

## AROMATIC PLANT TRADE AND LIVELIHOOD STRATEGIES IN RURAL NEPAL: A CASE OF WINTERGREEN IN DOLAKHA DISTRICT

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### **Introduction**

Collection and trading of non-timber forest products (NTFPs) is a traditional economic activity in Nepal. For decades, the rural poor in the mid-hills and mountains have been involved in the collection and sale of NTFPs for their medicinal and aromatic value. Utilization of plant resources is expanding as more people recognize their value for health, environment and social justice (Rawal, Acharya and Subedi 2001). These products constitute a significant portion of the rural economy and are locally consumed by communities living adjacent to the forest. Growing market opportunities for NTFPs provide real potential to raise local people's income, contribute to the national economy, and provide conservation incentives. However, the current NTFP sub-sector in Nepal is characterized by low level of knowledge among the collectors/producers, low domestic -value addition, and poor integration across the value chain. A number of stakeholder groups, ranging from collectors, local middlemen, urban traders, manufacturers, exporters, and government agencies have been involved in the chain with their own varied interests (Ojha, 2000).

In the rural areas of Nepal where resources are relatively abundant and other income generating opportunities are limited, essential oil plants offer a good prospect for enhancing the livelihood and incomes of local

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communities. Yet, these opportunities are tapped only on a limited scale owing to lack of knowledge on marketing, entrepreneurial capability and financial resources. For the past several years, development workers and policy makers have discussed the possibility of promoting non-timber forest products to reduce poverty. However, it has been difficult to find economically attractive essential oil products. To be successful, an essential oil product must have lasting market appeal and not merely be a 'novelty item', collectors must receive a good income from the product, and distributors must be guaranteed a consistent supply of the product. Case studies, publications and field visits on different enterprises undertaken in the past have demonstrated that investments addressing the above success factors have improved the economic situation of the rural poor as well as strengthened local governance (IIED 1998; Kaplinksy and Morris 2001; Ribot 1997; Shillington 2002).

Against the above backdrop, the objective of this paper is to assess opportunities for Wintergreen, a natural product's intervention on poverty reduction, strengthening local governance, and improving resource management.

### **Framework of the Study**

Wintergreen is available in sufficient quantity to allow for sustainable commercial harvesting and has the potential to be brought under locally managed regeneration systems. Wintergreen oil has demonstrated commercial value at the national or international level in order to attract local participation which offers opportunities for value-addition and increased productivity at the local level, thereby leading to poverty alleviation.

This paper is based on the nature, wealth and power framework and the analysis utilizes the concept of value chain. A value chain is defined as "a series of interlinked exchanges through which a commodity and its constituents pass from extraction through production to end use (Mendelson, Cowlshaw and Rowcliffe 2003:73)". As such, this approach directly addresses issues of production, transport and sale of the products to the final destination. One strength of the commodity chain approach is that it emphasizes on the fundamental importance not only of identifying

the actors involved in the trade, but also of elucidating the structure of market and tracing the dispersion of the benefit and power along the chain as determined by various interests and power relations. It is an explanatory tool that has its origins in the study of global trade relations and impacts of globalization, and has been extensively used to analyze agricultural and natural resource commodity markets. Thus, this is the series of relations through which an item passes, from extraction through conversion, exchange, transport, distribution and final use. Access mapping involves evaluating the distribution of profits among and within the groups along the chain; and tracing out, or mapping, from that distribution the mechanisms by which access to benefit is maintained and controlled. It also illuminates the practical issues surrounding establishment of community participation in benefits from and control over natural resources.

This approach is based on the premise that a better understanding of natural, economic and governance dimensions of a natural product chain will aid in expanding options for value addition, improve distributional outcomes, and encourage sustainable resource management. One powerful tool for understanding a value chain is access mapping. This involves identifying the actors who extract, produce, process, exchange, transport, distribute and consume the commodity; evaluating income and profit at each level; evaluating the distribution of income and profit within each group; and tracing the mechanism by which access to benefits is maintained and controlled within each group (Ribot, 1998).

**Research Methods Used:**

The study is based on the primary data collected using key informant interviews, focus group discussions, key informant interviews, and group interviews with a range of stakeholders from grassroots to national level stakeholders representing government and non-government institutions. To supplement the primary data, documentations were reviewed for using the relevant data. Dolakha district was selected for the study where a large volume of Wintergreen is currently harvested from this district, and potential exists for its expanded commercial activities. The unit of analysis is Wintergreen, a specific natural product.

