



**SUSTAINABLE FOREST
MANAGEMENT FOR MULTIPLE VALUES:
A PARADIGM SHIFT**



Edited by
P.P. Bhojvaid
Neena Khandekar

Sustainable Forest Management for Multiple Values

A Paradigm Shift

Volume II

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Neena Khandekar

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NTFP-Based Enterprises: Learning from Nepal for Green and Fair Value-Chain Development

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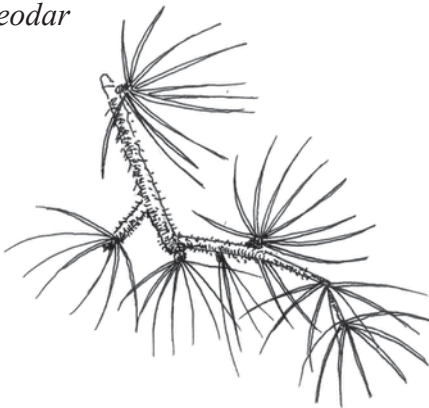
Bhishma P. Subedi is Executive Director, Asia Network for Sustainable Agriculture and Bioresources (ANSAB). Thematic areas of his research and development works include community-based enterprise-oriented natural resource management, ecosystem services, climate change - REDD+, participatory biodiversity monitoring, access and benefit sharing, land tenure and property rights, NTFPs, agro-forestry, sustainable forest management, certifications, subsector analysis, business development services market, value chain analysis and development, marketing information system, evidence based policy analysis, constituency building and multi-stakeholders facilitation. He has been recognized as the “Champion of the Asia-Pacific Forests” by the Food and Agriculture Organization of the United Nations.



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Deodar



Cedrus deodara is native to the western Himalayas in India occurring at 1,500–3,200 m altitude. It is a large evergreen coniferous tree 40–50 m tall, with a trunk up to 3 m in diameter. It has a conic crown with level branches and drooping branchlets. The leaves are needle-like, long, borne singly on long shoots, and in dense clusters on short shoots; they vary from bright green to glaucous blue-green in colour. Among Hindus, it is worshipped as a divine tree.

Introduction

Non-timber forest products (NTFPs) are receiving increased attention both at global and national level for their existing and potential significant role in livelihood, income generation and sustainable forest management. FAO (2002) estimates that NTFPs generate employment for 4 million people annually. Another estimate provides that close to one billion people in one way or another depend on NTFPs for their livelihoods. Various studies and trade statistics show that global market for NTFPs is big and growing. According to a study, the annual world trade of medicinal plants in late 1990s was US \$10 billion (Freese, 1998). An estimate by FAO (2010) showed that at least US \$18.5 billion worth of NTFPs were traded globally in 2005. Similarly, a study by ITC (2013) estimates that the global market of major medicinal plants and extracts increased from US\$19.5 billion in 2008 to US\$32.9 billion in 2013, with an annual growth rate of 11%.

In Nepal, NTFPs have been an important source of livelihoods and income for poor mountain communities since long; traditionally these are a source of food, fibre, medicines and spices. In spite of being an important source of livelihood and income to people and a potential sub-sector for economic growth with green and fair business practices, NTFPs were previously neglected and the potential was underexplored in Nepal.

In this context, ANSAB has chosen NTFP sub-sector and has been working for the understanding and promotion of sustainable management and use of these resources at national level since early 1990s. ANSAB has been working with the government and other key stakeholders, providing knowledge and common platform, facilitating and coordinating value chains, and generating and sharing actual examples of good practices on the ground. Adapting the participatory action research (PAR) learning cycle, they have conducted research, commissioned studies, organized communities, developed and participated in policy fora, facilitated establishment of enterprises and linked them to value chain emphasizing ecological sustainability, economic efficiency, and social justice and equity. They have also facilitated coordination of NTFP stakeholders and policy processes in Nepal.

Table 1

Scientific names of the NTFPs mentioned in this paper

Common Name	Scientific Name	Common Name	Scientific Name
Allo	<i>Girardiana diversifolia</i>	Mahuwa	<i>Madhuca indica</i>
Amala	<i>Phyllanthus emblica</i>	Majitho	<i>Rubia manjith</i>
Amaltus	<i>Cassia fistula</i>	Mentha	<i>Mentha arvensis</i>
Amriso	<i>Thysanolaena maxima</i>	Mint	<i>Mentha piperita</i>
Argeli	<i>Edgeworthia gardneri</i>	Morels	<i>Morchella</i> sp.
Atis	<i>Delphinium himalayai</i>	Naru	<i>Aesculus indica</i>
Babul	<i>Acacia nilotica</i>	Neem	<i>Azadirachta indica</i>
Bajradanti	<i>Potentilla fulgens</i>	Nigalo	<i>Drepanostachyam</i> sp.
Bamboo	<i>Bambusa arundinacea</i>	Nirmasi	<i>Parnassia nubicola</i>
Banmara	<i>Eupatorium adenophorum</i>	Okhar	<i>Juglans regia</i>
Barro	<i>Terminalia bellirica</i>	Padamchal	<i>Rheum australe</i>
Bel	<i>Aegle marmelos</i>	Pakhanved	<i>Bergenia ciliata</i>
Bhimal	<i>Grevia optiva</i>	Panchaunle	<i>Dactylorhiza hatagirea</i>

