations, traders and representatives of CFUGs. The criteria that were used to narrow down the number of possible case study sites were: (i) the forest was handed over to a CFUG at least five years ago; and (ii) one CFUG with traditional and another with enterprise-oriented NTFP management approach.

FIGURE 1 Map of the study sites



The two study sites differed in various aspects. Mahadevsthan comprised 125 households. The community forest area was located between 3 000 and 3 200 m above mean sea level (amsl) and started above the upper edge of the village. The village is close to the NTFP sites in the forest. Suspa comprised more than twice as many households as Mahadevsthan. The community forest area was located between 1 900 and 3 200 m amsl. It started above the upper edge of the household settlements of ward (the lowest administrative unit in Nepal) numbers 8 and 9. Some households of these wards were surrounded by the community forest. As the households of ward number 6 were situated in the foothills, it was relatively difficult for them to access forests with most of the commercial NTFPs such as *lokta* (*Daphne bhoulua*), *argeli* (*Edgeworthia gardenieri*) and *machino* (*Gaultheria fragrantissima*).

Proximity to town was another factor that distinguished the sites. Mahadevsthan is situated far from any town, whereas Suspa is quite close to Charikot, the district headquarter. Charikot is the biggest and economically most important town in the district. The users in both CFUGs were primarily dependent on agriculture for their livelihoods. In Suspa, however, a number of households were also engaged in public service and labour work outside Nepal. As a result, their economic status was better than that of the households of Mahadevsthan. Given their proximity to Charikot, users in Suspa took advantage of alternative employment opportunities including wage labour and sale of agricultural and forest products such as fuelwood and mushrooms. Users in Mahadevsthan, on the other hand, did not have these opportunities. A general overview of the selected CFUGs is presented in Table 1.

TABLE 1 General attributes of the selected CFUGs

CFUG attributes/ Name of CFUG	Mahadevthan	Suspa
Location	Sailungeswer Village Development Committee, Ward 4	Suspa Chemawati Village Development Committee, Ward 6, 8 and 9
Year of establishment	1995	1998
Forest area (ha)	207	635
Time required to reach the nearest town from the CFUG	About one and a half hours' walk and three hours by public transport	About an hour's walk
Number of households	125	303
Major ethnic group	Newar	Thami
Sources of income	Agriculture, Livestock, Forest resources	Agriculture, Livestock, Forest resources, Public sector employment, Labour work in foreign countries
Forest type	Mixed: containing pine, rhododendron and oak species	Mixed: containing pine, rhododendron and oak species
NTFPs traded	<i>Daphne bholua</i> (lokta), <i>Pine cone</i> (Simta), <i>Lichen</i> (jhyau), <i>Swertia chiraita</i> (chiraito), <i>Valeriana wallichaii</i> (sugandawal)	<i>Daphne bholua</i> (lokta), <i>Edgeworthia gardenieri</i> (argeli), <i>Gaultheria fragrantissima</i> (machino), <i>Giardiana diversifolia</i> (allo), mushroom
Associated enterprises	None	Bhimeshwar Handmade Paper enterprise, situated at Boch, 30 km from the CFUG, <i>machino</i> distillation enterprise, situated within the CFUG

Source: Field Survey 2007/8

2.2 Data collection and analysis

Data were collected between September 2007 and April 2008. Based on the sampling strategy employed in Gauli (2003) and Vyamana (2009), households were classified into four wealth categories: very poor, poor, medium and rich. This household classification exercise involved four steps: 1) purposive sampling of four key informants who had a rough idea of the economic status of each member household of the CFUG through informal discussions; 2) categorising the households of each ward into the four wealth groups. For this purpose, the key informants used self-selected indicators, such as landholding, food self-sufficiency, income from off-farm activities, as the most important distinguishing attributes; 3) coding each household by assigning 1 to the poorest household and sequentially higher numbers to other economic classes in ascending order; 4) calculating the average score for each household and stratifying the households of each ward into the relevant classes.

Following the wealth categorisation, proportionate random sampling was conducted to select 20% of the households from each economic class in each ward. This resulted in total 26 cases in Mahadevthan and 60 cases in Suspa. The sample households were interviewed using a pretested semi-structured questionnaire. The questionnaire contained questions about the household size, number of family members who had out-migrated, travel time from the households to the NTFP sites in the forest, in-farm and off-farm

household incomes, NTFP income, food self-sufficiency and issues relating to NTFP management in the CFUGs. The incomes were calculated by the respondents by recalling the previous year's income from different sources, as employed by Bista and Webb (2006). The study considered only the income from those NTFPs that were mentioned in their operational plans (OPs). Incomes from NTFPs such as mushrooms, which were open access, were excluded from the analysis. Similarly, fuelwood and fodder were excluded from the study as the OP of none of the studied CFUGs mentioned them as NTFPs. The first author was assisted in data collection by two recent forestry graduates.

In addition to the household interviews, three group discussions were separately conducted with the CFUG executive committee members elected by the general assembly, collectors and mixed groups of both collectors and non-collectors in each CFUG, as described by Morgan and Spanish (1984). The group discussions helped to understand the NTFP management approaches in the CFUGs and to triangulate the information obtained from household interviews. In addition, information on the NTFP management approaches was also obtained by reviewing the constitutions, OPs and meeting minutes of the CFUGs.

Data were analysed using both quantitative and qualitative methods. The quantitative data obtained from the household interviews were analysed using SPSS 15.0 software. As our objective was to analyse the effects of various independent variables on the income from the NTFPs, the analysis

excluded households from ward number 6 of Suspa as the ward is located relatively far from the forest and the households were not primary users for NTFP collection. Almost 80% of them were not involved in NTFP collection. This reduced the number of cases to 35 in Suspa. Likewise, family members who played an insignificant role in the harvesting of NTFPs (i.e. people younger than 11 and older than 60 years and out-migrants in Mahadevthan; and younger than 15 and older than 60 years and out-migrants in Suspa) were statistically isolated. The lower age limit was considered in Mahadevthan as collecting *simta* (cone of *Pinus spp*) and *jhyau* (raw lichen) is relatively easy and, therefore, a large number of children were also involved in their collection, whereas collecting *lokta* and *argeli* is labour demanding and mostly adult people were involved in Suspa. Backward multiple linear regression was carried out, taking income from NTFPs as a dependent variable and household cash income, household size, travel time and food self-sufficiency as independent variables, as described by Field (2009). However, prior using backward multiple linear regression various models were tried and the best fitting one was selected on the basis of (1) sign, value and significance of the intercept; (2) number of significant explanatory variables; (3) value of R^2 and (4) the significance of F-statistics. Furthermore, before carrying out linear regression analysis the data set was tested for autocorrelation and heterocedasticity using Durbin-Watson test and Breush-Pagan chi-square test respectively. The tests results showed that there was no autocorrelation and heterocedasticity.

The household income is assumed to have an influence on NTFP income because households with higher income tend to have little interest in NTFP collection. Household size is another variable assumed to have an influence on NTFP income because it is relatively easy for households with large family sizes to allocate labour for NTFP collection. Travel

time is also assumed to have this influence because the opportunity cost of collecting NTFPs may be high for households living far from NTFP sites. Similarly, food self-sufficiency is assumed to have such an influence because households living with low food self-sufficiency tend to go to forest to collect NTFPs to earn extra income.

The regression model used to estimate income from NTFPs is as follows:

$$Y = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + e$$

Where Y is the value of dependent variables, the NTFP income; b_0 is a constant and b_i s are the coefficients of the independent variables 1 to 4: (1) household cash income in Nepalese Rupees excluding income from NTFP, (2) number of economically active household members available for NTFP collection, (3) travel time in minutes to reach NTFP sites in the community forest and (4) food self-sufficiency in months, respectively; and e is a random disturbance term normally and independently distributed ($e \sim N(0, \sigma^2)$). The qualitative information obtained from household interviews, group discussions and informal discussions was used to supplement the results obtained from the quantitative data analysis.

3. RESULTS

3.1 NTFP management approaches in the CFUGs

3.1.1 Traditional approach

The OP of Mahadevthan mentioned 10¹ different NTFPs that were available in its forest, although the CFUG did not have detailed management plans for any NTFPs. The OP only contained lists of available NTFPs, harvestable quantities and royalty rates. The most traded NTFPs were *simta* and *jhyau*.