**Nature, Habitat and Ecology of Wintergreen:**

Wintergreen, locally known as *Dhasingre/Dhasingare/Machino*, is one of the widely available natural products in Dolakha district. Wintergreen is found between 1500-2700 meter feet in central Nepal and grows wild. It is a robust shrub with ovate to lanceolate evergreen leaves, and with numerous, axillary, spike-like clusters of small fragrant white or pink globular flowers. Flower clusters are 2.5-8.0 cm long, shorter than leaves; flowers are short-stalked; and corolla are 4 mm by 3 mm broad. Leaves are acute, 5-10 cm long, smooth above, dotted with the bases of bristles beneath, margins bristly-toothed; a branched shrub to 1-1.75 m. fruit 0.6 mm, with dark violet-blue fleshy pointed calyx-lobes.

This plant is native of North America and is found in woodland and exposed mountainous areas (Acharya, 2003). It is commonly found in Nepal as wild vegetation. It is a fast growing, evergreen robust shrub, which can grow properly in areas having rainfall up to 700-1000 mm. It grows densely in the degraded, open and moist slopes (Acharya, 2003). The most useful and valuable part of the plant is leaf, which is dark green in color and yield 0.3 to 0.9 percent of yellowish essential oil, the well known "Wintergreen oil" in commerce. The essential oil of this plant contains Methyl Salicylate 95-97%, widely used in allopathic and Ayurvedic medicines, and in cosmetic products, flavors and medical preparations, including toothpaste to massage cream (ANSAB 2002).

According to local inhabitants, Wintergreen plant has a good regeneration capacity. The plants, which are not harvested ever, have few leaves and the harvested plants regenerate more leaves.

**Actors Involved in the Value Chain of Wintergreen:**

Various actors are involved in the essential oil value chains of Wintergreen. These different actor groups exhibit a mixture of economic background and outside exposure, and possess years of experience in this field. There is a clear distinction in the role played by these groups (see underneath).

***The Harvesters***

Wintergreen harvesters are predominantly female local inhabitants

who reside 2-5 km from the forest. Some males also collect Wintergreen but only occasionally. A typical Wintergreen harvester begins her day at sunrise by sharpening her *hasiya* (sickle) and trodding her way to areas where she will collect Wintergreen. She moves through the forest from one clump to another, cutting leaf-sheaths. The harvester returns and delivers the Wintergreen to a processing unit. Thus, the task of collecting is categorized into travel to and from worksite, searching for and cutting Wintergreen, and carrying Wintergreen to a processing unit. Productivity of an extraction episode varies from one community forest to another. Interviews with the collectors, executive members of the CFUGs and local informants indicated that, in a 4-6 hour workday, one can collect approximately 60 kg of Wintergreen twigs with fresh leaves. In Suspa distillation unit, the price of 1 kg of Wintergreen was Rs.1.00, whereas in Khari Khola it was Rs 1.50. The reason given for the difference in price was the distance factor. Collectors had to spend 6 hours to reach the Khari Khola distillation unit whereas the same amount of Wintergreen could be collected within 5 hours in Suspa. However, collectors at the Suspa distillation unit were expecting to sell Wintergreen at the same price the collectors of Khari Khola distillation obtained.

The average annual income from Wintergreen varies from one harvester to another depending on the availability of surplus labor and socioeconomic condition of the collector. Generally, harvesters were able to earn Rs. 1,000-2,000 per month along with their daily work at home. This amount is higher than the local wage rate of unskilled labor (Rs.50 per day for 8 hours of work). Income from Wintergreen contributes 15-25 percent to the total household income of the harvesters. Most of the harvesters have limited knowledge about the end use of Wintergreen.

Harvesters deliver raw Wintergreen to the distillation unit where a responsible person records the date received and weight of the product. Harvesters either keep this information in their memory or maintain it at home. The responsible person gives the total amount of payable money to each collector weekly or biweekly. If the calculation of the payable money differs between the records of the distillation unit and the collector, they go through their records and settle the problem. Collectors mentioned some examples of this practice in both distillation units. They also mentioned that they had managed such differences without any difficulty.

None of the collectors, however, had taken payment in advance from the owner of the distillation unit.