Bhorla	<i>Bauhinia vahlii</i>	Pangar	<i>Hippocastanaceae</i> sp.
Bhyakur	<i>Dioscorea deltoidea</i>	Pipal	<i>Ficus religiosa</i>
Blue pine	<i>Pinus wallichiana</i>	Pipla	<i>Piper longum</i>
Chamomile	<i>Matricaria chamomilla</i>	Rattan	<i>Calamus rotang</i>
Chiraito	<i>Swertia chirayita</i>	Ritha	<i>Sapindus mukorossi</i>
Chirpine	<i>Pinus roxburghii</i>	Rudraksha	<i>Elaeocarpus ganitrus</i>
Chiuri	<i>Diploknema butyracea</i>	Sabai grass	<i>Eulaliopsis binata</i>
Chutro	<i>Berberis aristata</i>	Sal	<i>Shorea robusta</i>
Dalchini	<i>Cinnamomum</i> sp.	Sarpagandha	<i>Rauwolfia serpentina</i>
Deodar	<i>Cedrus deodara</i>	Satuwa	<i>Paris polyphylla</i>
Dhatelo	<i>Prinsepia utilis</i>	Seabuckthorn	<i>Hippophae rhamnoides</i>
Gandhaino	<i>Pleurosperrum dentatum</i>	Shiitake	<i>Lentinula edodes</i>
Gurjo	<i>Tinospora cordifolia</i>	Shilapushpa	<i>Didymocarpus pedicellata</i>
Haldu	<i>Adina cardifolia</i>	Sikakai	<i>Acacia gugguta</i>
Harro	<i>Terminalia chebula</i>	Silajit	<i>Asphaltum</i> sp.
Hemp	<i>Cannabis sativa</i>	Sugadhhokila	<i>Cinnamomum glaucescens</i>
Jackfruit	<i>Artocarpus heterophyllus</i>	Sugandhwal	<i>Valeriana jatamansi</i>
Jatamansi	<i>Nardostachys grandiflora</i>	Sunpati	<i>Rhododendron anthopogon</i>
Juniper	<i>Juniperus</i> sp.	Tejpat	<i>Cinnamomum tamala</i>
Ketuke	<i>Agave americana</i>	Tendu	<i>Diospyros</i> sp.
Khayer	<i>Acacia catechu</i>	Thingresallo	<i>Abies spectabilis</i>
Kurilo	<i>Asparagus racemosus</i>	Thyme	<i>Thymus vulgaris</i>
Kutki	<i>Neopicrorhiza scrophulariiflora</i>	Tilpushpi	<i>Digitalis purpurea</i>
Laghupatra	<i>Podophyllum hexandrum</i>	Timur	<i>Zanthoxylum armatum</i>
Lantana	<i>Lantana camara</i>	Titepati	<i>Artemisia vulgaris</i>
Lapsi	<i>Choerospondias axillaris</i>	Tulsi	<i>Ocimum sanctum</i>
Large cardamom	<i>Amomum subulatum</i>	Vasa	<i>Adhatoda vasica</i>
Lauthsalla	<i>Taxus</i> sp.	Walnut	<i>Juglans regia</i>
Lichens	<i>Permalia</i> sp.	Wintergreen	<i>Gaultheria fragrantissima</i>
Lokta	<i>Daphne</i> sp.	Yarshagumba	<i>Ophiocordyceps sinensis</i>

This paper presents the status, growth and impact of NTFP-based enterprises since 1990, identifies and analyses factors and impacts of change, including some specific interventions, and draws lessons for sustainable growth of the industry balancing social, economic and environmental goals. The main sources of information include a review of literature, data and information from various studies, experiments, national strategies, project reports, office records, consultation with experts, and direct experiential knowledge of the authors. The framework of analysis and lessons are expected to be useful for academicians, policy makers and development practitioners, including governments.

For the purpose of this paper, non-timber forest products, or NTFPs, are defined to include all goods of biological origin other than timber, fuelwood and fodder from forest, grassland or any land under similar use. Examples of NTFPs include medicinal and aromatic plants (MAPs); bamboo and rattan; nuts, fruits, tubers and berries; grasses and leaves; resins; insect and insect providers; and wild animals and birds. More specifically, this paper focuses on plant-based products.

Enterprises are defined as organized economic activities with the motive of earning profits. Organized economic activities may include growing or collection of products, processing, trade, transportation, and manufacturing, both formally and informally.

The value chain describes the full range of activities and actors that are required to bring a product from its conception to its end use and beyond. This includes activities from design, production, processing, manufacturing, marketing, distribution and support to the final consumer. The activities that comprise a value chain can be contained within a single firm or divided among different firms.

Scientific names of the NTFPs mentioned in this paper are given in Table 1 for the benefit of readers, who may not be familiar with the common Nepali names.

Resource Base and Commercially Valuable NTFPs

Nepal embraces very unique geographical regions that contain the tropical plains (Tarai) bordering India in the south, an extensive section of the mid-mountains, and the trans-Himalayan sections bordering Tibet in the north. It has a rich natural resource base with over 7,000 species of higher plants, of which about 250 species are endemic (Bajracharya *et al.*, 1988) and more than 1,000 species are of known uses. The varied ecological conditions prevailing due to altitudinal and climatic variation have resulted in the rich diversity of NTFPs, upon which rural communities rely for food, medicines and other purposes.

The taxonomy of NTFP usage is also quite rich in Nepal, which include medicinal and aromatic products, spices and flavour, wild-mushrooms, fruits, dyes and tans, fibres used in handicrafts, tea, brooms, leaf plates, rosin, turpentine, gums, edible fats and oils, personal care products (e.g., shampoos and creams), and bamboo and rattan products (Subedi, 2006). Among the 1,000 economic plant species, over 700 are medicinal, 440 wild food, 30 spices, 71 fibre yielding, and over 100 fodder indicating that many of the plant species have more than one economic use. Regarding commercial uses, while some earlier studies reported that more than 100 types are collected for commercial purposes (Edwards, 1996; Subedi, 1997; Subedi, 2003), a more recent study records 161 NTFP species in commercial trade in Nepal (Subedi, 2006).

In terms of land space, forests (29%), shrub lands (10.6%), meadows (grass lands) and non-cultivated inclusions, covering over 50% of the total geographical area of the country constitute the biological resource base for the provision of NTFPs in Nepal (Subedi, 2006). The Master Plan for the Forestry Sector has identified 61% of the total forests having potential for community forestry (HMGN, 1988), providing a high prospect for rural communities to be engaged in NTFP-based enterprise activities in the country.

Major wild plant species producing commercial products that are harvested and traded in significant volumes or that are of high value, from different altitudinal zones, are given in Table 2. While there are a considerable number of NTFPs in tropical and mid-hill regions, some of which are also produced in sizable volumes, the Himalayan and trans-Himalayan regions are rich in high value NTFPs.

Table 2

Major commercially valuable, indigenous NTFPs of Nepal by altitudinal zones (Adapted from Subedi, 2006)

Altitudinal zone	NTFP species
1. Tropical(upto1000m)	Kurilo, tulsu, khayer, bel, harro, barro, amala, sikakai, tendu, sarpagandha, neem, haldu, jackfruit, babul, amaltus
2. Sub-tropical(1000-2000m)	Lokta, argeli, chiraito, wintergreen, timur, pipla, tejpat, dalchini, kurilo, rudraksha, ritha, majitho, gurjo, pushpa, bhyakur, bajradanti, sugandhwal, sugadhkokila, vasa
3. Himalayan and trans-Himalayan	
a. Temperate(2000-3000m)	Atis, chiraito, sugandhwal, nirmasi, chutro, tilpushpi
b. Sub-alpine(3000-4000m)	Chiraito, morels, padamchal, satuwa, sunpati, juniper, lichens, laghupatra, lauthsalla, panchaunle
c. Alpine(above4000m)	Kutki, jatamansi, yarshagumba

Status, Trends and Impacts

Since 1990, although on a limited scale, some positive results and trends have been observed in NTFP-based enterprises and industry practices in terms of growth (number, function, business volume) socio-economic impacts, value chain governance, technology use, services, marketing and trade practices. Table 3 summarizes these trends, which is followed by a brief description about these trends.

