Keynote Paper[1]

Enhancing the contribution of nontimber forest products in supporting green economy and sustainable development in mountain countries

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Abstract

Efforts to sustainably manage the world's nontimber forest resources, especially in the developing world, have not achieved the desired goals. Balancing the three pillars of sustainable development—social, environmental, and economic—has been one of the key challenges. Although the traditional impediments—population growth, poverty, and ignorance—continue to have an influence, new drivers of change such as climate change, globalization, and migration have added new problems and some opportunities. The markets for natural products, especially pharmaceuticals, food, and nutrition products, are growing. Medicinal and aromatic plant products alone are estimated to command a market of more than USD $80 billion. But with the rise in demand for nontimber forest products (NTFPs), there is also a rise in biodiversity loss and an increase in the number of poor people dependent on forest products for livelihoods. It is necessary to develop a sustainable growth strategy that can secure an equitable living standard for forest-dependent people while preserving ecosystem resources. For such a development model, which is now called green economy, the importance of natural capital or ecosystem services will be high. Here the role of NTFPs cannot be overstressed. Many local economies, especially in mountain ecosystems, are highly dependent on NTFPs and associated natural resources. Their role can be enhanced through green technologies and generating green jobs. Many countries—both developing and developed—already have institutions and governance systems that are implementing sustainable management of NTFPs, ensuring an equitable flow of benefits to the people involved. Many of these traditional institutions that have evolved over generations have led to a number of good practices that have been helping indigenous communities to cope with financial, ecological, and social changes and challenges, protecting against the consequences of unavoidable changes in the external environment. In the Hindu Kush Himalayan region, pro-poor value chain development pilots conducted by research and development organizations have been successful. With an expected increased investment in forestry, there is a real need for more systematic research and knowledge generation on the role and potential of NTFPs in assisting the attainment of sustainable development goals.

Keywords: nontimber forest products, sustainability, biodiversity, poverty reduction, green economy.

Background

Mountains occupy 24 percent of the global surface area and are home to 12 percent of the world's population. They have ecological, socioeconomic, spiritual, and cultural significance, not only for those living in mountainous areas, but also for people living beyond (Schild 2008). The international community recognized the importance of mountains at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil in 1992 with

[1] Invited Keynote Paper presented at the 2012 IUFRO CONFERENCE FOREST PRODUCTS, DIVISION 5; www.iufro2012.org; July 8-13, 2012; Lisbon; Portugal

the adoption of Chapter 13 in Agenda 21, which underscores the role of mountains in global sustainable development. Mountain ecosystems are among the most varied and richest in the world terms of species (e.g., Vare et al. 2003; Moser et al. 2005; Spehn and Korner 2005). Mountains support about one-quarter of the planet's biodiversity and have nearly half of the world's biodiversity hotspots (Singh 2011). Mountain systems provide niche habitats for many rare and/or endangered endemic species (ICIMOD 2011).

Mountain communities are mainly traditional societies. They have developed and maintained vast knowledge and experience on the use of natural resources including plant resources. Much of the mountain's rural economic activities, however, are based on unsustainable use of natural resources, resulting in deforestation, loss of biodiversity, and degradation of natural habitats. Cultural and traditional knowledge and values are also fast vanishing. Proper documentation and screening of traditional knowledge on natural resource management and use can improve forest resource management. The harmony between cultural diversity and natural resources developed through centuries, and the resulting culturally compliant utilization systems also needs to be studied and documented for wider dissemination and application.

The common factor that cuts across all forest and biodiversity dependent communities in the mountainous regions is the existence of high poverty and deprivation amidst rich biodiversity. Hence, there is a need to provide forest and biodiversity-based employment and sustainable livelihoods to the poor and marginalized communities, while ensuring conservation of forests and natural habitats, which are becoming increasing threatened. In this context, the role of nontimber forest products (NTFPs) becomes extremely important, because cutting and using timber products increases carbon intensity.

Sustainable use and management of biodiversity resources such as NTFPs is a high-priority topic in sustainable mountain development agenda. In recent years, the environmental and economic roles of NTFPs are becoming increasingly significant owing to better understanding and appreciation of their role in promoting low-carbon economic growth. Growing market preference for green and natural products and emphasis on efficient and sustainable use of natural resources has also highlighted the added importance of NTFP development. In recent years, NTFPs have gained much needed recognition along with the realization of the need to conserve forests and protect the trees and wild animals. In many countries, proper harnessing of NTFP resources has been providing a powerful incentive to local communities to protect forest tree cover while harvesting forest undergrowth only. In fact sustainable management of NTFPs has been helping to achieve sustainable management of forest resources in many countries.