### ***The Community Forest User Group (CFUG)***

CFUGs are the key owners of raw Wintergreen because almost all Wintergreen is collected from community forests. There are a total of 278 CFUGs in Dolakha district. The role of CFUGs in the value chain has gradually increased in Dolakha due to the active role of ANSAB in promoting NTFPs by facilitating FECOFUN at the district as well as central levels. Without a close collaboration with the CFUGs, it would have been impossible to establish the Wintergreen oil distillation unit in the district. In close association with CFUGs in their respective catchment areas, distillation units can be established individually or collectively.

Neither FECOFUN nor District Forest Office (DFO) has adequate data about the exact availability of Wintergreen in different community forests. However, available secondary data and discussions held with different stakeholders show that at least 6 distillation units can be managed in a sustainable manner in Dolakha district alone. Informants also mentioned that there are some potential areas for the establishment of distillation units in Sindhupalchowk district. The Forest Stewardship Council (FSC) certification process did assess for a few of the CFUGs the availability and suggested sustainable harvesting levels and also concluded that expansion could happen, but needed to be closely monitored. FSC requires annual field audits to check on forest and social conditions and as more groups can join the FSC certification, it is hoped that more CFUG areas will come under better management. The FSC certification report does give maximum harvest levels and monitoring and record keeping protocols to be observed. The initial areas that were certified for Wintergreen and other products just recently passed their first FSC audit.

After entering into an agreement with a distillation unit, CFUGs give permission to collect Wintergreen from their forest. Harvesters do not have to pay a royalty directly to CFUGs. CFUGs get NRs 0.25 per kg of raw Wintergreen from the owner of the distillation unit. The relationship between the distillation units and CFUGs was found to be

good. The CFUGs give a letter of clearance to the local traders or marketing cooperative to export Wintergreen oil to Kathmandu.

### ***Primary Processors***

Two types of primary processors are involved in Wintergreen oil production: privately owned and managed by cooperative. Cooperative-managed enterprises are important not only for their financial benefits but also for their socio-economic benefits. This enterprise created part-time employment for about 300 community people through Wintergreen collection and fuelwood collection. It also employed six direct laborers in its daily activities. Wintergreen distillation units are located, as far as possible, near the community forest and villages. The processing unit is very simple where two laborers are required to work in each unit. Each laborer working at the distillation unit gets Rs. 3,000 per month (Rs. 100 per day) and two meals a day. These laborers are supposed to stay at the distillation unit for security reasons.

One person puts fresh Wintergreen leaves in the upper part of the vessel, while another prepares the fire by putting the marc (wastage) of the previous distillation under the same vessel. It takes about 250 kilos of raw Wintergreen to produce one kilo of oil. The lower part of the vessel contains water that will be transformed into the steam. The passage between the drum and the condenser has to be tightly closed to maintain the water steam inside the drum. Hard leaves of Wintergreen take about 2-3 hours to macerate. After 2-3 hours the worker stops the fire for about 6-8 hours and lights it again for 4-5 hours.

A skilled laborer opens the passage between the vessel and the condenser to let the distillation process take place. The steam charged with the essential oil is cooled in the condenser that contains a tube system where cold water flows. In this way, the distillation process lasts 8-10 hours for Wintergreen essential oil. The temperature of the tube connecting the second chamber and the condenser has to be steadily checked and the intensity of the fire maintained. The essential oil sublimates off, if the temperature exceeds 100 degrees Celsius.

The steam transforms into liquid and flows from the condenser to a container or a separator. At the end of the process, the essential oil is

separated from the water. The essential oil from Wintergreen is heavier than water. The leaves are removed from the upper part of the drum and spread out to dry. They will feed the fire of the next distillation process. It was also mentioned that the amount of firewood required per day in Khari Khola and Suspa distillation unit were 25 and 10 kg, respectively. The cost of one kg of firewood was one rupee. Some leakage problems were seen during the separation process of Wintergreen oil. The amount of Wintergreen oil produced from each distillation process ranges between 2.2–2.5 kg per day. Had there not been the leakage problem, production of the oil could have been slightly higher. The oil produced is taken to Kathmandu. The traders do not have to pay any tax and royalty to others except the royalty to the CFUGs.