TABLE 2 Change in household size because of out-migration

Community Forest User Group	Economic class	Total household size	Household size after out-migration	Change in household size (%)*
Mahadevthan	Very poor (n=5)	4.2	3.0	28.6
	Poor (n=6)	4.8	3.2	34.5
	Medium (n=8)	4.5	3.6	19.4
	Rich (n=7)	4.4	3.6	19.3
Suspa	Very poor (n=7)	2.1	1.9	13.3
	Poor (n=10)	3.9	2.8	28.2
	Medium (n=11)	4.2	3.0	28.3
	Rich (n=7)	3.4	2.9	16.7

Source: Field Survey 2007/8

* Change in household size was obtained by calculating the change for each household and were averaged for each economic class

¹ Lokta, Argeli, Mushroom, Jhyau, Simta, Allo (*Girardinia diversifolia*), Chiraita (*Swertia chirayita*), Sugandawal (*Valeriana wallichaii*), Pakhanbed (*Bergenia ciliata*), Majitho (*Bubica cardifolia*)

Household interviews revealed that the average distance to the NTFP sites in the forest from households was 18.9 (Standard deviation 7.7) minutes.

Group discussions with CFUG committee members and collectors showed that the NTFP management approach was traditional. The committee had regulated the management of NTFPs in the forest by imposing a ban on their harvest. The ban was not as strict for *simta* and *jhyau* as it was for *lokta*. Collection of *lokta*, one of the most commercialised NTFPs in the district, was banned for five years. During group discussions, some collectors expressed their displeasure over the long-term ban. The committee members, however, justified their action of banning by citing the unavailability of appropriate market and price for *lokta* and the need for conserving it. Although there was no restriction on the collection of *simta* and *jhyau*, most of the poor users were not collecting them until village traders asked them to. They feared that if they were not able to sell the NTFPs in time, they might get spoiled because of the lack of proper storage facilities in their houses.

Users could harvest NTFPs only when the CFUG committee opened the forest for that purpose generally in the winter, which was also an off-season for agricultural activities. The forest was opened only when outside traders requested them. The committee would inform the users about the forest opening day through personal communication. During group discussion, a few collectors expressed their grievance that sometimes they did not know when the forest had opened and came to know about it only when they saw other households bringing home harvested NTFPs.

According to the committee members, first, outside traders contacted village traders – mostly committee members –, who, after price negotiations with the outside traders, gave permission of the committee to collect NTFPs. The village traders then informed the collectors about the prices of NTFPs. However, neither village traders nor collectors were aware of the actual market prices of the NTFPs. The collectors had to sell the collected NTFPs to village-level traders. In some cases, they had to wait for weeks or months before receiving payment for the sold NTFPs. Mahadevthan was exclusively dependent on outside traders for marketing NTFPs. It did not have market linkages with any enterprise. Moreover, services of outside traders were irregular. Hence the CFUG could not sell NTFPs regularly.

The CFUG levied taxes on the export of NTFPs by district-level traders and deposited the collected revenue in its community fund. The fund was mainly used for community development activities such as construction of roads and community buildings and lending to CFUG members on interest. Mahadevthan had identified the three poorest users from their group, which was approved by its general assembly, – the highest decision-making body in CFUGs. However, it had not conducted any pro-poor programme for them.

3.1.2 Enterprise-oriented approach

In its OP, Suspa had listed 12² NTFPs that were available in its forest. Out of these NTFPs, the CFUG had detailed management plans for *lokta*, *argeli* and *machino*, including descriptions about the age, size, quantity and appropriate months/season for harvesting each NTFP. Household interviews revealed that average distance to the NTFP sites in the forest from households was 62.0 (Standard deviation 20.0) minutes.

Suspa had allocated a piece of land to each ward within the community forest for cultivating NTFPs such as *argeli*, broom grass (*Thysanolaena maxima*) and cardamom (*Amomum subulatum*). It had introduced a rule that every member household of the CFUG must participate in NTFP planting activities, but it was not obligatory for the household to take part in harvesting activities. During group discussions, some users said that generally richer households did not opt for *argeli* harvesting. Furthermore, mostly women were involved in *machino* harvesting, whereas there was almost equal participation of men and women in *lokta* and *argeli* harvesting.

Suspa had restricted the role of middlemen in NTFP trading. The CFUG had direct market linkages with enterprises to sell NTFPs. It had processing enterprises for *lokta* and *argeli* about 30 km from the CFUG and for *machino* within the CFUG. The committee members negotiated prices of NTFPs with the enterprises and fixed their prices by taking the price in Kathmandu markets as reference. The committee then announced the prices of NTFPs, forest opening day and harvesting period. Generally, the committee took such decisions two weeks before the opening day and in the agricultural off-season period. They disseminated the information by posting announcements on the CFUG notice board and in public places, as well as through personal communication. According to the committee members, the duration of the forest opening was based on the stocks of individual NTFPs in the forest; it usually lasted for 15 days to a month in the case of *lokta* and *argeli* and four to five months in the case of *machino*. During group discussions, the collectors said that advance notice of the opening day and the prices of NTFPs helped households to manage their time for NTFP collection.

Suspa had different marketing arrangements for *machino* from *lokta* and *argeli*. Collectors sold *machino* direct to the enterprise immediately after harvesting and received money on a fortnightly basis. The CFUG collected royalty on *machino* from entrepreneurs. In case of *lokta* and *argeli*, when harvesting was over, the committee fixed the day of purchase and asked collectors to bring the harvested NTFPs to a specified place on that day. The information dissemination process was similar to that for opening the forest. The collectors would bring their harvested *lokta* and *argeli* to the collection centre on that day. The committee paid the collectors on the same day according to the predetermined prices. It would

² Lokta, Argeli, Mushroom, Jhyau, Simta, Machino, Allo (*Girardinia diversifolia*), Chiraita (*Swertia chirayita*), Pakhanbed (*Bergenia ciliata*), Majitho (*Bubica cardifolia*), Vajradanti (*Barleria prionitis*), Nagbeli (*Lycopodium clavatum*)

then sell NTFPs to the enterprise after adding the royalty on the respective NTFPs and a profit margin.

As in Mahadevthan, the revenue from NTFP sale was deposited in the CFUG's common fund. The fund was mainly used for forest and/or community development activities such as hiring forest guards, constructing roads, building school infrastructure, etc. The CFUG had identified 26 poorest user households through participatory well-being ranking. The identification was approved by its general assembly. It had conducted some NTFP-based pro-poor programmes for such households. For instance, it had supported two poorest user households to purchase shares of a paper enterprise and four to purchase shares of a distillation enterprise.

3.2 Livelihood strategies and out-migration

The information obtained from the household interview shows that the basic livelihood strategy of both CFUGs was agriculture. The major agricultural crops of Mahadevthan were potato, maize and vegetables. The households sold potato and vegetables or bartered them with rice in the village. Kathmandu was the final market for these products. Similarly, the major agricultural crops of Suspa were potato, vegetables, maize and livestock products such as milk. Generally, the agricultural and livestock products were taken to Charikot.

In both CFUGs, agricultural production was not enough to meet household food requirements. Average food self-sufficiency for Mahadevthan and Suspa was 8.31 (standard deviation = 3.03) and 7.03 (standard deviation = 3.18) months respectively in a year. Their sources of income other than agriculture were domestic and overseas labour work and public service. Out-migration was slightly higher in Mahadevthan than in Suspa (Table 2). Most of the adult male members of Mahadevthan had migrated to Kathmandu in search of labour work, leaving their wives and children at home. In Suspa, apart from Kathmandu, the male members went to Charikot to find labour work. Members of a few households, generally the better-off, were in public services and overseas employment.

TABLE 3 *Share of NTFP income on household cash income*

Community Forest User Group	Economic class	Average cash income (NRs) ¹	Average NTFP income (NRs)	Average NTFP contribution (%)	Maximum contribution (%)
Mahadevthan	Very poor (n=5)	15 077	1 077	7.3	14.7
	Poor (n=6)	20 265	1 198	6.2	12.7
	Medium (n=8)	32 351	2 227	6.8	10.3
	Rich (n=7)	42 719	2 319	5.6	12.0
Suspa	Very poor (n=7)	27 376	2 305	8.2	20.8
	Poor (n=10)	46 686	2 316	5.5	13.3
	Medium (n=11)	57 483	1 477	2.8	7.1
	Rich (n=7)	65 608	899	2.5	10.1

Source: Field Survey 2007/8

¹ 1 US Dollar = 74 Nepalese Rupees (NRs)

TABLE 4 *Determinants of the NTFP income in Mahadevthan*

Variables	Coefficient ^{a)}
Constant	555.625 (481.127)
Household income excluding income from NTFPs	-0.02* (0.008)
Economically active household members	541.131** (143.9)
<i>F</i> value = 18.10**	
Adjusted R ² = 0.578	

^{a)} Numbers in parentheses indicate standard error (SD), Significance: *5%, **1%.