Table 3

Major changes in NTFP-based enterprises and industry practices in Nepal since 1990

Issues & indicators	Status in 1990 and before	Trend (2010)
Growth		
Enterprise number	Only few formally organized enterprises, largely unorganized, informal and unrecorded.	Increasing number of enterprises, both formal and informal; playing more prominent roles in national economy.
Enterprise functions	Largely limited to collection from wild, transportation and trade of crude herbs.	Now also started cultivation, enterprise-oriented community forest management, value-added processing, manufacturing of final products, marketing, and trade.
Business volume	About 3,350MT generating about US \$128,000 government revenue.	Both volume and value of trade is increasing; value of some products increased by many folds.

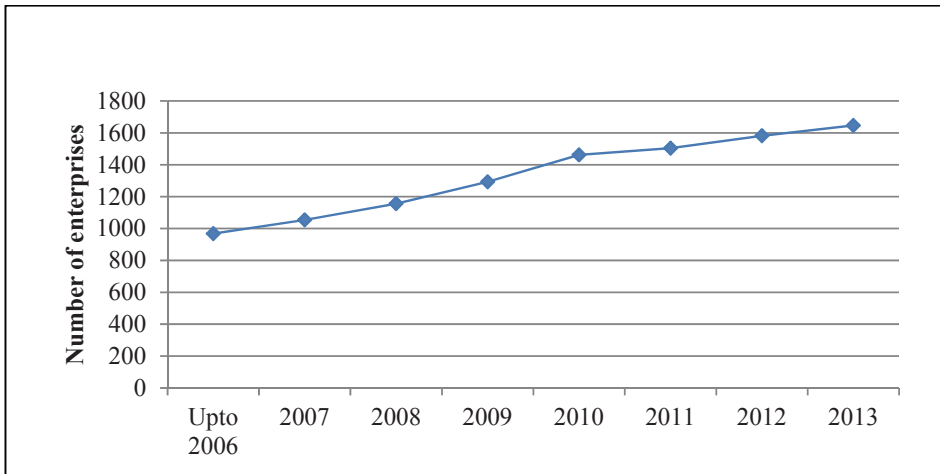
Socio-economic impact		
Income to local collectors and traders	Very little; people of limited area getting income.	Significant percentage of income of many households in high mountains including marginalized groups, e.g., <i>dalits</i> , women and disabled, improving their lifestyle.
Government revenue	Small amount, almost no revenue from some species.	Major item of revenue, especially from mountain districts; contributing about 8% to the total export value.
Value chain governance		
Inter and intra-firm cooperation and coordination	Limited linkages, widespread mistrust among the actors	Better linkages are being established for some value chains; horizontal linkages through commodity-based associations, and vertical linkages through national level marketing companies for handmade paper, essential oils and briquette.
Fair price/distribution of benefits	Uneven and skewed profit margins, mostly controlled by a few influential traders, producers receiving less	Largely the same with some producers involved in some value chains with balanced governance receiving better share of the total income; these producers are organized, have established linkages, and have improved access to information and power.
Lead firm	No committed lead firm	Development of some exemplary fair and green value chains with committed lead firms.
Conservation practices and technology use		
Production of NTFPs	Most collection practices were typically extractive, unsustainable and reflective of 'open access' approach; haphazard collection without a scientific approach.	NTFPs included in some community forestry management plans bringing harvests under control; cultivation of some species started; select work done on scientific harvesting; some groups achieving high standards of sustainable forest management with Forest Stewardship Council (FSC) certification.
Processing and manufacturing	NTFPs traded mostly in crude form with no value addition.	Value addition by proper drying, cleaning, grading, packaging and product development, and improved trading practices for some species.

Services		
Financing for local processing	Almost non-existent.	Some linkage established for financing to communities, some banks and cooperatives have developed financial products, financial assistance from some projects and organizations.
Marketing information	No market information, and harvesters and local traders at the mercy of large traders.	MIS system operating providing local communities to bargaining power.
Coordination among major actors	No formal bodies to bring together CFUGs, government, private sectors and NGOs.	Nepal NTFP Network (NNN), Herbs and NTFPs Coordination Committee (HNCC) provide regular forums for interaction among actors.
Marketing and trade practices		
Market channels & business practices	Mostly traded illegally; no legal access and high risk for collectors and local traders.	Some established legal channels of trade, legal access to collection for some communities, establishment of few collection centres, improved information flow and linkages.
Product positioning in international markets	More than 90% of NTFPs traded to India; little or no sales in international markets.	Achieved sales in international markets, significant volume of lokta handmade paper, essential oils, handicrafts exported to US and European markets; export of chiraito, ritha, satuwa, essential oils, rudraksha, yarsagumba initiated to China.
Organized trade and export	Very little.	Several commodity associations, national marketing and export organizations and some multinationals.

Growth in number of enterprises, functions and business volume: Although the exact number of the enterprises is not known as they operate largely in informal sector and many of the registered enterprises discontinue their operations, available data shows that their number is increasing. Fig. 1 shows the cumulative number of registered NTFP-based processing and manufacturing enterprises without dropout rates from 2006 to 2013 (DoCSI, 2013; DoI, 2013). In addition, there are 493 traders including exporters registered at the Department of Commerce to do trading of a variety of commodities including NTFPs (DoC records 2013). The available studies show smaller number but confirm similar trends for functional enterprises as well. For example, a survey in 1995 recorded 100 NTFP entrepreneurs, along the east-west highway (Subedi, 1997) followed by two ANSAB surveys in 2003 and 2009 recording 375 and 872 entrepreneurs, respectively.

Fig. 1

Trend showing the number of registered NTFP-based processing and manufacturing enterprises



Source: Data from DoCSI, 2013 and DoI, 2013

This increase in number is due to the expansion and growth of enterprise activities including cultivation, harvesting, value-added processing, manufacturing of final products and trade, which was largely limited to the harvesting from wild, transportation and trade of crude herbs before 1990. Although not on a big scale, these enterprises are involved in production of different types of NTFP products, which are presented in Table 4.