#### ***District Level Traders***

District level traders buy Wintergreen oil from the primary processors. The price of one kg oil is NRs. 700 at the distillation unit. The village traders sell Wintergreen oil to the Herbs Production and Processing Company Limited (HPPCL), Kathmandu. The transportation cost per kg oil is NRs. 10. It was also mentioned that traders who can sell Wintergreen oil at the domestic manufacturer/retail market in Kathmandu get more benefits compared to selling to HPPCL.

#### ***Domestic Manufacturers***

There are about 30 Nepali manufacturers who use Wintergreen oil in various medical and toiletry-related preparations such as massage oil and toothpaste. Nepali manufacturers prefer to buy Wintergreen oil from district level traders or cooperatives. They pay Nepali Rs. 950 (about US \$ 13.50) to buy one kilogram of oil from HPPCL but can get oil from district level traders for only Rs. 850 (about US \$12.00) per kilo of oil.

#### ***National Trader and Marketing Cooperative***

The government owned Herbs Production and Processing Company Limited (HPPCL) in Kathmandu is one of the leading companies, which buys Wintergreen oil from district level traders and sells it to domestic



manufacturers in Nepal. It also exports Wintergreen oil to India and European countries. HPPCL guarantees traders and cooperatives it will buy certain amounts of essential oil from different parts of Nepal. According to official information from HPPCL, Wintergreen oil comes to the company from Dolakha district directly from the district level traders or via cooperatives depending on the nature of the ownership of the distillation unit. HPPCL uses Wintergreen oil for *Sancho* production (liquid medicine used against upper respiratory tract infections like the common cold and throat pain), sells to a domestic manufacturer, and

**Table 1: Services and Skills along the Wintergreen Value Chain, Dolakha**

Market Actors	Number in 2004	Services and Skills
National Trader	1	Buys Wintergreen oil from district level traders and cooperative Sell it to Nepali manufacturers, export to abroad Explore international market for higher value addition
Nepali manufacturers	30	Use Wintergreen oil in different products Buy Wintergreen oil from district level traders/ cooperative national trader
District level	3	Supply oil to Nepali manufacturers and traders national trader, arrange transport, store oil
Marketing cooperative	1	Gives opportunity for local people to invest small scale enterprises; Provides market information to CFUGs
Primary processors	5	Pay royalty to CFUGs Buy fuelwood from local inhabitants, process oil, pay harvester so must have working capital
Harvesters	350	Have skill to collect raw Wintergreen; Helps processors providing raw Wintergreen on time; Use surplus labor in income generating activities Conduct biological monitoring 10 with CFUGs
CFUGs (resource managers / producers)	10	Give opportunity to local inhabitants to involve in income generating activities; Use royalty for the forest management and other social and economic development issues

Source: Field Survey, 2005

exports to India and abroad. However, export of Wintergreen oil from Nepal to third countries (other than India) is very small. With respect to market price, the district level traders and cooperative usually get higher prices from domestic manufacturers than the national trader. Thus, the domestic manufacturer/retailer is the first stop to sell Wintergreen oil in Kathmandu. It was also mentioned that the share of Wintergreen oil in the international market is less than 10 percent. International buyers have commented that while the Nepal Wintergreen oil is unique (harvested from wild sources, high quality and most recently forest stewardship council (FSC) and organic certified) it must be placed in specialty markets as Chinese Wintergreen oil of much lower quality sells for a fraction of the price. Bulk international users of Wintergreen oil buy almost exclusively on price and do not need the highest quality oil produced by Nepal.

### Gross Output Values

Market shares of the harvesters have increased due to the interventions from enterprise-oriented community forests, better access to market information, and local communities' awareness about the new income generation opportunities offered by this product.

**Table 2: Price, Expenses and Margins for Wintergreen Oil**

Actors	Prices/Expenses/Margins (Rs./Kg) 2005
<b>Prices</b>	
Local harvesters to local processing unit (250 kg raw Wintergreen to produce one kg oil)	312
Local processing unit to marketing cooperative (oil)	700
Local processing unit to district level traders (oil)	700
Cooperative to national trader	800
Cooperative to domestic manufacturers (oil)	850
National traders to domestic manufacturers (oil)	950
National trader to Indian Market	1400
National Trader to European and American market	1700
<b>Expenses</b>	
Harvesting and transportation to local processing units by local harvesters (local cost of labor)	250