3.3 Share of household income from NTFPs

The household interviews showed that, apart from NTFP income, labour work within the village or in towns, sale of vegetables, public service and remittance from overseas employment were the major sources of household income. NTFP has share up to 15% of total income of very poor user households in Mahadevthan and 21% in Suspa (Table 4). In both CFUGs, share of NTFPs in the total household income of rich households was only around 10% of the total income. Average share of NTFPs to household income was the highest for very poor class in both CFUGs. However, the average NTFP income of very poor and poor households, in absolute term, is half that of middle and rich households in Mahadevthan.

3.4 Determinants of NTFP income

In Mahadevthan, the results of multiple linear regression show that the adjusted R² value is 0.578, suggesting that 57.8% of variance in dependent variable is accounted for by independent variables (Table 4). Household income and household size were found to be significant determinants of

TABLE 5 *Determinants of the NTFP income in Suspa*

Variables	Coefficient ^{a)}
Constant	3645.854*** (896.454)
Household income excluding income from the NTFPs	-0.009* (0.005)
Economically active household members	681.902*** (177.55)
Travel time to reach the NTFPs site in the community forest	-32.759*** (10.57)
Food self-sufficiency	-179.577** (72.012)
<i>F</i> value = 8.58***	
Adjusted R ² = 0.472	

^{a)} Numbers in parentheses indicate standard error (SD).

Significance: *10%, **5%, ***1%.

NTFP income ($p = 0.021$ and 0.001 respectively). The positively significant coefficients indicate that rich households and households with bigger family size had a higher NTFP-based income compared to their opposite counterparts.

Two variables, travel time and food self-sufficiency, do not significantly relate with the NTFP income; hence, backward multiple regression excluded them from the model. This implies that, irrespective of the household distance from the NTFP site and food self-sufficiency, the users were extracting NTFPs from the community forest.

In Suspa, adjusted R² value is 0.472, suggesting that 47.2% of variance in dependent variable is accounted for by independent variables (Table 5). Household size, travel time and food self-sufficiency were found to be significantly related with the dependent variable, NTFP income, respectively at 1%, 1% and 5% level of significance ($p = 0.001$; 0.004 and 0.018 respectively). The total household income was also significant but at 10% level ($p = 0.064$). The positive coefficient of household size indicates that households with bigger family size were earning more from NTFPs, whereas the negative coefficient value of travel time indicates that households close to the forest were earning more from NTFPs compared to their opposite counterparts. Similarly, the negative coefficient value of household income indicates that the higher the household income, the lower the income from NTFPs. Similarly, food self-sufficiency is negatively correlated with the NTFP income, indicating that households with low food self-sufficiency mostly depend on NTFP collection.

4. DISCUSSION

Although a lot of literature highlight the role of NTFPs on the livelihoods of the poor (Cavendish 2000 and Neumann and Hirsch 2000, for example), the results of this study show that the maximum contribution of NTFPs to the incomes of the poorest households is low (15% and 21% respectively in Mahadevthan and Suspa). The low contribution could be

because the study considered only a few NTFPs that were mentioned in the operational plans. Furthermore, between the two CFUGs studied, their contribution to the poorest households of the remoter CFUG, Mahadevthan, is the least. This can be ascribed to two reasons: first, Mahadevthan had banned harvest of *lokta* – one of the most commercialised NTFPs in the district – for several years to conserve the resource. This was at the cost of poor households, who lost an important source of cash income (Dev *et al.* 2003 and KC 2004); second, passive participation of poor households in NTFP collection as a result of the low confidence in the NTFP marketing mechanism of Mahadevthan committee because of irregular service of traders. In addition, the fieldwork for this study was conducted at a time when the enterprises associated with Suspa were operating in their initial years of operation and when dividends had not yet accrued to the shareholders. It can be expected that, in the future, there will be a greater contribution of NTFPs to the income of the poorest households in Suspa as a number of them had shares in the enterprises.

Furthermore, the positively significant coefficient of household income in Mahadevthan indicates that rich households were earning more from NTFPs than poor households. In other words, poor households were earning less from NTFPs despite of loose community control in harvesting of *simta* and *jhyau*. These low earnings of poor households could be because of a weak NTFP marketing mechanism in Mahadevthan. As there was no assured market for NTFPs and the services of outside traders were also irregular, most of the users were not sure whether the NTFPs collected by them would be sold in time. The risk of NTFPs being spoiled due to lack of proper storage facilities with poor households, coupled with an uncertain payment mechanism, could be reasons for the low interest of users, especially poor users, in the collection of NTFPs. The case is similar in other parts of the world. Ambrose-Oji (2003), conducted a study in South-west Cameroon, illustrating that poor people benefit less from NTFP collection, as economically, they are not in a position to cope with the results of an uncertain market for NTFPs, whereas rich people, having greater reservoirs of capital assets, can take risk. The elite domination of the decision-making forum of CFUG, as argued by Rishi and Gauli (2005) and Thoms (2008), could be a factor for Mahadevthan's non-pro-poor NTFP management. The elite in the community are reluctant to change the system as long as they are benefiting or until an outside force convinces them to change (Gauli and Hauser 2009). If poor users cannot sell the collected NTFPs immediately or have to wait for long to get their money, then they may be drawn towards work other than collecting NTFPs.

However, in case of Suspa, the total household income was negatively related with the NTFP income, indicating that poor households were earning more than rich households. The reason for this could be the established market linkages of NTFPs with enterprises. The users were quite sure of selling the NTFPs collected by them in time; hence, poor users were motivated towards harvesting NTFPs. Pandit *et al.* (2009) also illustrates that enterprise-oriented community

forest management delivers more benefits to poor users. In addition, as there was collective marketing of NTFPs and the CFUG committee was directly responsible for marketing, collectors felt more secure about the market for their NTFPs. This discussion is close to the recommendation made by Bista and Webb (2006), which argues for the economic benefits of collective NTFP marketing for poor users. In addition, cultivation of *argeli* in community forest land in Suspa had benefited poor households as rich households are less interested in harvesting this NTFP. Maharjan *et al.* (2009), a study conducted in Nepal, also argues in favour of the contribution to cash income of poor households through allocation of land in community forests for cultivation of NTFPs.

In both CFUGs, the variable household size was found to be significantly related with NTFP income. The positive coefficient value indicates that the larger the household size, the more its income from NTFPs. This could be because, households with big family size could harvest more within the short period of time the forest was opened. Furthermore, for such households, allocating labour for NTFP collection is relatively easy compared to smaller households. When male members out-migrate in search of employment, leaving only their wives and children behind, the family has less effective human resources available for NTFP collection (Giri *et al.* 2008). Hence, as out-migration from poor households was high in Mahadevthan, its impact on NTFP income was greater.

Poor communication about the forest opening day in Mahadevthan affected allocation of household members for NTFP collection, especially in those households whose male members had out-migrated. Consequently, female-headed households were unable to collect significant amounts of NTFPs as they had to finish other household chores such as taking care of their children and cattle. A similar trend is observed by Adhikari *et al.* (2004), who mentions that female-headed households can collect only half of the forest products collected by male-headed households. Similarly, Olsen and Larsen (2003) illustrate the availability of adult male members as a prerequisite for NTFP harvesting.

However, in Suspa the CFUG committee announces the prices of NTFPs and the forest opening day around 15 days before, and therefore the households have sufficient time to plan for assigning their members for NTFP collection. In addition, the operation of the *machino* enterprise within the CFUG for a couple of months and the regular payment mechanism may have encouraged female members of the out-migrated houses to be involved in *machino* collection to earn extra income. Likewise, as the town Charikot is closer to Suspa, male members from poor households who are engaged in wage labour can also participate in the harvesting activities, whereas this is practically difficult for users from Mahadevthan.

In Suspa, the variable travel time is significant but negatively related with NTFP income, implying that households living close to forest earn more from NTFPs. When the committee opens the forest, households living close to the forest get an opportunity to harvest more by virtue of their location

than households living far from the forest. However, irrespective of distance from forest, all households in Mahadevthan were earning from NTFPs. It could be because Mahadevthan is remotely located and had limited alternative cash earning opportunities; hence, the collection of NTFPs was one of the good sources of cash income for almost all households.