Table 4

Types of products produced by NTFP-based enterprises in Nepal (Adapted from Subedi, 2006)

Products	Examples of Plant Species Used
A. Products in raw form	
Medicinal and aromatic	Kutki, chiraito, lauthsalla, yarshagumba, panchaunle, pakhanved, harro, barro, amala, neem, silajit, padamchal, jatamansi, sugand-hawal, wintergreen, chamomile, mentha, chiuri, and many more
Spices and flavors	Cinnamon, timur, amala, juniper, large cardamom, also many of the aromatic plants
Wild mushrooms and health foods	Morels, kurilo
Dyes and tans	Padamchal, chutro, majitho, lauthsalla, banjh, thingresallo, okhar
Plant Fibres	Lokta, allo, argeli, hemp, bhimal, ketuke
Gums and resins	Chirpine, blue pine, sal
Handicrafts (leaves, woods, sticks)	Sal, pipal, bhorla, bamboo, nigalo, rattan

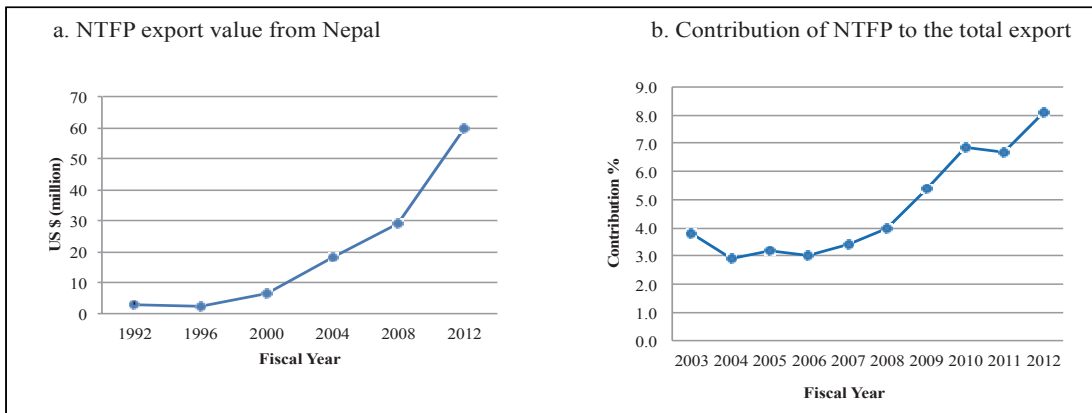
B. Products after value-added processing	
Lokta Handmade paper	Lokta
Argeliwhiteskin	Argeli
Other plant fibers (threads, ropes, fabric)	Allo, hemp, bhimal, bhorla, argeli, sabai grass, ketuke
Fats and oils	Chiuri
Essential oils and extracts	Jatamansi, sugandhawal, titepati, sunpati, juniper, wintergreen, sugandhakokila, abies, deodar, lauthsalla
C. Finished Products	
Ayurvedic preparations (medicines, tonic, nutrient supplements)	Kutki, chiraito, lauthsalla, yarshagumba, panchaunle, pakhanved, harro, barro, amala, neem, silajit and others
Traditional medicines	Kutki, chiraito, lauthsalla, yarshagumba, panchaunle, pakhanved, harro, barro, amala, neem, silajit and others
Handmade paper products	Lokta, argeli
Wild fiber cloth and handi-crafts	Allo, hemp
Incense	Jatamansi, juniper, sunpati, mahuwa
Herbal teas	Thyme, gurjo, gandhaino, tulsi, mint, cinnamon, and a number of medicinal and aromatic plants
Herbal drinks, juices	Bel, sea-buckthorn, amala, aloe vera, rhododendron
Brooms	Amriso, sabai grass
Bamboo and rattan products	Bamboo, nigalo, rattan
Leaf products	Sal, pipal, bhorla
Edible fats and oils	Dhatelo, chiuri, khamu, walnut
Rosin, turpentine and gums	Chirpine, blue pine, sal
Personal care products (soaps, shampoo, creams)	Chiuri, ritha, amala, sikakai, naru, pangar, aromatic plants

There has been corresponding increase in business volume and value as well. There are variations in estimate of quantity and value of NTFP trade, but the trend is very clear that while volume of trade is increasing for most of the commercial NTFPs, the value is increasing quite significantly. The government records show that more than 13,000 MT of NTFPs were traded in 2011 (DoF, 2012), which was 3,350 MT in 1990 (DoF, records). Several studies show that the government records include only a portion of NTFPs traded, as informal transactions are common and the record keeping system is poor. Furthermore, these studies confirm the increasing trend of business. For example, the annual harvesting and trading of NTFPs was 10,000 to 15,000 MT with an export value of US \$8.6 million in the early 1990s (Edwards, 1996) and 20,000 MT worth US \$18-20 million in the late 1990s (Kanel, 1999). Some other estimates show that NTFP trade involved an annual transaction of US \$26 million in 1995 (Subedi, 1997) and US \$ 35.7 million in 2002 (Subedi, 2006).

The increasing trend of annual value of trade is also demonstrated by the NTFP export value during the past two decades. NTFP export from Nepal increased to US \$59 million in 2012 from US \$2.76 million in 1992 (Fig. 2), which comes to be more than 2100%. The contribution of NTFPs to the total export from Nepal has also doubled from about 4% in 2003 to above 8% in 2012.

Fig. 2

Total NTFP export value from Nepal and its contribution to total export



Source: Data from MoF, 2002 and MoF, 2013

The industry has the potential to grow further, as there is a scope of expanding cultivation and processing of some marketable NTFPs in Nepal. Some prominent examples of successful cultivation in various altitudinal zones during this period include atis, chiraito, satuwa, sugandhawal, alainchi, timur, ritha, rudraksha, tejpat, chamomile, citronella, lemongrass and mentha. There is also a good prospect for increasing production of some valuable NTFPs, such as large cardamom and plant fibre by improving production techniques. In addition to expanding the area and production of currently cultivated items, there is also a possibility to increase supply by promoting emerging crops, such as Shiitake mushroom.

Socio-economic impact: Forest resources have remained an integral part of the livelihood support system in Nepal, where overwhelming majority of the 20 million people live in the interface between forest and agriculture. Edwards (1996) reported that harvesters of NTFPs in Nepal received only 32% of the final price in India. Based on a study in Karnali region, Subedi (1999) and Subedi and Ojha (2001) found that the price received by the local harvesters for their products, in some cases, was less than their labour wages. This has been due to the limited number of traders who enjoy huge margins by controlling the market. The practice also created mistrust among these actors. The access to NTFP collection was generally limited to contractors, and even in the case of community forestry, some groups like *dalits* were excluded due to superstition. For example in Bajhang, *dalits* did not dare to go and collect yarshagumba as they believe that if they enter to the area, some misfortune will befall them and their families.