Current status of the knowledge in NTFP management

There is no universally accepted definition of the term 'nontimber forest products'. FAO uses the term 'nonwood forest products' and defines them as "products of biological origin other than wood derived from forests, other wooded land, and trees outside forests; they may be gathered from the wild, or produced in forest plantations, agro-forestry schemes and from trees outside forests" (FAO 1999). Ahenkan and Boon (2011) have done an excellent compilation and analysis of the semantics and the difficulties in defining NTFPs. In some countries, NTFPs are also referred to as minor or special forest products (Hammett 1999). In some definitions, NTFPs include nonconsumptive ecosystem services enjoyed by humanity such as

ecological/environmental, cultural and religious, and tourism and recreation values (Walter 1998).

In this paper, the NTFPs found in mountain and hilly ecosystems are considered to comprise nontimber floral, faunal, and recreational products, including fuel wood, wood crafts, animal fodder, and compost materials; medicinal, aromatic, and dye plants; wild mushrooms, floral greens, decorative greenery, and wild foods (nuts and seeds, berries, oil seeds, etc.); craft species; and products of ecotourism value derived from forests, rangelands, and protected areas. They also include game animals, furbearers, etc. NTFPs are increasingly considered high-value ecosystem goods and services that can transform the economies of forest-rich developing countries into low-carbon or green-growth-based economies. This is the main argument of this paper.

Livelihood importance of NTFPs in mountains

Poverty in developing mountainous countries is generally linked with small, fragmented, or no land holdings, accompanied by low productivity. Dependence on collection and gathering of NTFPs from forests to ensure food security goes largely unnoticed, and is not accounted in the calculations of gross national product. Some of the products meet a global demand (e.g., edible nuts, honey, bamboo, and cane products); others reach specific markets (e.g., crude herbs, aromatic and chemical products), while some NTFPs are collected and consumed locally. Forest-dependent communities across the mountainous regions derive their sustenance from NTFPs in periods of financial stress, and have used them as raw materials for producing items of daily use in normal times. In least-developed mountainous countries such as Nepal, Bhutan, and Myanmar, NTFPs provide food, medicine, nutrition, and cash income to poor and vulnerable households. NTFPs are extracted primarily from the wild for meeting the food, medicine, and supplementary cash needs for the subsistence of poor households in these countries. NTFPs such as bamboo and rattan are also used in rural and urban homes for construction and manufacturing purposes, and are traded in local, regional, and international markets. The role of the medicinal and aromatic plant resources in the economy of developing countries becomes even greater when high-value service sectors such as health, neutraceuticals, organic and certified products, and ecotourism are taken into account and linked to overall sectoral development of forest conservation and development (Karki 2003, 2004; Karki et al. 2004);

Market potentials and constraints

It is estimated that more than 150 NTFPs are traded in international markets (FAO 1997). Among these, medicinal and aromatic plant products alone are estimated to command a market of more than USD $80 billion (Karki and Nagpal 2004). The World Health Organization (WHO 2002) estimates that 80 percent of the global population relies on plant-based medicines for primary health care needs. Agrawal (2009) estimates the global market potential for NTFPs to be as high as USD $225 trillion by 2050. It is clear that NTFPs, besides providing multiple intangible benefits, also have huge economic potential and generate cash incomes, particularly for women and families that do not have access to agricultural lands and major markets, particularly in developing countries. However, the inadequacy of market-related information and negotiation skills with the upstream producers in dealing with market forces, as well as unequal power relationships or lack of a level playing field between buyers and sellers, disadvantages the

growers, collectors, and local traders of NTFPs in mountainous regions. The supply chain of NTFP products is unnecessarily long, with a large number of commission agents eating into the returns that could go to the farmers. These are the major obstacles to the small-scale producers and growers of NTFPs that prevent them from benefitting from higher values. Forest users, landowners, harvesters and processors, and policymakers can influence how NTFP resources are managed through the knowledge, practices and policies they suggest, design and implement, if they can all work within one single framework linking producers to markets and consumers.