The coefficient of food self-sufficiency with NTFP income in Mahadevthan was insignificant. It indicates that, all households were involved in NTFP collection, irrespective of their food self-sufficiency. As there were not many agricultural activities in winter season, and due to its remote location, getting other employment is also difficult, all households were involved in NTFP collection. In contrast, NTFP income is negatively correlated with food self-sufficiency in Suspa. The result is similar to a few studies conducted in other countries. For instance, a study conducted in Vietnam by Viet Quang and Nam Anh (2006) illustrates that household food self-sufficiency is directly related with dependence on NTFP collection. As Suspa is located close to the district headquarters, the users had alternative cash earning opportunities in the form of sale of labour or agricultural products. Mostly those households who could not meet their household food requirements even out of alternative employment activities engaged in NTFP collection.

5. CONCLUSION

NTFP management in community forestry is a widely accepted approach to poverty reduction. However, egalitarian access to resources is determined by local rules, norms and conditions, which create favourable or unfavourable environments for income-earning benefits from NTFPs for households characterised by certain socio-economic attributes. In CFUGs with weak marketing mechanisms, poor users do not have confidence in their management committees, and therefore do not consider NTFP collection lucrative work. On the other hand, a secure market, transparent prices and advance notice of the forest opening days provide opportunities for earning more from NTFP collection, especially for poor households. Female-headed poor households are the most disadvantaged by weak marketing mechanisms. Strict prohibition on NTFP harvesting and allowing harvesting only for a short period of time favours large family-sized households and those living close to forests. When the forest is opened at a short notice, the households with absent male members are not able to cash in on the opportunity to collect NTFPs in comparison to other households. In areas where cash income sources are limited, household food self-sufficiency cannot be a determining factor for NTFP income. In contrast, in areas where there are relatively good alternative employment opportunities, mostly users with low household cash income, low self-food sufficiency and living close to the forest are involved in NTFP collection. This study stresses the importance of an enterprise-oriented NTFP marketing approach, especially in remote areas where alternative employment opportunities are limited.

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Paper III

Linking community forest user groups to non-timber forest product-based enterprises: How does it affect poor users' household income?

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I and Michael Hauser worked out the concept. I collected data from the field, conducted the data analysis, and produced a first draft of the paper. I revised the draft with inputs from Michael Hauser and Christian R. Vogl. The paper was submitted to the Journal of Forest Economics on July 2011. The paper is under peer review.

Linking community forest user groups to non-timber forest product-based enterprises: How does it affect poor users' household income?

Abstract

This study analyses and compares the contributions of the enterprise-based non-timber forest product (NTFP) management approach with the traditional management approach to the household income of NTFP collectors. The study findings show that, in the absence of an NTFP-based enterprise, users do not consider NTFP collection as a lucrative work and they are not assured of timely sale of the NTFPs harvested by them. On the other hand, when the community forest user group has a secure market linkage, the participation and thereby earning of the poorest users from NTFP collection increases remarkably. The study concludes that the establishment of direct NTFP market linkages by establishing local enterprises could be one of the approaches to reducing poverty.

Keywords: Non-timber forest product, enterprise, poverty, community forestry, Nepal

Introduction

A large number of rural poor people living in, or close to, forests depend on non-timber forest products (NTFPs) for their livelihoods. NTFPs are products other than timber produced in forests, and include annual and perennial plants as well as game (Belcher, 2003). Rural people use NTFPs for both subsistence and cash income (Neumann and Hirsch, 2000). While these users are the central actors in the NTFP value chain, they are the least influential actors in the NTFP value chain. It is often argued that the prices that rural collectors are able to obtain through harvesting and selling NTFPs are much lower than the actual prices of the NTFPs on national and international markets (Maraseni et al., 2006). The underlying reasons for such price disparities are poor market information system in rural areas, long supply chains, unorganized marketing and rural people's inability to add value to the produce at local level (Edwards, 1996; Bista and Webb, 2006; Maraseni et al., 2006)

The most commonly proposed ways for strengthening the stake of poor people in NTFP value chains are collective marketing and local-level value addition to the produce (Subedi, 2006; Gauli and Hauser, 2009; Pandit et al., 2009). Collective marketing increases the bargaining power of collectors for better prices, as well as reducing the transaction cost for traders. Similarly, enterprise development at local level adds value to NTFPs and generates alternative employment opportunities for local people. Acknowledging these potentials of collective marketing and local-level enterprise development, Nepal's Herbs and NTFP Policy 2004 emphasizes the development of such enterprises as part of the community forestry programme (HMG/N, 2004). The policy further emphasizes active participation of poor members of community forest user groups (CFUGs) in the operation of NTFP-based local enterprises. The community forests are the national forests handed over to local communities for managing, using and selling excess forest products.

The concept of community forestry in Nepal started being implemented in the 1970s, and has since generated many success stories of forest restoration and biodiversity conservation (Subedi, 2006; Gauli and Baral, 2008). However, despite the successful history of forest restoration of almost three decades, their contribution to the livelihoods of the poor people is still a matter of discourse. Community forestry is frequently blamed for its inability to deliver optimal benefits to the poor users (Malla et al., 2003; Maskey et al., 2006; Thoms, 2008).

In light of the growing emphasis given to NTFP-based enterprise development at local level, as well as the much debated livelihood impact of community forestry, this study analyses the impact of NTFP-based enterprises on household income of users of Mahadevthan CFUG, Dolakha District, central Nepal. It compares the past situation, 2007/08, where the CFUG did not have a direct NTFP market linkage with any locally established NTFP-based enterprises with the present situation, 2010, where it has such a linkage.

As a result of the interventions made by a few non-governmental organizations working in the area and the District Forest Office, a handmade paper enterprise was established close to the CFUG. The organizations involved in establishing the enterprise were the Asia Network for Sustainable Agriculture and Bioresources, the District Forest Office,

the District Development Committee, and the District Cottage & Small Scale Industries Development Board. The enterprise was established through a public-private partnership approach, involving nearby CFUGs, individual members of the CFUGs and local traders. In the second phase of the study, Mahadevthan CFUG had become a shareholder of the newly established enterprise. In addition, three persons from the CFUG also bought its shares. As a result, the CFUG built a direct market linkage for *lokta* (*Daphne bholua*), one of the most commercialized NTFPs in the district, with the enterprise. In this context, the study will examine whether or not the change in the marketing approach for the NTFP from marketing through middlemen to direct marketing has improved poor users' household income.

Overview of study site

The study site, Mahadevthan CFUG, is located about 165 km east of the capital city, Kathmandu. It takes about three hours by public transportation and 1.5 hours on foot from Charikot, the district headquarters and nearest town, to reach the site. It consists of 125 households, with Newar ethnic group making up the majority population. Outmigration of household members to Kathmandu in search of job is high. The community forest area is located between 3,000 and 3,200 m above mean sea level and starts above the upper edge of the village. The village is close to the NTFP sites in the forest. The members of the CFUG were primarily dependent on agriculture for their livelihoods. A general overview of the selected CFUG is presented in Table 1.

Table 1: General attribute of Mahadevthan CFUG

Attributes/Name of CFUG	Mahadevthan
Location	Sailungeswer Village Development Committee, Ward 4
Year of establishment	1995
Forest area (ha)	207
Time required to reach the nearest town from the CFUG	About 1.5 hour on foot, then three hours by public transport
Number of households	125
Major ethnic group	Newar
Income sources	Agriculture, livestock, forest resources
Forest type	Mixed: containing pine, rhododendron and oak species
NTFPs traded	<i>Daphne bholua</i> (Lokta), <i>Pine cone</i> (Simta), <i>Lichen</i> (Jhau), <i>Swertia chiraita</i> (Chiraito), <i>Valeriana wallichaii</i> (Sugandawal)

Data collection methods

This study followed a panel type of longitudinal research approach as described by Neuman (2006). Data was collected in two phases (September 2007 to April 2008 and June to August 2010). During the first phase, all households of the CFUG were classified in four economic classes. The detailed process followed for classification is described in Gauli and Hauser (2011). From each economic class 20% of the households were randomly selected for interview. The total sample size was 26 households. In the second phase, the same households were interviewed, using the same semi-structured questionnaire that was used in the first phase. The interviews generated data related to the demographic profile of each selected household, the number of household members who had out-migrated in search of job. The household interviews also collected data on the household income from different sources, including NTFP trade, and the time required to reach the NTFP sites in the forest.