Over the past decade, the percentage share of the total income of collectors has improved for some products, such as yarshagumba, chiraito, essential oil producing aromatic plants, lokta, ritha, chiuri, satuwa, jatamansi and atis. As there are very few economic opportunities for the people of hills and mountain areas, NTFPs play a crucial role in their livelihood strategy. In some rural hilly areas, NTFP collection is the only means of cash income and may contribute up to 50% of the annual average household income (Edwards, 1996; Olsen and Larsen, 2003). A survey in Humla district shows

that NTFPs contribute about 25% to the household income for the collecting households (Subedi, 1999), which is close to the value that Molnar *et al.* (2004) estimated for about one billion people of the world.

Currently, the marginalized groups including women, *dalits* and disabled in many parts of the country significantly rely on NTFP-based economic activities, and are improving their lifestyle. NTFPs have generated income and employment opportunities for these groups. At national level, it is difficult to get income data as majority of the NTFP-based enterprises still operate informally at local level. A recent report shows that more than 84,000 rural, mostly marginalized people, are making an additional annual income of US \$97 per person per year as a result of ANSAB's intervention for development of community-based forest enterprises and value chain promotion of the products produced by those enterprises (ANSAB, 2013).

Value chain governance: NTFP business is mostly controlled by a few influential traders and characterized by secretive and non-transparent business practices with uneven and skewed profit margins. The profit distribution is highly uneven with generally a high return to external stakeholders, and a low return to stakeholders close to resource base, i.e. collectors of NTFPs and village traders (Subedi and Ojha, 2001). The vertical and horizontal linkages in the value chain are limited for most of the products, with some commodity-based associations and national marketing companies establishing linkages.

Since 2000, some models of fair and green value chains are being developed by long-term committed lead firms having clearly stated value chain vision. Some notable lead firms include, Himalyan BioTrade (HBTL) for Forest Stewardship Council (FSC) certified essential oils and lokta handmade paper, Himalayan Naturals for briquettes, Alternative Herbals for chiuri, natural juices, Ashapuri Organic for organic dried herbs, herbal teas, mushrooms and vegetables and GorkhaAyurved for Ayurvedic medicines. Each of them has a clearly stated vision, goal and practices. For example, HBTL has been sourcing FSC certified handmade paper from the rural mountain communities with guaranteed buy back and increased stakeholder income, and selling the paper and paper products to the international markets. Another company, Himalayan Naturals has consolidated briquette-producing enterprises as the shareholders and has been distributing income and share of the profit generated from the sale of briquettes. Briquette enterprises involve the poor, women and marginalized groups, and these groups are deriving significant income from the enterprises.

Conservation practices and technology use: Among the community forest user groups organized for sustainable use of NTFPs, there has been significant improvement in collection practices of NTFPs over the past two decades. Earlier, the collection practices were typically extractive, unsustainable and reflective of an 'open access' approach. Sustainable resource management based on economic incentives received little attention and scant effort was made to balance economic, social and environmental concerns. Since the mid 1990s, with ANSAB's facilitation in bringing forests and meadows under improved community management and in establishing NTFP-based enterprises at community level, there are some very good examples of successful local community systems of governing forest management and enterprise operation. These communities have initiated systems of NTFP focused sustainable forestry and are generating biological and socio-economic information required for management decisions, as reflected in their operational plans.

Many enterprises use simple and locally available technologies for value-added processing and manufacturing. As compared to two decades ago, when NTFPs were traded mostly in crude form, a range of technologies is currently employed. These technologies, although not in a big scale, have been adopted, and in some cases adapted, after the traders and collectors have realized the importance of value addition in their business. The technologies in current practice by NTFP-based enterprises are presented in Table 5.

Table 5

Technologies in practice by NTFP-based enterprises in Nepal for value added processing and product development (Adapted from Subedi, 2006)

Technology	Examples of Applications
Drying: mainly traditional sun and fire drying, but some practices of using solar dryer, hybrid solar dryer and solar cooker	All medicinal and aromatic products except wintergreen; mushrooms including morels, spices, etc.
Cleaning	Morels, yarshagumba, timur
Distillation: a range of steam distillation	Essential oils from wintergreen, jatamansi, sugandhwal, zanthoxylum, anthopogon, seabuckthorn, and a range of aromatic products
Solvent extraction	Fixed oils and fats from cinnamon, castor, jatropha, sugandhkokila as well as harro, barro for leather tanning
Extraction of active ingredients	Lauthsalla, laghupatra
Sapogenin extraction	Ritha and other soap bearing plants
Extraction of juice	Seabuckthorn, bel, rhododendron
Grinding (grain mill), mixing	Herbal teas, ayurvedic medicines
Debarking	Argeli
Paper-making (handmade)	Argeli and lokta
Detoxification	Removal of saponin from chiuri ghee
Oil expeller: various types	Dhatelo oil, chiuri, jatropha
Fiber extraction	Ketuke
Rope maker: pedal operated	Babiyo
Weaving: shuttle loom (instead of back-strap loom) and pedal operated spinning (Charkha)	Allo and hemp cloth
Compacting: pressing to reduce volume	Chiraito
Grading and packaging	Timur, yarshagumba, morels, chiraito
Packaging	Morels, chiraito
Packaging: bulk	All raw NTFPs, value added products and finished products
Leaf plate stitching, pressing and drying	Sal leaf, bhorla
Soap making	Ritha, pangar, chiuri butter
Deseeding	Ritha
Briquette making	Banmara, titepati, lantana

A more recent example of product development and adaption of technology is bio-briquette industry that uses unwanted and invasive shrubs from forests. A briquette marketing company with facilitation of ANSAB offered improved packaging and essential accessories (tripod and burning

stove) along with the briquette, which has become one of the main factors for their widespread use among urban consumers in Kathmandu. With technological advancement that can also build on traditional and existing technologies, there is potential to develop value added NTFP products.

Services: NTFP-based enterprises that usually involve smallholders have been facing difficulties receiving financial and non-financial business development services, which are important to improve enterprise performance, their access to markets, ability to compete, and participation in the value chain. These services, including those for marketing information, business development services (BDS), financial services and access to technology, have been introduced in Nepal only a decade ago after ANSAB's initiation. Now there is a marketing information service (MIS) that collects and disseminates price of 33 NTFPs and spices from six major trading centres in India and Nepal. Revolving equity funds have been established in some communities to establish businesses based on NTFP collection, processing and trade. Some BDS providers are established and are operating at regional and local level and helping enterprises in defining target markets and demand, preparing business plans, developing marketing strategies, managing finance and cash flow and providing technology and other extension services.