Employment, health and income potential of nontimber forest products

The NTFP sector is a very important source of rural employment. According to FAO (1997, 1999), NTFPs contribute about 50 percent of forest revenue and 70 percent of income through export of different food, medicine, and aroma products (Sekar et al. 1996). In India, the NTFP sector, including bamboo and rattan, medicinal plants, and other subsectors, is estimated to employ poor people for more than 100 million person days (Tewari 2004) mainly in rural areas; about 200 to 300 million villagers depend on NTFPs to varying degrees. NTFPs also contribute 10 to 40 percent of income to the 50 million tribal households in India (FAO 1997). In Indonesia, the rattan industry has been providing employment for 200,000 people. Large numbers of people are employed in Vietnam and Bangladesh. In Malaysia, the rattan subsector is a major source of employment and was estimated to contribute 14.8 percent of the economic activity in the country (FAO 1997). In Nepal, rural mountain communities derive up to 50 percent of their total family income from NTFPs (Pyakurel and Baniya 2011). Thus NTFPs can significantly help in livelihood diversification of vulnerable mountain communities affected by downturns in other resource sectors as a result of land and forest degradation, which is often aggravated by growing climate variability.

The annual revenue from the sale of more than 33,000 tonnes of NTFPs is estimated to be between 13 and 26 million USD (GoN 2010). *Most of the products are exported to India in crude or semiprocessed form. But in the last few years, semiprocessed or processed NTFPs are being exported to both India and other countries. Essential oils are the major exported commodities among processed herbs that are extracted from more than 18 aromatic plants* (Prakrit 2007). *The oils are mostly exported to Japan, the US, Germany, Belgium, and many other countries. The other NTFPs exported are handicraft items whose value was about Rs 300 million in 2004/2005 (*Acharya 2006*). The NTFPs thus are the major exports of Nepal. Nepal however also is one of the biggest consumers of processed medicinal products, most of which are imported from India, which is growing at an annual rate of 20 percent,* (Ghimire et al. 2008a,b). *Therefore, there is a tremendous possibility of improved management, processing, and value addition of herbal products and other NTFPs in Nepal that can help alleviate poverty by creating income generating opportunities locally (based on WWF, Nepal).*

Ayurveda, the oldest medical system in the Indian subcontinent, and traditional Chinese medicine (TCM) have alone reported using approximately 2,000 to 3,000 medicinal plant species. The *Charak Samhita*, an ancient handwritten document on herbal therapy in India, reports on the production of 340 herbal drugs and their indigenous uses based on wild collection of NTFPs (Prajapati et al. 1993). Worldwide, it is estimated that approximately 25 percent of all pharmaceutical drugs are derived from plants, and many others are synthetic analogues built on prototype compounds isolated from plant species (Rao et al. 2004).

Green economy: key issues in mountains

A green economy is defined by the United Nations Environment Programme (UNEP) as one that results in 'improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities'. Accordingly, the basic requirements of a green economy are low carbon production, resource efficiency, and social inclusiveness.

To date, there is no unified view among the mountainous countries on what represents and drives a green economy and there is also no clarity on what it means for the mountains.[2] The green economy concept offers ample opportunities for application in mountain ecosystems simply because mountain ecosystems and production systems are already largely low carbon or 'green'.

There is therefore a need to come up with specific and strategic approaches to implement green and low-carbon economy concepts in the mountains, and to identify opportunities from developing and least-developed country contexts for promoting green economics. There is also a need for new global policies and finances to support poverty reduction and sustainable development through green economics and good governance solutions. The key outcome that can be desired for mountains in a green economy is an ecosystem services-based economy that is both pro-poor and pro-growth and addresses the issues of ecological fragility, social inequity (creating employment for the poor and reducing inequality and marginality) and economic development (by reducing poverty and costs of living) through interventions owned and managed by mountain communities and supported by national and regional agencies.

There are also risks and constraints in promoting green economics on a mass scale. Green and low-carbon solutions in mountain regions need to create jobs, help produce surplus quality products, promote access to national and international markets, and prioritize poverty reduction, good governance, and equity in the supply/value chains. Further, the transition to a green economy in developing and least-developed mountain countries should not constrain countries from pursuing their own development paths.

There is a need for a separate programme of work for promoting green economy in mountains under the UNCSD process, one that develops green growth pathways that recognize the proper value of natural capital and rewards mountain farmers and other resource users for their sustainable practices in producing ecosystem goods and services, including ecotourism-related benefits.