In the second phase of data collection, before conducting household interviews, a group discussion was conducted with the members of the CFUG executive committee and the organizations involved in establishing the NTFP enterprise. The group discussion comprised of 8 participants. The discussions helped to understand the process of

establishing the enterprise and the role of each stakeholder, including the poorest users, in linking the NTFP to the enterprise. After accomplishing household interviews, group discussions were separately conducted with the collectors and the poor household members, as described by Morgan and Spanish (1984). This helped to triangulate the information collected through the household interviews.

The collected data of both study phases were entered in SPSS 15.00 (Inc. Spss). Wilcoxon signed-rank test and Spearman correlations, as described by Field (2009), were carried out to analyse the collected data. Wilcoxon signed-rank test was used to see whether there was a significant change in the NTFP and household cash income before and after the establishment of enterprise. Likewise, Spearman correlation between NTFP income and different socio-economic attributes such as household cash income, household size, food self-sufficiency and travel time to NTFP sites was carried out to understand the distribution of NTFP income benefits among the households. The household income considered cash income in Nepalese rupees (NPR), excluding income from NTFPs; household size is the number of economically active household members available for NTFP collection, excluding children, people above 60 years of age and the out-migrated; the travel time is minutes to reach NTFP sites in the community forest; and food self-sufficiency is the availability of food from own production in months. The results obtained from the analysis of the data of the two phases were compared to understand the role of the enterprise in the distribution of benefits from NTFP trade among different socio-economic groups.

Results

Change in NTFP management approach

In 2007/08, when data were collected for the first phase of the study, the operational plan (OP) of the forest mentioned 10 different NTFPs that were available in the forest, and the CFUG did not have a detailed management plan for any of them. The OP only listed the available NTFPs, harvestable quantities and royalty rates. In 2010, when data were collected for the second phase, the OP listed 18 different NTFPs with detailed management plans for *lokta* (*Daphne bholua*) and *argeli* (*Edgeworthia gardenieri*).

The committee regulated the management of NTFPs in the forest by imposing a ban on its harvest. The ban was not as strict for *simta* (cone of *Pinus spp*) and *jhyau* (raw lichen) as it was for *lokta*, with the executive committee of the CFUG ensuring that nobody harvested *simta* and *jhyau* without permission. Collection of *lokta* was banned for five years during the first phase of data collection. In group discussions at that time, some collectors expressed their displeasure over the long-term ban. The committee members, however, justified the ban by citing the unavailability of appropriate market and price for *lokta*, as well as the need for conserving it. Although the users could collect *simta* and *jhyau* without permission, most of the poor users did not collect them until the village traders asked them to do so. They feared that, if the NTFPs could not be sold in time, their quality might deteriorate because of the lack of proper storage facilities in their houses. During the second phase of data collection, the CFUG had entered into an agreement with the newly established handmade paper enterprise to sell the collected *lokta* and had also lifted the indefinite ban on its collection.

The users could harvest NTFPs only when the CFUG committee opened the forest for that purpose, generally an agricultural off-season. According to the committee members, outside traders contacted village traders – mostly executive committee members of the CFUG – who, after price negotiations with the traders, gave permission to collect NTFPs. The village traders then informed the collectors about the prices of NTFPs. However, neither village traders nor collectors were aware of the actual market prices of the NTFPs. The committee would inform the users about the forest opening day through personal communication. During group discussions, however, a few collectors complained that sometimes they were not informed when the forest would be opened and came to know about it only when they saw other households bringing home harvested NTFPs. The collectors had to sell the collected NTFPs to village traders. In some cases, they had to wait for weeks or months before receiving payment for the sold NTFPs. The CFUG was exclusively dependent on outside traders for marketing NTFPs. Moreover, services of outside traders were irregular. Hence, the CFUG could not sell NTFPs regularly.

Since the establishment of the enterprise, the users have been selling their harvested *lokta* directly to the enterprise. As there was guarantee of a market for harvested *lokta* because of the direct market linkage with the enterprise, the executive committee of the

CFUG took a decision to harvest *lokta* almost one month before the day of harvesting. They communicated the decision to the users individually in an informal way. As the decision was taken almost one month before the date of forest opening, almost all users became aware of the forest opening day. Generally, harvesting period lasted for 15 days. When harvesting was over, the executive committee of the CFUG would call representatives from the enterprise for price negotiation. At the price negotiation meeting, along with the executive committee members of the CFUG, *lokta* harvesters would be present. The first author observed that, at the meeting, the NTFP collectors were presenting themselves strongly in the price negotiation process as they had become aware of the requirement of *lokta* for the enterprise. After the meeting, one harvester said that they got almost 25% higher prices than those offered by individual traders.

Household economy and NTFP income

The information obtained from the household interviews show that agriculture was the basic livelihood strategy of the households in the CFUG. The major agricultural crops that generated cash income were potato, maize and vegetables. The households sold potato and vegetables or bartered them with rice in the village. Kathmandu was the final market for these products.

In the CFUG, agricultural production was not enough to meet the household food requirement. Average food self-sufficiency was almost a year for rich households, whereas it was almost a quarter of a year for very poor households. Food self-sufficiency of the households across the economic classes before and after the enterprise establishment was almost the same. The source of income other than agriculture was selling labour in the local market across all economic classes. Mostly, adult male members out-migrated to Kathmandu in search of labour work, leaving their wives and children at home. In recent years, members of a few households, mostly rich, out-migrated to overseas countries for labour work.



Fig 1: Change in total cash income of different economic classes of the users (n=26) (1 US dollar = 72 Nepalese rupees)

The other source of cash income of the households was selling collected NTFPs. Total cash income of all economic classes had increased between 2007/08 and 2010 (fig. 1). However, Wilcoxon signed-rank test shows that the change in income was significant only for very poor households ($Z = -2.023$, $P = 0.043$). Not all economic classes were equally benefited by the increase in NTFP income. There was remarkable increase in NTFP income of very poor and poor households, whereas that of middle class households was almost the same and that of rich class households had decreased (fig. 2). The statistical analysis using Wilcoxon signed-rank test shows that the change in NTFP income was significant only for very poor and poor households ($Z = -2.032$, $P = 0.042$; $Z = -2.201$, $P = 0.028$ respectively).

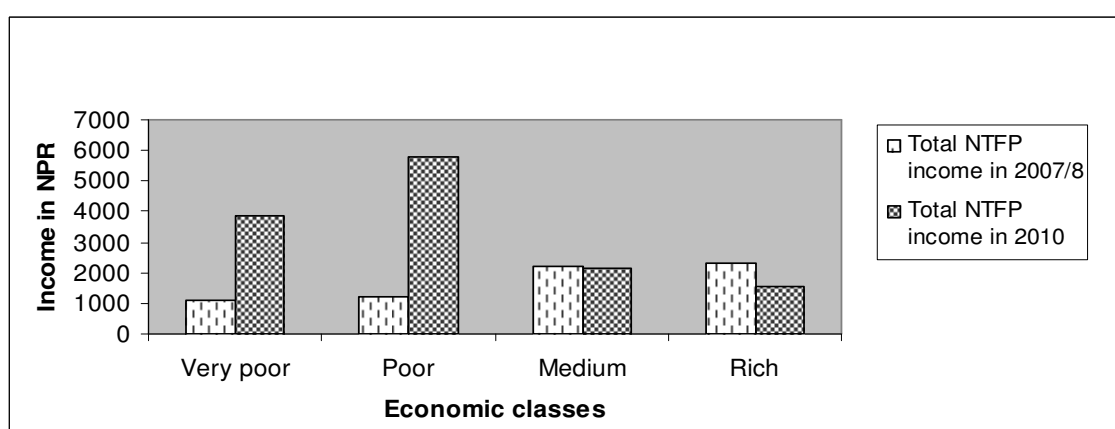


Fig 2: Change in NTFP income of different economic classes of the users (n= 26) (1 US dollar = 72 Nepalese rupees)

Determinants of NTFP income

The Spearman correlation of the first phase data shows that total cash income and household size are positively and significantly ($P = 0.000$ and 0.000 respectively) correlated with income from NTFPs (Table 2). The result indicates that rich households and households with more members were earning more from NTFP sale. The other variables, i.e. travel time and food self-sufficiency, were not significantly correlated with the NTFP income, suggesting that households were involved in NTFP collection irrespective of how far they were located from the forest and agriculture production from their field.

Table 2: Correlation of different socio-economic variables with NTFP income of households (n=26)

Variables	Correlation coefficient of year	
	2007/08	2010
Total cash income	0.648**	-0.512**
Economically active household members	0.766**	0.450*
Food self-sufficiency	0.345	-0.581**
Travel time	-0.185	0.052

Significance: *5%, **1%.