While NTFP-based enterprises have not been a priority sector for the financial institutions, some linkages have been established for financing of community-enterprises; a few banks and cooperatives have developed financial products and worked with the enterprises at local level. Some projects and organizations are linking-up the banks and NTFP-based enterprises for providing financial assistance. For example, Small Farmer Development Project of the Agricultural Development Bank and UNICEF provides financial assistance to handmade paper enterprises, and ANSAB-linked the Bank of Kathmandu to enterprises in Banke and Dolakha districts.

Since the mid 1990s, some formal bodies have been organized that provide for regular interaction among actors. For example, Nepal NTFP Network (NNN) brings together NTFP enterprises, entrepreneurs, community members, service providers, policy makers and donors, and Herbs and NTFPs Coordination Committee (HNCC) brings together civil society representative and government agencies to discuss issues related to NTFP-based enterprises.

Marketing and Trade Practices: The market and trade channels for most of the NTFPs follow a general pattern of forest or meadow to village to road-head or local trade centre, then on to larger trade centres. More recently, collection centres have been established in some places, where the harvesters do not have to bargain for a fair price. Communities in some parts of the country are also consolidated and they transport their products to the trade centre, which has improved share of profits to the collectors from trading.

India is the major market of Nepalese NTFPs with more than 90% of the products being exported to India in raw form (Olsen, 2005; Kanel, 1999; Edwards, 1996). As compared to the trade practices two decades earlier, when NTFPs had little or no sales in international markets beside India, some percentage of the products is currently going to Europe, North America and some other Asian countries. Export of some NTFPs including chiraito, ritha, satuwa, essential oils, rudraksha and yarsagumba has been initiated to China. During the past decade, some high value NTFPs, such as essential oils and handmade paper are processed and majority of them are exported to Europe and US. More than 70% of the total essential oils were exported to Europe and a significant volume of lokta handmade paper was exported to the United States in 2012.

Since the early 2000s, there are some models of responsible business practices exhibited, especially by lokta handmade paper. The handmade paper produced by community-based enterprises in Dolakha and Bajhang have received FSC certification that is the first of its type in the world, and has been used by an international cosmetics company Aveda Corporation to wrap their holiday gift

boxes since 2007. While the major concern of the western buyers in the beginning was the sustainable supply of the paper, the FSC certification has ensured sustainable production and harvesting of lokta for the handmade paper products. The FSC certification covers 24 NTFPs, which are harvested and transformed into essential oils, Ayurvedic medicines and health supplements, and a variety of other herbal medicines and beauty products, for sale in international markets.

Since the mid 1990s, NTFP sub-sector has observed some developments for organized trade and export. A number of commodity associations have become organized, such as Nepal Herbs and Herbal Products Association (NEHHPA), Jadibuti Association of Nepal (JABAN), Nepal Bio-briquette Producers' Association, Handmade Paper Association (HANDPASS). These associations have been organizing producers and traders, addressing commodity specific constraints and opportunities, and lobbying for policy reform and good practices. Some national level companies, such as Himalayan Biotrade, Himalayan Naturals, Alternative Herbals, Ashapuri Organic, and GorkhaAyurved are playing a role of good lead firm and consolidating the production enterprises and marketing the products in volume. Some big companies including Dabur (Nepal), Chaudhary Biosysand Dugar Group have been showing their interest in initiating establishment of production farms, collection of products from local harvesters for trade in domestic and international markets.

Factors Governing the Changes

In the context of the overall development in Nepal since 1990, positive changes in production and industrial practices, development and growth of new green and fair value-chains, the scale of impacts in NTFP sector is noteworthy. The major factors governing change are presented below:

Community Forestry System: Local control of forest resources increased noticeably, once community forestry system was initiated. Until the late 1970s, indigenous efforts to manage local resources had been grossly undermined by centralized government control of forests. The transfer of legal rights from the central government to local communities to manage and use specific forest areas was promoted by favourable policies after the formulation of the Forestry Act, 1993. As a result, a large number of local communities were united under Community Forest User Groups (CFUGs), which instituted basic common property rights in forest resources, including mechanisms for regulating the harvest of NTFPs among their members and excluding outsiders (Ostrom, 1990).

With the community forestry system, the local communities have initiated systems of NTFP-focused sustainable forestry and generating biological and socio-economic information required for management decisions, as reflected in operation plan of the community forest user groups (CFUGs). With assured tenure and management rights over the community forests, these user groups have also carried out discrete economic activities through the establishment of community-based NTFP enterprises to enhance the economic wellbeing of the community members. Further, through linkages to CFUGs, other enterprises that are established outside community forests have also improved their access to collect NTFPs. For example, the handmade paper enterprises established in Bajhang (Malika) and Dolakha (Everest Gateway and Bhimeshwor) districts with facilitation support from ANSAB are linked to clusters of CFUGs that supply lokta bark and firewood. This effort has established a model for sustainable harvesting of resources and ensured regular production of lokta paper, at least from the perspective of the raw material supply concerns.

Generation of Knowledge through Research: Since the mid 1990s, knowledge about biological, social and economic dimensions of natural resources and enterprises, and the organization of the communities for different stages of NTFP value chains has been generated through research, experimentation and continuous monitoring of impacts. Researchers have produced species-specific biological information of some economically important NTFPs, knowledge about local people's livelihood needs and significance of NTFP's contribution. Research backed by experimentation has

improved understanding of policy provisions vs. implementation, contradictions in intended and actual impacts, and programme implementation strategies for the government. As an example of knowledge generation, enterprise-oriented approaches to biodiversity conservation pioneered by ANSAB in Humla district of Nepal from 1995-99 generated information in terms of policy gaps and barriers, feasibility of biological monitoring, and the significance of leadership, governance and marketing in NTFP-based enterprises. Some other understandings from ANSAB's research and studies have been value chain development, BDS approach for service delivery, enterprise modality, marketing information system, and FSC certification since 2000. These and other information generated over the two decades have been useful for the government, NGOs and civil society organizations in advancing enterprise-based biodiversity conservation in Nepal.

Multi-Stakeholder Forums: Multi-stakeholder forums created during period played an important role in raising awareness among stakeholders, information exchange, coordination and reducing duplication of efforts in the field. In Nepal, a multi-stakeholder forum in NTFP sub-sector was initiated in 1995 with the establishment of Nepal NTFP Network (NNN). With 50 organizational and 300 individual members, NNN focuses on policy and practical issues relating to NTFPs at national level through periodic meetings, sharing of activities and organizing task forces. The ground breaking initiatives of including NTFPs in community forest management, and the handing over of rights and responsibilities of these government-owned lands to CFUGs were greatly accelerated through the Network.