Actors	Prices/Expenses/Margins (Rs./Kg) 2005
Conservation fee to CFUGs paid by local processors	62
Handling, fuelwood, staff, machines depreciation, rents paid by local processors/cooperative	250
Handling and packaging paid by local trader/ marketing cooperatives	10
Transportation to Kathmandu paid by cooperatives/ local trader	10
Storage, quality testing, insurance, repackaging, handling paid by national trader	60
Export permit, Department of Plant Resources (DPR) tests and issues certification, sealed and other costs paid by national trader to export India	200
Export permit, DPR test and certification, sealed and other costs paid by national trader to export Europe and America	300
<b>Margins</b>	
Harvesters	62
Primary Processor	76
Cooperative	80
District level trader	80
National Trader (if sold to domestic manufacturers)	90
National Trader (if sold in India)	340
National Trader (if sold to Europe and America)	540

Source: Field Survey and information obtained from HPPCL and HBTL, 2005.

#### **Employment and Sales Destination:**

Wintergreen harvesters are predominantly female local inhabitants who reside 2-5 km far from the forest. Some males also collect Wintergreen but only occasionally. Poor and marginalized local farmers are the main harvesters of Wintergreen.

The Herbs Production and Processing Company, Limited (HPPCL), Kathmandu is one of the leading companies, which buys and sells essential oil in Nepal. It guarantees to buy certain amount of essential oil from different parts of Nepal. According to HPPCL, Wintergreen oil comes to the company from Dolakha District either directly from the traders or

via cooperatives depending on the nature of the ownership of the distillation unit. HPPCL uses Wintergreen oil for its own production of Sancho (liquid medicine used against, among others, upper respiratory tract infections like the common cold and throat pain), sells to retailers and Ayurvedic companies and firms, and exports to India and abroad. However, export of Wintergreen oil from Nepal to third countries (other than India) is very small. With respect to the market price, the local contractors usually get higher prices from retailers and market traders in Kathmandu who are trying to look for markets in Europe and America. Thus, retailers are the first preferred buyers of Wintergreen oil in Kathmandu. The share of Wintergreen oil in international market was reported to be less than 10 percent.

**Table 3: Vertical Income and Profit for Wintergreen Oil**

Actors	Income Per Kg (Rs)	Profit Per Kg (Rs)
Harvesters	312	62
CFUGs	62	50
Processors	700	76
Marketing Cooperative	850	80
District level trader	850	80
National Trader (for selling in Indian Market)	1400	340
National Trader (for selling in America or Europe)	1700	540

Source: Field Survey, 2005.

#### **Horizontal Distribution of Income and Profit :**

The average annual income from Wintergreen varies among the harvesters depending on their household labor availability and socioeconomic condition. Generally, harvesters were able to earn Rs. 1,000-2,000 per month along with their daily work at home. This amount is higher than the local labor wage rate (Rs.50 with meals per day for 8 hours of work). Income from Wintergreen contributes 15-25 percent to the total household income of the harvesters. The processors and marketing cooperative are not sufficiently motivated to establish new Wintergreen

processing units due to stagnant market price and monopoly price fixing by HPPCL.

**Table 4: Power Mapping of Wintergreen**

<b>MarketActors</b>	<b>Access Status</b>	<b>Mechanism of Exercising Access</b>
Local harvesters	Access to forests, Direct access to CFUG resources	CFUG membershipLocal inhabitants
Community Forest User Groups	Access to local harvesters, traders, market information and various supporting organizations	CFUG membershipOwnership and management rights of community forest Networking with different governmental and non governmental organizations
Primary Processor	Access to harvesters and CFUGsAccess to district level traders Local social and economic network, Access to market information and other supporting Organizations	Good relationship with the harvesters CFUGs Employment opportunities for local community members Provide economic opportunities for locals
District level traders	Access to processors, domestic manufacturers and national traders	Good relationship with primary processors, DFO and FECOFUN Social and economic networking with primary processors
Co-operative Enterprises	Access to CFUGs, domestic manufacturers and national traders Access to market information and supporting organization	Good relationship with FCUGs, FECOFUN and supporting organization. Support from local community
Nepali Manufacturers	Access to district level tradersAccess to international market on minimal scale Access to national trader Access to people on behalf their final product Knowledge on market information	Production popularity in national and international market. Good network with district and national tradersGood network with custom international markets Popularity of the product.
National Traders	Access to Nepali manufacturers, district level traders and international market. Access to market information	Network with international and Nepali manufacturers;Quantity of purchasing assurances to cooperatives, district level traders and primary processors; Network with international market

Source: Field survey 2005.