Green economy: opportunities through NTFP management

The green economy we talk about today has been around for a very long time. Communities and societies in forest- and biodiversity-rich developing countries that were forced by technological and other resource constraints and by the inaccessibility, marginality, and fragility of their environment to live at subsistence level have developed cultural norms, social contracts, and management systems to ensure their livelihoods and the sustainability of the resource base. The original idea of the green economy as developed by ecologists and environmentalists was largely

[2] To address this situation, ICIMOD, jointly with UNEP organized an International Conference on Green Economy that came up with a declaration defining the framework for green economy in the mountains. (http://www.icimod.org/?q=4299) .

based on sustainable extraction and utilization of natural products while meeting high social standards. This approach, however, was limiting the kind of economic growth that the current green economy approach expounds. Medicinal and aromatic plants (MAPs) conservation and development and organic agriculture efforts practiced in Bhutan, India, and Nepal provide examples of growth models based on this kind of economic development approach. Karki (2011) recently conducted a comprehensive assessment of successful case studies in the Asia Pacific mountain regions in the context of sustainable mountain development in which forest and NTFP management figure prominently. The case studies suggest that NTFPs are the most important biological resources for socioeconomically uplifting poor and marginal communities.

NTFP sector development has impact on all three pillars of sustainable development—ecological, economic, and social—in a balanced manner. NTFPs meet the criteria for green economy and green growth in that the resources are plentiful, management technologies are simple and accessible to poor and enterprising communities, and markets (especially for herbal medicines, neutraceuticals, and organic food) are growing worldwide.

NTFP-based green economy: challenges and opportunities for mountainous regions

Mountainous countries will face numerous challenges in adapting and adopting green economy policies. Different countries are interpreting green economics differently and are embarking on different approaches to promote green growth concepts and practices for sustainable development. Green economics can be a means to achieve sustainable development in mountains, and NTFPs can provide a head start. However, the common challenges mountain countries are confronting or will face in future are: How to document good green-economy-relevant NTFP management cases on which the future development pathways can be charted? How effective are the current approaches, and what lessons can be learned from the experiences, particularly in terms of management systems, and their successes and failures? Although NTFPs can be viewed from the perspective of economic development, they must also be considered in terms of biodiversity conservation. The supply of wild plant NTFPs is dwindling given the threats of increasing demand, a rapidly increasing human population, and rampant destruction of plant-rich habitats.

Medicinal and aromatic plants provide a good example. At the current rate of consumption and use, the status of many medicinal plants is severely threatened, with risk to future benefits and knowledge. Although cultivation is playing an increasing role in the supply of MAPs, most will be obtained from wild collection in the foreseeable future; thus their sustainable management is essential. There is no ‘Golden Rule’ that can be applied universally to ensure conservation and sustainable medicinal plant management, because what is defined as conservation and sustainability will vary with type of plant, part used, locality, and other factors.

Bhutan banned the export of medicinal plants and other NTFPs in 1988 as a measure to conserve biodiversity and to prevent uncontrolled exploitation of these resources. The ‘Framework for Collection and Management of Non-Wood Forest Products’ (RGoB 2009) has permitted communities to collect medicinal plants and other NTFPs for noncommercial uses, considering conservation and sustainability of the resources. The government has identified seven species as ‘extremely rare’ and 26 species as ‘rare’ and has launched conservation and management initiatives for protecting them.

In China, the State has protected 116 species of medicinal plants used in TCM (CCTHM 1995). The government has proposed six large Important Plant Areas (IPAs) for medicinal plants and other NTFPs in the Chinese Himalayan region, covering an area of 434,200 km² (Hamilton and Radford 2007). There are 2,400 nature reserves covering 14.8 percent of the total land and 60 percent of the country's plant species that are designated for *in situ* conservation and management for sustainably harvesting medicinal plants benefiting the local population. Regarding *ex situ* conservation, there are 10 state-managed Medicinal Plant Gardens and Germplasm Banks; 220 Botanical Gardens (2006), about 5,000 species of medicinal plants and other NTFPs cultivated in these botanical gardens (Pei and Sajise 1993).