The correlation results of the data collected in the second phase show a “U-turn” in the relation between the total cash income and NTFP income from the first phase of data collection. The total cash income is negatively and significantly ($P = 0.007$) correlated with income from NTFPs, suggesting that poor households were earning more from NTFP sale in 2010. Similarly, food self-sufficiency of households is also negatively and significantly ($P = 0.002$) correlated with NTFP income, indicating that households with low food self-sufficiency mostly depend on NTFP collection. Likewise, the variable household size, which was significantly and positively correlated in the first phase of the study, was significant in the second study, suggesting that the bigger the household size, the more is the income from NTFP. The variable travel time was not significant in the second phase, as in the first phase.

Discussion

NTFP marketing in Nepal is traditional, where middlemen are important actors in the value chain (Banjade and Paudel, 2008). However, they are often criticized for taking advantage of poor NTFP collectors. They are blamed for hiding information on the actual market prices and offering low prices to rural NTFP collectors, who have limited or no market information (Maraseni et al., 2006). The middlemen are mostly elite people of the village or outsiders who enjoy good relationship with the elite people. As they get good profit margins from NTFP trade, they seldom try to make their business fair and transparent until and unless they are pressurized by outsiders (see Gauli and Hauser, 2009). The situation was similar in the study site, too. During the first phase of the study, when the CFUG followed traditional NTFP management, the rich households were earning a relatively high NTFP income. Only when external agencies intervened did a paradigm shift in the management approach take place. The adoption of the enterprise-oriented NTFP management approach by the CFUG had provided the collectors with better information on price and market for NTFPs. This could be the reason for higher share of poor households in the NTFP income after the CFUG adopted the enterprise-oriented management approach (fig. 2).

The underlying reason for positive and significant correlation of household income with NTFP income in the first phase and opposite in the second phase could be the absence and presence of direct NTFP marketing with the enterprise respectively. When there was no enterprise and the services of outside traders were also irregular, the collectors were not sure of a market for their NTFPs or whether or not the NTFPs collected by them would be sold in time. The risk of NTFPs perishing due to lack of proper storage facilities with poor households, coupled with an uncertain payment mechanism, could be the reasons behind the low interest of users, especially poor users, in the collection of NTFPs. The case is similar in other parts of the world. Ambrose-Oji (2003), who conducted a study in Southwest Cameroon, illustrates that poor people benefit less from NTFP collection, as, economically, they are not in a position to cope with the results of an uncertain market for NTFPs, whereas rich people, having greater reservoirs of capital assets, can take more risk. If poor users cannot sell the collected NTFPs immediately or have to wait for long to get their money, then they may be drawn towards work other than collecting NTFPs.

However, the change in the marketing mechanism of NTFPs, brought as a result of the direct market linkage, may be a reason for the “U-turn” in the NTFP income of poor households. The establishment of the enterprise, as well as involvement of external agencies in its establishment, could have boosted the confidence of the users to sell their collected *lokta*. The other reason for higher NTFP income could be the higher participation of users in NTFP collection as they were communicated almost one month in advance about the forest opening day for NTFP collection. Especially poor households, whose male members had migrated to cities and towns within the country in search of job, leaving their wives and children behind, find it difficult to manage time for NTFP collection when the forest opening day is decided and announced at a short notice. In such a situation, female-headed households are unable to collect NTFPs in significant quantities, as they have to finish other household chores such as taking care of children and cattle (Gauli and Hauser, 2011). The provision of announcing the forest opening day one month in advance could help the migrated male members of households to return and manage time for NTFP collection.

The positive and significant correlation coefficient between the household size and the NTFP income in both phases could be because households with big family size can harvest more NTFPs within a short period of time the forest is open. Furthermore, allocating labour for NTFP collection is relatively easy for such households compared to smaller households. When male members of the family out-migrate, they have less effective human resources available for NTFP collection (Giri et al., 2008). A similar trend is observed by Adhikari et al. (2004), which mentions that female-headed households can collect only half of the forest products collected by male-headed households. Similarly, (Olsen and Larsen, 2003) finds the availability of adult male members as a prerequisite for NTFP harvesting. However, the pro-gender institutional arrangements in CFUGs could reduce female’s labour time in collecting NTFPs and increase their cash income (Das, 2011).

The non-significant correlation coefficient between food self-sufficiency and NTFP income in the first phase and negative and significant coefficient in the second phase indicate the real dependency of poor households on NTFP income for their livelihoods. When there was poor NTFP marketing mechanism in the CFUG, the poor users did not

have confidence in the management committee of the CFUG and did not consider NTFP collection as a lucrative work. On the contrary, existence of a favourable NTFP marketing environment for poor users as a result of direct market linkage for NTFP increased the participation of poor users with low food self-sufficiency in NTFP collection. A similar study by Rijal et al. (2011) also shows the negative relationship between food self-sufficiency and NTFP dependency. The result is also similar to those of a few studies conducted in other countries. For instance, Viet Quang and Nam Anh (2006), a study conducted in Vietnam, illustrates that household food self-sufficiency is directly related to dependence on NTFP collection. Both studies illustrate that the lower the food self-sufficiency, the higher is the dependency on NTFP. As there was no market assurance in the first phase, the poor households were not in a position to take the risk of the collected NTFPs getting spoiled. In contrast, after the CFUG had established direct market linkage with the enterprise, the poor households may have become confident of selling their NTFPs in time. Consequently, their active participation in NTFP collection could have increased.

The non-significant relation of the variable travel time with NTFP income in both phases indicates that, irrespective of distance from forest, all households in the CFUG were earning from NTFPs. It could be because the CFUG is remotely located and had limited alternative cash earning opportunities; hence, the collection of NTFPs was one of the good sources of cash income for almost all households.

Conclusion

The establishment of local NTFP-based enterprises is a widely accepted approach to poverty reduction. However, egalitarian access to resources is determined by local rules and norms, which create favourable or unfavourable environment for income-earning benefits from NTFPs for households characterised by certain socio-economic attributes. The type of NTFP marketing mechanism in place is one of the important factors that determine how much poor households can earn income from NTFPs. Weak marketing management of NTFPs is unfavourable for poor households, whereas direct market linkages with enterprise are more favourable. Furthermore, the strict prohibition of NTFP harvests or respectively permitting harvesting only for a short period of time favour large family-sized households. When the forest is opened at a short notice, the households with

absent male members are not able to collect NTFPs in the quantities collected by other households. Furthermore, female-headed households are deprived of earning NTFP income when forests are opened at a short notice, whereas they are able to set aside their time for taking care of their children and other work when the forest opening day is communicated to them in advance. Also, a favourable marketing environment, enabling direct market linkages, increases the participation of the users who have low food self-sufficiency so that they can use their earning in purchasing food. Travel time cannot be a determining factor for NTFP collection where cash income sources are limited. This study suggests to policymakers to build an enabling environment for; and the policy implementers and development organizations to consider forest-based NTFP enterprises in areas with limited alternative employment opportunities for egalitarian access to resources.

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Part C

4 Conclusion, Implications and Recommendations

4.1 Conclusion

With a number of studies on the role of NTFPs in the livelihoods of the rural poor, it is now well documented that NTFPs can work as a safety net for poor's livelihoods. Keeping this view, the Herbs and Non-timber Forest Products Development Policy of Nepal emphasizes commercial management of NTFPs in community forest for poverty reduction through active involvement of poor users (HMG/N 2004). A large number of previous studies have explained the dependency of the rural poor on NTFPs for their livelihoods as well as importance of commercial NTFP management for reducing poverty (Olsen and Larsen 2003; Olsen 2005; Bista and Webb 2006; Maraseni *et al.* 2006). The findings of the papers II and III also support the above statement as poor people in the study areas were more dependent on NTFP income in their livelihoods than middle and rich people. Similarly, the policy documents of the GoN as well as many studies consider community forestry as a vehicle for poverty reduction (NPC 2002; Banjade *et al.* 2006; Pokharel 2009). However, these studies do not provide a complete picture of commercial management of NTFPs in community forests. Most of these studies are basically focused on government-managed forests (eg. Olsen and Larsen 2003; Pandit and Thapa 2004), which are considered to be open access. The management practices of such forests are completely different from those of community-managed forests. To address this gap, the paper I of this dissertation has exploring different factors for pro-poor commercialization of NTFPs in CFUGs.