Wintergreen is comparatively a new product. Compared to its full potential, its utilization has been minimal. A detailed feasibility study of this product in different districts is yet to be done. However, the following table provides the actual quantity harvested and the estimated annual production capacity of raw Wintergreen in various districts.

**Table 5: Harvesting and Biological Capacity Status of Wintergreen in Nepal**

SN	Districts	Wintergreen	Annual Harvested	Annual
		No of Harvesters	Quantity (Kg) (Average of Last 5 Years)	Production Capacity Kg/Year (Potential)
1	Solukhumbu	0	-	400,000
2	Sankhuwasabha	0	-	30,000
3	Pachthar	0	-	7,000
4	Okhaldhunga	0	-	150,000
5	Ilam	0	-	50,000
6	Ramechhap	100	100,000	400,000
7	Sindupalchok	50	75,000	200,000
8	Nuwakot	0	0	400,000
9	Rasuwa	0	0	300,000
10	Dolakha	200	160,000	700,000
11	Kavrepalanchok	0	0	300,000
12	Lalitpur	0	0	15,000
13	Dhading	0	0	50,000
14	Makawanpur	0	0	50,000
15	Bhaktapur	0	0	50,000
16	Mygadi	0	0	20,000
17	Baglung	0	0	15,000
	<b>Total</b>	<b>350</b>	<b>335,000</b>	<b>1,437,000</b>

Source: Essential oil production chart obtained from HBTL and information from different DFO Offices, 2005.

Productivity of a Wintergreen extraction episode varies from one community forest to another. Interview with the harvesters, executive members of CFUGs and local informants indicate that in a 4-6 hour workday, one can collect approximately 60 kg of Wintergreen twigs with fresh leaves. The value of one kg of Wintergreen varies from Rs.

1.00 to Rs 1.50. The average annual income from Wintergreen varies from one collector to another depending on the availability of surplus labor and socioeconomic condition of the collector. Generally, harvesters were able to earn Rs. 1,000-2,000 per month along with their daily work at home. This amount is higher than the local wage labor rate (Rs.50 per day for 8 hours of work). Income from Wintergreen contributes 15-25 percent to the total household income of the harvesters.

CFUGs are becoming stronger to manage local resources in Dolakha. The government has given full authority to CFUGs to manage Wintergreen for income ingeneration. Coordination among DFO, FECOFUN, (I)NGOs and CFUGs is becoming stronger on market information, sustainable harvesting and ownership rights to the local inhabitants.

**Wealth/Economic Mapping:**

Collection and trade of NTFPs have played a key role in the economic development of the country where economic opportunities are severely constrained by difficult socio-economic condition and poorly developed infrastructures such as communication and transport facilities (ANSAB, 1999). For most of the communities, NTFP collection is one of the few or only ways to earn cash income without engaging in seasonal migration out of the area. Productivity of a Wintergreen extraction episode varies from one community forest to another. Interview with the harvesters, executive members of CFUGs and local informants indicate that in a 4-6 hour workday, one can collect approximately 60 kg of Wintergreen twigs with fresh leaves. The value of one kg of Wintergreen varies from Rs. 1.00 to Rs 1.50. The average annual income from Wintergreen varies from one collector to another depending on the availability of surplus labor and socioeconomic condition of the collector. Generally, harvesters were able to earn Rs. 1,000-2,000 per month along with their daily work at home. This amount is higher than the local wage labor rate (Rs.50 per day for 8 hours of work). Income from Wintergreen contributes 15-25 percent to the total household income of the harvesters.

**Power/Governance Mapping:**

CFUGs are becoming stronger to manage local resources in Dolakha. The government has given full authority to CFUGs to manage Wintergreen