In India, Conservation Assessment and Management Plan (CAMP) workshops, following the IUCN criteria, have been organized in major parts of the country, including all the Himalayan states. The National Medicinal Plants Board (NMPB), chaired by the Union Health Minister, was established in 2000 and has prioritized 31 species of medicinal plants for conservation, management, and cultivation. State-level Medicinal Plants Boards have been established in 26 states of the country. Considering the state-level activities for conservation and management of MAPs/NTFPs, in 2004 Uttarakhand declared itself as an Herbal State with a plan of action for the conservation, management, and development of the NTFP sector. The Uttarakhand state government has prioritized 26 species of medicinal and aromatic plants for conservation in the wild and for cultivation. The state is also supporting farmers for cultivating the 26 prioritized species with 50-percent assistance on cultivation cost up to a maximum of 1,000,000 Indian rupees (USD 2000). By 2010, about 8,000 private organic herbal farms had been registered. The state government has established large number of medicinal plant nurseries and provides free planting materials for registered farmers and *Van Panchayat* (Forest Council) members as a strategy to enrich plantations in the forests. In 1998, the Government of Sikkim imposed a ban on grazing in reserved forests, plantation areas and around water sources areas, and in 2000 it imposed a total ban on lopping of selected trees and collection of selected medicinal herbs. Sikkim has brought 34,000 farmers cultivating 18,000 ha in the organic farming regime.

The Government of Nepal has imposed different levels of restrictions in the collection, trade, and export of some of the highly traded medicinal plants to safeguard them in the wild, and to promote cultivation practices. The CAMP workshop (Tandon et al. 2001) evaluated 51 commercial MAPs and NTFPs for their status in the wild. In 2000, Nepal established the high-level Herbs and NTFP Coordination Committee (HNCC), chaired by the Minister of Forests and Soil Conservation, to formulate and implement MAP/NTFP-related policies and to streamline the NTFP sector in the country. The Herbs and NTFP Development Policy 2004 is a milestone in the country's strategy to conserve and sustainably manage the MAPs and NTFP sectors. It includes six policy objectives, five policy groups, and 28 development strategies. In general, the policy identifies national challenges, opportunities, and priorities, and provides an outline for moving forward. The HNCC has prioritized 30 species of medicinal plants/NTFPs for conservation, research, development, and management, including 12 species recommended for cultivation.

Pakistan, in 2001, assessed the threat of 52 species of commercial medicinal plants following the IUCN criteria. Later in 2010, the government prioritized 24 commercial medicinal plant species (including 12 endangered and 12 vulnerable species) and has made provisions to conserve and manage them through different administrative and management units.

Area for improvement: value chain development

The world market for natural products and organically derived NTFPs, including medicinal plant products, has been increasing, and consumers have become more conscious of the source and quality of the products they purchase. According to FAO, organic trade is expanding at the rate of 15 to 20 percent per year, and more than 100 countries currently export certified organic products (Choudhary and Bhattarai 2008). However, the global trade in organic products is hindered by a multitude of standards, regulations, and conformity assessment systems. There are currently two international standards for organic agriculture: the FAO/World Health Organization (WHO) Codex Alimentarius Commission Guidelines-based standards, and the International Federation of Organic Agriculture Movements (IFOAM) basic standards. This means that products certified as organic in one system may not be easily recognized as organic under another, causing problems and increased costs for organic producers and exporters who want to sell in different markets.

The potential for small holders and other marginal community groups to diversify and enhance their livelihoods is particularly significant when harvesters become involved in 'value addition' activities associated with the packaging of goods or the manufacture of secondary products, and when they engage in responsible trade of medicinal plants and other NTFPs. Investigating the market and the means to access it can enable NTFP cooperatives and other farm organizations to understand opportunities and develop strategies to meet the needs of its members and buyers. The objective is to create economic enterprises in which the livelihood base and activities of entire communities are upgraded—and not just a few micro entrepreneurs. Clearly, providing a delicate balance between the two depends on socioeconomic and cultural factors as well as the more obvious technological and biological support systems.

At the local level, improved marketing requires capable organizations such as cooperatives or other farm associations. These organizations can help take decisions of common interest and undertake collective actions. By working together, members of an organization can gain bargaining power with traders and middlemen and maximize their incomes. An organizational marketing strategy can also help reduce risks for producers.

A number of factors influence the ability of producers to respond to customer needs and wants. Some can be influenced by farmers and producers while others are beyond their control. Although small-scale farmers have some marketing skills, they could benefit from the specialized expertise and more efficient marketing made possible through marketing associations. This means that capacity building is needed at village, regional, and national levels to identify promising NTFPs and to manage their harvesting, production, and marketing. Extension workers, nongovernmental organizations, and community leaders can be important agents for introducing marketing to small farmers.

Local knowledge about plants and the innovation system of individuals and communities can be useful tools in search of new ways of conserving and using NTFPs for the benefit of mountain communities themselves as well as for achieving wider sustainable development goals. The approach has to document this knowledge and apply it to bridge the gap between the understanding and needs of government agencies, the public sector, local communities, and the private sector based on systematic NTFP knowledge management. One aim is to provide local NTFP users with viable incentives to refrain from unsustainable harvesting and of NTFPs while providing local and national economic benefits.