A number of previous studies have explained different socio-economic variables in accessing the benefits of community forests (Adhikari *et al.* 2004; KC 2004; Adhikari and Lovett 2006). However, these studies are basically focused on subsistence forest products. The influence of such socio-economic variables on accessing the benefits of commercial forest products such as NTFPs may not be the same as those from subsistence forest products. Thus, this thesis provides insights into different socio-economic variables that influence accessing benefits from commercial management of NTFPs in CFUGs.

Based on the results of the three papers presented in this doctoral thesis, the following conclusions are reached:

1. The first paper of this thesis concludes that the role of external agencies such as GOs and NGOs is vital for low elite domination and execution of pro-poor programmes in CFUGs. In addition, organizing marginalized users in CFUGs and building their capacity help to access the benefits of community forests.

2. The second paper of this thesis concludes that poor and female-headed households are the most disadvantaged in a weak NTFP marketing link. Those households are demotivated in NTFP collection as a result of an uncertain market for timely sale of collected NTFPs. Furthermore, female-headed households are not able to allocate time for NTFP collection when the executive committee of CFUG opens the forests for NTFP collection at short notice as other household chores becomes a priority for them. Furthermore, the relationship between the household cash income and food self-sufficiency can only be found where other alternative employment opportunities are available.

3. The third paper of this thesis concludes that establishment of NTFP-based enterprises at local level and market linkage of NTFPs to the enterprise assure users of timely sale of the NTFPs collected by them, thereby enhancing the participation of poor users in NTFP collection and benefit-sharing.

The conclusions are used to broaden the discussion of the role of commercial NTFP management in CFUGs in poverty reduction through potential implications.

4.2 Theoretical Implications

The empirical findings also have theoretical implications. Theories on poverty argue that poverty is an outcome of economic, political, social and geographical discrimination (Sen 2003; Hayati and Karami 2005; Karami 2006). It is also argued that poor and marginalized groups of society need to be included in decision-making processes of resource management at local level to bring them out of poverty (Hoddinott *et al.* 2001). Moreover, the concepts of compensation and subsidy are also in place in literature as a

means to reducing poverty (Kumar 2002). Paper I of this dissertation, an analysis of institutional arrangements for commercial management of NTFPs in community forests, emphasizes inclusion of representatives of marginalized members of CFUGs in the executive committees of CFUGs to increase their influence over the committees' decisions. However, for execution of pro-poor programmes, the role of external agencies is vital as a patron–client relationship exists between external agencies and CFUG committee members. Likewise, papers II and III stress the increasing access of users to the market through establishment of NTFP-based enterprises in remote areas where alternative employment opportunities are scarce. These papers also argue that such enterprises accelerate economic activities in the area through increased participation of marginalized groups in communities.

The theories on vulnerability argues that the more assets the people possess, the less vulnerable they are; in other words, vulnerable people possess fewer assets (Moser 1998). The findings of papers I and II also suggest that, as poor users hold low assets, CFUGs need to introduce special provisions for them to reduce their vulnerability. Supporting poor users in purchasing shares in NTFP-based enterprises and providing land in community forests for income generation through NTFP cultivation are a few programmes targeted at reducing vulnerability. Moreover, influence of external agencies on executive committee helps to reduce the elite domination of decision-making processes and to encourage them to take pro-poor decisions. Furthermore, the theories on dependency argues that lack of productive assets, particularly land and livestock, makes rural people dependent on NTFPs (Olsen and Larsen 2003). Likewise, households living in remote areas are discouraged from NTFP collection as there exists a weak market (Quang and Anh 2006), while another school of thought argues that households living close to market are less dependent on NTFPs (Ghate *et al.* 2009). Papers II and III of this dissertation attempt to explain these two schools of thought. These papers argue that unless there exists an assurance of market for timely sale of NTFPs at reliable prices, collectors do not consider NTFP collection as a lucrative work. Likewise, in the areas close to markets, mostly those households that have low food self-sufficiency are dependent on NTFPs for their livelihoods.

4.3 Policy and Practical Implications

The governmental policies documents of Nepal have given priority to the commercial management of NTFPs in community forest for poverty reduction (NPC 2002; HMG/N 2004). These policies suggest increased participation of poor people in all the steps of the NTFP value chain from cultivation/management and value addition to marketing. Paper I of the thesis suggests that participation of poor users as individuals in the decision-making forum of CFUGs merely influences CFUG decisions in favour of poor people. However, the people who participate in such forums should represent their groups as a whole. As they have strong support from their groups, they can put the concerns of their groups more strongly in decision-making forums and influence decisions in their favour. In the same vein, papers II and III argue that reduction of poverty through NTFP management in remote areas is possible if an enabling policy environment for establishing NTFP-based enterprises exists in those areas and development agencies consider establishment of such enterprises in those areas.

4.4 Recommendations

The following recommendations are made for CFUGs, development agencies and policy makers:

1. Emphasis should be given to inclusion of representatives from marginalized groups in executive committee of CFUGs. However, inclusion should not be on individual basis, but should represent the subgroups concerned. It is recommended that subgroups of marginalized people within CFUGs should be formed and they made aware of their rights. Individuals from the subgroups should represent on the executive committee.
2. The CFUGs should follow poor people-centric planning processes while drawing up their operational plans. The external agencies are advised to facilitate the drawing up process of operational plans and to motivate and convince the better-off people in the CFUGs, particularly on the executive committee, for pro-poor programmes. Frequently meeting and making the better-off people participate in the workshops and training related to social inclusion would be beneficial to increase the egalitarian access of CFUG resources.

3. Development agencies should support development of pro-poor commercial NTFP management plans in CFUGs as they can influence the decision-makers in CFUGs as well as provide technical support which CFUGs largely lack.

4. Policy makers should build an enabling environment for establishing NTFP-based enterprises in remote areas. For this, policy documents should be drafted in a way that encourages CFUGs, DFO and NGOs to invest their human and financial capital to establish such enterprises, targeting poor people, particularly in remote areas of Nepal.

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Annex: 1

Other Tasks Accomplished During the Study Period

A paper entitled “Vulnerability of indigenous mountainous community to climate change and their coping strategies” was presented in National Conference on Forest People Interaction on June 7-8, 2010 in Pokhara, Nepal. The principal author of the paper is Sony Baral and co-author are I and Yogendra K. Karna.

A poster entitled “Commercializing non-timber forest products in Nepal’s community forest user groups: How marketing arrangements matter for poor users” was presented in National Conference on Forest People Interaction on June 7-8, 2010 in Pokhara, Nepal. The co-author of the poster is Michael Hauser from BOKU University, Austria.

A poster entitled “Factor Influencing Institutional Arrangements for Effective Management of Non Timber Forest Products in Community Forest User Groups of Nepal” was presented in an International Conference on International Research on Food Security, Natural Resource Management and Rural Development, Tropentag 6-8 Oct 2009. The co-author of the poster is Michael Hauser from BOKU University, Austria.
<http://www.tropentag.de/2009/abstracts/posters/315.pdf>

A paper entitled “Non-timber forest product (NTFP) policy and Community Forestry in Nepal: Does the NTFP policy contribute to poverty alleviation? A policy analysis” was presented in Young Scientist Forum, organized by University of Natural Resources and Applied Life Sciences, Vienna, Austria.

A paper entitled “Community Forestry in Nepal: Conserving Biodiversity with Economic Incentive” was presented in International Symposium- Preservation of Biocultural Diversity-A Global Issue. Organized by University of BOKU, Vienna, Austria. 6-9 May 2008. The co-author of the paper is Sony Baral.

Annex: 2

CURRICULUM VITAE

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PERSONAL INFORMATION

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Language: English, Nepali (native) & Hindi
Address: Resource Identification and Management Society - Nepal (RIMS-Nepal), Postal No: 2464, Lalitpur, Nepal

ACADEMIC QUALIFICATION

2007- 2011 Doctoral Study in Natural Resource Management. *University of Natural Resources and Life Sciences (BOKU), Vienna, Austria, www.boku.ac.at. – (Supported by International Cooperation in Education and Research (OeAD -GmbH) Austria). Tentative date of graduation November 2011.*

2002- 2003 MRM (M.Phil.) in Natural Resource Management. Indian Institute of Forest Management, Bhopal, India.

1994-1996 Masters in Organic Chemistry. Kritipur Campus, Tribhuvan University, Nepal.

1993-1995 Bachelors in Biology. Trichandra College, Tribhuvan University, Nepal.