Building on the NNN experience and contributions, the Government of Nepal established the formal, high-level multi-stakeholder policy forum – Herbs and NTFP Coordination Committee (HNCC), headed by the Minister of Forests and Soil Conservation for coordinating NTFP development activities and to develop enabling policies. HNCC has been coordinating different line ministries, private sector and civil society organisations, and making recommendations to the Government of Nepal for framing NTFP related policy. There are also some Public-Private-Community-partnership forums established that are organizing industries, government, NGOs and communities for the promotion of NTFP sub-sector.

These forums bring together representation and views of local collectors, entrepreneurs, traders, companies, service providers, and government line agencies; and serve as mediums to share knowledge and experiences, bridge gaps in understanding about grassroots realities and international standards, and reduce duplication of efforts and activities, thus linking the learning from one organization to another's learning cycle in both top-down and bottom-up approaches

Understanding the Importance of the NTFP Sub-Sector among the Key Stakeholders: Increased understanding on the status, scope and economic potential of the NTFP sub-sector among government and other stakeholders has also been one of the factors for the positive change of the sub-sector since 1990. While NTFPs were treated as minor forest products before, the sub-sector has observed improved understanding with clear information available on the potential of NTFPs for poverty reduction and community development, their species-specific information for sustainable production and management, and the legitimate community needs and capacity for managing enterprise-oriented forestry.

These understanding have been developed due to the processes involving studies, experimentations and piloting, and outcomes in the form of learning documents primarily through ANSAB's leadership and coordination efforts as described above. Some of the documents developed for improving understanding are manuals on enterprise development, and organizing communities for resource management, enterprise development and integration into value chain, and toolkits on entrepreneurship development, business planning, marketing information system, development of local resource persons, certification, participatory biodiversity monitoring and NTFP-inventory.

Based on the understanding, the government has made some positive changes to address the challenges and harness the potential. For example, legal access to resources is provisioned through CFUG tenure instruments to enable sustainable management of these natural resources, and rationalization of royalty rates of NTFPs. Similarly, realizing the potential scope, other stakeholders including civil society organizations, financial institutions, private sectors and multi-lateral organizations increased their participation in NTFP sub-sector for creating income and economic opportunities. For example, the Federation of the Community Forest User Groups, Nepal (FECOFUN) is involved in advocacy for community rights, financial institutions, such as Bank of Kathmandu and Agriculture Development Bank have developed financial products, and UNDP in collaboration with the Government of Nepal have designed Micro-Enterprise Development Program (MEDEP) to promote micro-enterprises among the poor for economic empowerment.

Capacity Building: Since 1990, improved capacity building of individual collectors, communities, key stakeholders and government staff has resulted to the promotion of NTFP sub-sector in Nepal. Various types of training are also given at regional and national levels targeting various levels of participants. For example, through targeted ANSAB projects, the individual collectors and communities were organized at various levels and provided with knowledge and skills for sustainable harvesting and NTFP-based enterprise creation. The collectors and communities have been empowered with tools for sustainable forest management and biodiversity conservation – detailed participatory resource assessment, threat analysis and biological monitoring, which integrates villagers’ subsistence and commercial needs with biodiversity conservation.

Some innovative concepts, such as sub-groups in community forestry user groups have been introduced, where the poorest and most vulnerable people within the groups are organized and some plots are allocated to the sub-groups for income generating activities. There are information sub-centres that use a network of facilitating organizations to provide marketing information services (MIS) to collectors, traders, producers and potential entrepreneurs of NTFPs.

Facilitation for Policy Reforms: Continuous facilitation from organizations and networks has been one of the major factors for the reform in policy and legal provisions related to NTFPs since 1990. ANSAB has been continuously coordinating forums including NNN for the policy reform process by setting policy goals and objectives, using bases and criteria, and identifying the participants and their role during the process. Some progress has been made in building networks and alliances by recognizing all stakeholders and creating mechanisms for formally involving all legitimate stakeholders, especially the poor, women and other disadvantaged groups. Similarly, support to raise policy awareness among forest users, collectors, traditional healers and traders has been a useful movement for policy facilitation process. The organizations have also helped to develop a clear process and criteria for fixing and revising royalty rates and implementing the process, and simplifying trade procedures to support small business as well.

Some of the policy reforms include the lifting of ban on some tradable NTFPs, rationalization of the royalty rates of over 50 products, prioritization of 30 NTFPs by HNCC for conservation and utilization, and formulation of NTFP Inventory Guideline 2012. Some other current outcomes due to external facilitation include revision of EIA/IEE provisions on community forest registration that ease raw material sourcing for NTFP-based enterprises at community level, and endorsement of decision for the exemption of government royalty for chiuri, ritha, timur and lapsi, the NTFPs grown almost 100% in private land by the Ministry of Forests and Soil Conservation, which has been forwarded to the Ministry of Finance for consideration.

Piloting and Learning Cycle: The present practice of NTFP management with enterprise and value chain development has resulted primarily due to piloting of practices in the field to maximize the opportunities given by existing legislation. Some of the piloted practices, primarily through

ANSAB's series of learning cycle since mid 1990s involve the inclusion of NTFPs provisions in community forest management plans, prioritizing forest and pasture lands that are rich in NTFPs for handing over as community forest, allowing and supporting CFUGs for organized collection and marketing, building associations and networks of CFUGs and enterprises, supporting the enterprises to understand end markets and establish market linkages, and facilitating community forest user groups and enterprises to receive FSC certification.

The evidence created with these pilot practices integrated with knowledge management and conceptualization has been useful for improving sustainable management and cultivation practice of NTFPs. Some of the notable standardized practices that are adopted by many organizations and projects are resource assessment and inventory, incorporation of NTFPs in CF management operational plan, yield and growth studies, community-based enterprise development, value chain integration and marketing.

Conclusion and Lessons Learnt

Participatory action research practiced in Nepal since the mid 1990s has produced some remarkable results. The lessons learnt in achieving these results can be useful to scale-up these practices in Nepal and other geographical regions with similar socio-economic and ecological settings. Some lessons are encapsulated below with brief description:

A Systematic and Systemic Approach is Required to Achieve the Scale of Results: One of the major lessons that can be drawn from Nepal's experience is that community-based NTFP enterprises have the ability to achieve scale of results and generate positive impacts on local livelihoods, economy and for poverty reduction, social equity, and sustainable management of natural resources, but it requires proper facilitation and technical assistance, especially for sustainable forest management and development, governance and growth of value chain. These enterprises contribute effectively to local economies, diversify income streams, and generate multiple social benefits, as the local groups or individuals have the capacity to learn to manage the various dimensions of enterprise activities. Enabling the communities to earn decent income from the utilization of natural resources would lead them to become the stewards of natural resources.