**Table 6: Power Mapping of Wintergreen**

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Local harvesters	Access to forests, Direct access to CFUG resources	CFUG membership Local inhabitants
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Primary Processor	Access to harvesters and CFUGs Access to district level traders Local social and economic network, Access to market information and other supporting organizations	Good relationship with the harvesters CFUGs Employment opportunities for local community members Provide economic opportunities for locals
District level traders	Access to processors, domestic manufacturers and national traders	Good relationship with primary processors, DFO, and FECOFUN Social and economic networking with primary processors
Cooperative Enterprises	Access to CFUGs, domestic manufacturers and national traders Access to market information and supporting organization	Good relationship with FCUGs, FECOFUN and supporting organization. Support from local community
Nepali Manufacturers	Access to district level traders Access to international market on minimal scale Access to national trader Access to people on behalf their final product Knowledge on market information	Production popularity in national and international market. Good network with district and national traders Good network with custom international markets Popularity of the product.
National Traders	Access to Nepali manufacturers, district level traders and international market Access to market information	Network with international and Nepali manufacturers Quantity of purchasing assurances to cooperatives, district level traders and primary processors Network with international market



for income ingeneration. Coordination among DFO, FECOFUN, (I)NGOs and CFUGs is becoming stronger on market information, sustainable harvesting and ownership rights to the local inhabitants.

Corruption in the Government agencies is a difficult reality for collectors, traders, and processors to overcome. Those with the financial means to address the needs of government officials, police officials, and forestry and customs agencies can profit within the current environment.

The government policy on forestry has enabled expansion of community forests across the country and devolved forest management rights and responsibilities to local community organizations (CFUGs). The community forestry program has significantly contributed to empowering the local people and ensuring sustainable utilization and management of locally occurring natural resources. It has been one of the most successful approaches in the forestry sector (Shrestha and Sharma 2004) in which the government transfers the responsibility of managing forests to the communities and recognizes the latter's right to use on a sustainable basis. Various writers have noted its achievements in terms of better forest condition, social mobilization and income generation for rural development, and institutional building at the grass-root level ((Kanel 2004; Luintel, et. al, 2004; Shrestha and Sharma 2004).

Government policy with regard to NTFPs is not, however, perceived to be in favor of local communities in the same way as in the case of CF. It mainly tilts toward regulatory control in the name of maintaining ecological balance. As such, it has contributed little to solving problems affecting this sub-sector, and has often invited confrontation between the local people and the government. Luintel, et. al (2004) argue that such policies nurture a vicious circle of poverty.

**Conclusions:**

Natural resources are dynamic. Perception regarding their ownership and access right is socially embedded, and political forces determine the stake of various actors and stakeholders over such resources. People and their surrounding environment define resources and their use. The Nature, Wealth and Power Framework enables one to understand the various cross-cutting themes. It is a mutually inclusive framework for knowledge

management, capacity building, organizational development and arrangement, competitiveness and efficiencies, policy and legal reforms, and integration.

The essential oil products are mostly harvested from the forest for commercial purposes and are carried away from the villages and districts and are sold to the national and international markets. In general, the actors in the value chain at each level derive some benefits from NTFP trade. Wintergreen is an emerging product. There are high potentials for promoting essential oil products for income and employment generation in Nepal, made possible by the country's unique geo-climatic and ecological diversity.

Most of the collectors Wintergreen were from poor and marginalized groups. CFUGs are generating substantial amounts of forest products and income. Substantial potentials also exist for further enhancing income through better management of community forests in Nepal. However, fund mobilization guidelines should be prepared in consultation with different stakeholders so that income and expenditure of CFUGs become more transparent and geared towards pro-poor activities. In order to improve participation, inclusiveness, transparency and accountability in governance at the local level, more authority should be given to CFUGs with close supervision from DFO.

It is very important to link enterprises with well managed CFUGs to generate sufficient economic incentives and promote biodiversity conservation. Based on the experience from Dolakha district, involvement of local people in establishing cooperatives appeared a preferred modality. Under-harvesting of Wintergreen was observed due to the presence of insufficient processing units, insufficient market demand, competition with Chinese products and insurgency. External support for the local communities is crucial in both conservation of biodiversity and reducing poverty within communities. Market information and strategies of various players, starting from local harvesters to international traders, are substantially different and information gaps exist at each stage. Proper market information could ensure due return for each actor.

DFOs, CFUGs and entrepreneurs do not have adequate information on the availability of resources. The management plans are not based on

production capacity of the given area. Similarly, enterprise planning is not based on resource availability. Both collectors and district level traders suffer from poor market information, product price variation as well as uncertainty regarding future supply and demand of the products. As a result, business opportunities go untapped at the local level. It is exacerbated by inadequate fiscal incentives to community-based NTFP enterprises and bureaucratic harassment on commercial use of community forest resources. A favorable policy environment is a precondition in creating incentives and sustainable use of resources leading to biodiversity conservation.

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