PUBLICATIONS

Journal Articles

Gauli, K. Vogl, C. R. and Hauser, M. (Submitted). Linking community forest user groups to non-timber forest product-based enterprises: How does it affect poor users' household income? *Journal of Forest Economics*. Submitted on 20 July 2011.

Gauli, K. and Hauser, M. (2011). Commercial Management of Non-timber Forest Products in Nepal's Community Forest User Groups: who benefits? *International Forestry Review*. **13**(1), 35-45.

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Rishi, P. and Gauli, K. (2005). Who should lead us? : The voice of the Western Terai region of Nepal. *International Forestry Review*. **7**(3), 235-240.

Gauli, K. and Rishi, P. (2004). Do the marginalized Class really participate in Community Forestry? A case study from Western Terai Region of Nepal. *Forests, Trees and Livelihoods*. **14**, 137-148.

Proceedings Articles

Baral, S. Gauli, K. Paudel, A. and Karna, Y. (2010). *Vulnerability of indigenous mountainous communities to climate change and their coping strategies*. Proceedings of the National Conference on Forest People Interaction. June 7-8, 2010 Pokhara, Nepal.

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Gauli, K. and Baral, S. (2008). "*Community Forestry in Nepal: Conserving Resources with Economic Incentive*". In: Splachtna B.E. (Ed.), Proceedings of the International Symposium: Preservation of Biocultural Diversity – a Global Issue, 6-8 May 2008, Vienna, pp. 119-124. BOKU-University of Natural Resources and Applied Life Sciences, Vienna, Austria.

Project Reports

Gauli, K. (2010). *Scoping study of forestry and agricultural sectors with respect to climate adaptation*: Submitted to Climate Change Adaptation Design Project Nepal (CADP-Nepal). DFID funded project.

Gauli, K. (2010). Resource Inventory of NTFPs in Gulmi District and their Management Plans (2010) submitted to District Forest Gulmi in financial support of LFP

Magazine articles

Baral, S, and Gauli, K. (2009). *Contribution of Community Forestry to Rural Households: An Economic Analysis*. A case study from Nepal. PREBEG, an annual magazine Published by Institute of Forestry, Nepal.

Gauli, K. 2005. *Problems and prospects of NTFPs in Dolpa District*. Published in Phoksundo, Annual Newspaper, published by Phoksundo Karmachari Milan Kendra, Dolpa.

Gauli, K, 2003. Non Timber Forest Product Cultivation to meet the local Demand(*In Nepali*).. Published in *Ukali Community Newspaper*, Year 5, Volume 58, 2060.

NATIONAL AND INTERNATIONAL SEMINARS/WORKSHOPS

Baral, S. Gauli, K. (Presenter), Paudel, A. and Karna, Y. 2010, *Vulnerability of indigenous mountainous communities to climate change and their coping strategies*. Paper presented in National Conference on Forest People Interaction. June 7-8, 2010 Pokhara, Nepal.

Gauli, K. and Hauser, M. 2010. *Commercializing non-timber forest products in Nepal's community forest user groups: How marketing arrangements matter for poor users*. Poster presented in National Conference on Forest People Interaction. June 7-8, 2010 Pokhara, Nepal.

Gauli, K. and Hauser, M. 2009. *Factor Influencing Institutional Arrangements for Effective Management of Non Timber Forest Products in Community Forest User Groups of Nepal*. Poster presented in an International Conference on International Research on Food Security, Natural Resource Management and Rural Development, Tropentag 6-8 Oct 2009 <http://www.tropentag.de/2009/abstracts/posters/315.pdf>

Baral, S. Gauli, K. Harald, V. and Sekot, A. 2009. *Economic Contribution of Community Forestry: Myth or Reality*'. Paper presented on International Symposium on Society and Resource Management Meet old and new worlds in Research, Planning, and Management organized by University of BOKU from July 4-8, 2009.

Gauli, K. (2008). *Non-timber forest product (NTFP) policy and Community Forestry in Nepal: Does the NTFP policy contribute to poverty alleviation? A policy analysis*. Paper presented at Young Scientist Forum, organized by University of Natural Resources and Applied Life Sciences, Vienna, Austria.

Gauli, K. and Baral, S. 2008. *Community Forestry in Nepal: Conserving Biodiversity with Economic Incentive*. Paper presented in International Symposium- Preservation of Biocultural Diversity-A Global Issue. Organized by University of BOKU, Vienna, Austria. 6-9 May 2008.

MANUSCRIPT

M. Phil. thesis entitled: *A Behavioural Assessment of User groups in context of Community Forestry: A case study from western Terai Region of Nepal*, Indian Institute of Forest Management, Bhopal, India. Under the financial support of Livelihood and Forestry Program (LFP) Terai component, Butwal.

PROFESSIONAL EXPERIENCES

1. Executive Director- Resource Identification and Management Society-Nepal (RIMS-Nepal) (December 2010 onward)

Responsibilities

Overall management of projects and personnel, Developing project proposals, Exploring and bidding projects and consultancy works, Report writing and presentation of project and consultancy works, Coordinate and building networks with donors and stakeholders.

2. Researcher- Center for Development Research, University of Natural Resources and Applied Life Sciences (BOKU), Vienna, Austria (March 2007 to till date)

Responsibility:

Conduct a research on pro-poor commercial management of non-timber forest products in community forest user groups of Nepal. Organizing forums for scientific discussions

3. Technical Advisor- Resource Identification and Management Society-Nepal (RIMS-Nepal) (August 2010-November 2010)

Responsibilities

Provide technical assistance to the staff of RIMS Nepal on proposal writing and report writing. Provide inputs on program development and implementation.

4. District Manager (Feb 2004- Jan. 2007) - Asia Network for Sustainable Agriculture and Bioresources

Worked in Business Development Services—Marketing, Production and Services (BDS-MaPS) project in Dolpa (Feb 2004- Jan 2005) and Syangja (Feb 2005- Jan. 2007) Districts. BDS-MaPS is USAID funded project jointly implemented by ANSAB, IDE-Nepal, WWF, Winrock International and Lotus Opportunity and I had represented in BDS-MaPS from ANSAB. (www.ansab.org)

Responsibilities

Overall management of program and personnel in the districts.

Identification of different natural product sub-sector basically NTFPs and high value agriculture crops and implement in the districts.

Coordinate project activities planning and monitoring in the district and reporting to regional and central office.

Sustainable harvesting and market linkage of NTFPs from the district.

Facilitate BDS market development (both demand and supply sides) in the districts.

Extend training to district staff and other stakeholders in BDS market development.

Coordinate with the project regional office and concerned stakeholders.

5. Faculty Member (Natural Product Chemistry)- (August 2003- Feb 2004) in Universal College, Kathmandu

Responsibilities

Conduct classes in Natural Product Chemistry, specially Alkaloids, Terpenoids, Flavonoids, Steroids, Caratenoids etc., and conducted practical classes to isolate active ingredients from Natural Products for B. Sc Biochemistry

6. Quality Assurance Officer (May 1998- April 2002) in Colgate Palmolive (Nepal) Pvt. Ltd. Hetauda, Nepal

Responsibilities

Analysis of essential oils like menthol, peppermint oil, clove oil, methyl salicylate through Gas Chromatography and various raw materials through High Performance Liquid Chromatography.

Total quality control of manufacturing process.

TRAINING

Training on Scientific Writing in English organized by BOKU University on 17 Sep 2008 and 12 Nov 2008.

Training on Gender linkages to Natural Resource Management organized by BDS MaPS on 15 to 16 May, 2005.

Training on Natural Product Based Enterprise Development Planning organized by ANSAB in Nagarkot on 9th-13th April 2005.

Training on Sub-Sector Analysis facilitated by SNV Nepal and Lotus Intellect and organized by BDS MaPS on 12-14 Feb, 2004.

Training provided on Valuing Colgate People organized by Colgate Palmolive India Ltd. Presentation focus on Management with respect, valuing gender, providing opportunities for disable people etc 28 February and 1 March 2002.

Training on Coaching and Feedback organized by Colgate Palmolive Nepal on 1 to 2 April 2001.

TECHNICAL SKILLS

Software like SPSS, Atlas.ti, Endnote, AnthroPack, AHP, MS-Word, MS-Excel, MS-Access, MS- PowerPoint, Macromedia Flash.

PLACES VISITED

- Within Nepal- Over 40 out of 75 districts of Nepal
- Outside Nepal – Austria, Italy, France, Switzerland, Hungary, United Kingdom, Germany, Slovakia and several parts of India.