There are a number of factors strongly associated with enterprise genesis, operation and growth, e.g., market, policy, technology and institutional support that need facilitation. An important practical step for the facilitation of NTFP-based enterprises that usually involve smallholders, would require an organization which could act as a national hub to simultaneously generate knowledge through research and product development and act as facilitator to improve the policy and regulatory environment, organize communities to develop enterprises, analyze the entire value chain, understand and meet the end market requirements for prioritized products, facilitate the BDS market development and linkages, build capacity of each group of stakeholders (community-based enterprises, national enterprises, service providers, government and value chain facilitators), and identify critical services and facilitate the process of service delivery.

Synergy between Sustainable Forest Management and Local Economic Development is Possible through a Carefully Developed Green and Fair NTFP Value-Chain: By developing synergy among local communities, biodiversity and enterprises, it is possible to generate enough economic incentives to local communities for biodiversity conservation. NTFP-based enterprises are one of the means for providing economic benefits to a community of stakeholders who have incentive and capacity to take initiatives for biodiversity enhancing activities and counter the threats to the biodiversity. ANSAB's experience in enterprise-oriented natural resource management shows that as entrepreneurs become more aware of the scope of natural resources for their enterprises and develop deeper sense of ownership, they improve resource management plans, institutionalize sustainable

harvesting practices, pay for the resource conservation activities, initiate measures to mitigate threats to natural resources, assist natural regeneration and conduct artificial regeneration of the natural resources. Enterprises can lead to conservation while addressing social and equity issues, but it is only under limited conditions. For optimal benefits from the enterprises, at least the following issues need to be addressed:

1. Clear property rights with long-term access to earn cash income from resources – enterprises need to have some control to ensure access to the resource and the way the resource is managed.
2. Forest management system and practices that consider all aspects of society – social justice and equity should be considered along with ecological sustainability and economic efficiency.
3. Sustainable extraction of NTFPs – biological monitoring and technical information on sustainable yields or field-based research for determining sustainable yield should be done.
4. Integration into remunerative value chain – access to value adding technologies and higher value markets to give premiums to support the conservation and biological monitoring efforts.

Natural Resource-Based Enterprises Need Some Basic Requirements for Their Success: For the success of any enterprise, a number of factors including nature and characteristics of biodiversity (commercial value, production and production capacity, threats), local communities (property rights, production of goods, benefits and services, and institutional and technical capabilities to manage biological resources and enterprises), and enterprise (market, technology, financial and other business development services) can determine the context. At least the following eight requirements should be taken into considerations for establishing and running a successful enterprise:

1. Raw material availability – A long-term biologically sustainable supply of the targeted natural product in sufficient quantities is necessary for the enterprise activity to be financially viable.
2. Legal access to and control over the natural resources – collectors should be able to manage natural products harvesting and incorporate the enterprise activity into their overall forest management plans. Enterprise activities must comply with a range of legal requirements.
3. Equitable distribution of benefits – if community members do not feel the benefits are being distributed fairly there will be less incentive to protect the natural resources. The overall raw material source could become threatened as well as the commercial activity and the ecosystem's biodiversity.
4. Appropriate processing technology – is the technology compatible with the prevailing infrastructure and human resource conditions at the chosen location? Conditions to be considered include: transport and storage facilities; equipment/machinery availability; power or fuel required for the processing activity; and technical skills available.
5. Good management – people with knowledge of, and experience with managing proposed activities should be available to run the enterprise or they should be closely involved in its operations.
6. Commercial sustainability (also known as economic or financial viability) – commercial sustainability is a simple concept. Sell the product at a price and volume that covers all the costs associated with the natural product enterprise with enough money leftover as profit.
7. Access to capital – start-up capital and ongoing working capital is needed for the enterprise.
8. Available and accessible market for the products – is there a market for the available quantity and quality of product? Is there adequate demand at the expected selling price? Who will buy the products?

Any NTFP-based enterprise considered should have favourable conditions for each 'requirement'

item. If the targeted enterprise does not have a good strategy to tackle one of the items, it might not be feasible for establishment or operation.

Transformation of the NTFP-producers into Enterprises Needs Value Chain Facilitation: NTFP-based enterprises have particular characteristics that differ from other enterprises. The main characteristics are:

- The seasonal nature of growth and production of NTFPs implies seasonal fluctuations in collection, utilization and market price of the product;
- Most of the harvesting of the products is done by the poorest members of the community often struggling for subsistence that forces them to focus on immediate relief activities;
- Most harvesters have low literacy skills, limited enterprise opportunities and weak bargaining power often leading to a trader-controlled market;
- Reliable market and price information, processing technologies and access to market is difficult;
- Many high value NTFPs are found in very remote areas, hence their processing and marketing costs are high;
- The support services – infrastructure and business development services – available for processing and marketing of NTFPs are inadequate for small, fair trade businesses; and
- Local traders often do not have access to the capital required for processing and marketing of the NTFPs.

These characteristics lead to the limiting role of the producers in marketing and value chain. Transforming producers into enterprises requires external support that would organize them and build their capacity for enterprise development and access to financial and non-financial business development services (BDS) and to participate in the value chain. Regular facilitation from organizations and government programmes is also necessary to provide critical services and facilitate the BDS market development and linkages in order to understand and meet the end market requirements, build capacity of each group of stakeholders (local level and national enterprises, service providers, government and value chain facilitators), develop clusters (networking and alliance building), generate required information through research and product development, and analyze and facilitate to improve the policy and regulatory environment.

Successful Policy Reform is Possible through a Systematic Process with Scientific Evidences: Enabling policy environment supports the development and operation of NTFP-based enterprises in various ways including raw material acquisition, registration, financing and marketing. It also provides incentives to stakeholders for managing natural resources and establishing enterprises. Successful facilitation for policy reform and improved implementation requires a systematic process with scientific evidences. ANSAB's past experience shows that a successful policy revision requires at least the following five elements:

1. Clear evidence from research– Comparative analysis of various policy options in terms of livelihood, income generation and conservation provides clear information on the necessity and benefit of the proposed policy option(s) over the current policy provisions and practices.
2. Demonstration of impacts of various policy options–Experimentation and field-testing of the policy options validate their social, economic and conservation impacts.
3. Constituency building–A constituency or advocacy base helps the policy personnel understand the stakeholder's concern over the issue, and is often one of the most important policy components.
4. Coordination and forum organizing–Coordination of the stakeholders and organizing them in

forums help to make a uniform stance for providing regular feedback to the government and policy makers.

5. Enduring effort of research and facilitating organizations—Policy process takes time, often needing evidence-based policy recommendations and facilitation during the whole process.

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