ICIMOD has pioneered development of commodity-wise value chains for selected NTFPs in the Hindu Kush Himalayan region. ICIMOD has developed a mountain-specific value chain approach and framework for more participatory and equitable engagement of collectors, producers, local traders, and processors in NTFP value chain development and livelihood improvement.

One project, for example, analysed the prevailing supply chains of *Cinnamomum tamala* (Indian bay leaf) in Nepal and India (Choudhary et al. 2011). Through awareness raising, training, and capacity building of both producers and buyers, it helped establish a business partnership between poor producers and markets trading in essential oils and spices. This has doubled the income of producers in the Chamoli district of Uttarakhand, India, and the Udayapur district of Nepal. A detailed analysis showed that around 900 tonnes of raw bay leaves were harvested in Udaipur district, Nepal, and 20 to 40 tonnes in the Indian project sites were produced and exported annually. In the Nepal case, a local company, with a buy back relationship with local producers, was using nearly 25 percent of the total bay leaf, producing essential oil. An estimated 2,150 tonnes of bay leaves were sent from Nepal to India every year. Farmers in Nepal earned a gross margin of 11 percent, and traders 34 percent; collectors in India had a margin of 10 percent, and traders 17 percent. The bay leaf value chain has shown that by addressing underlying inequality and power differences between the upstream producers and downstream actors, we can achieve better equity in benefit sharing.

Some of the key issues identified were lack of organizing skills among the producers, lack of market information and access to producers, absence of technologies for value addition, lack of sustainable harvesting and management skills, lack of capacity to conform to market requirements, policy hurdles to access to NTFP resources on government land, and bureaucratic hurdles. Interventions were identified based on the issues identified, using a multi-stakeholder approach integrating poverty and gender dimensions. Market information, especially product prices, was gathered systematically. Partnerships between concerned government line agencies and the research team focused on building the capacity of local institutions in skills such as collection, grading, sorting, and packaging of bay leaves. Training programmes also focused on group formation, bay leaf cultivation and management, sustainable harvesting, and community-based enterprise development. Networks of buyers, local traders, and exporters and producers were formed and strengthened. An effort to improve access to markets by bringing them closer to the production sites was piloted in India.

The value chain interventions led to immediate benefits for the poor producers in terms of increased income, increased knowledge and skills, and gender equality. The outcomes could also be seen in improved education and health of the children of the producer families. Improved harvesting practices lead to improved quality of raw materials and finished products.

With the market for NTFPs, especially medicinal plants, growing in South Asia and particularly in India and China, ICIMOD is scaling up and scaling out these experiences and promoting cross-border learning and sharing of good practices.

Conclusions and recommendations

An NTFP-based green economy not only means products and income, but also provides a basis for integrated and sustainable management of forest resources. Taking the concept forward

would call for a balanced and holistic approach to forestry, as well as fundamental institutional changes. Technical inputs combined with traditional knowledge produce an adaptive technology that is based on the cultural, social, environmental, and economic factors that are relevant to the local population; if adopted systematically, it can improve livelihoods.

Local knowledge about plants and the innovation systems of individuals and communities are useful in the search for new ways to conserve and use plants for the benefit of the communities as well as for achieving wider development goals. Given the overlapping benefits of enhancing access to health care, providing livelihoods, and encouraging sustainable use of the environment, it is clear that work to promote the conservation and management of NTFPs and to build on traditional practices can make valuable contributions to achieving the general social advances spelled out in the Millennium Development Goals.

Much has been said about the impact of liberalization on the lives of the poor. But what is really needed is to undertake liberalization from the point of view of the poor. If technology is improved, collection and trade channels are rationalized and made efficient, and the appropriate processing facilities developed in the producing countries, it will be possible to bring about positive change. It is also necessary to develop new products and new uses for known products, with a clear market orientation. In addition, the new attitude of green consumerism resulting from the concern for environmental conservation and the consequent preference for natural products is providing new advantages for NTFPs.

A systematic approach to enhancing the contribution of NTFPs should involve the usual planning cycle: formulation of objectives, preparation of strategy, planning, implementing, monitoring, and appraisal. It requires that managers understand the resource status, that all stakeholders participate in decision making and cost and benefit sharing, and that effective procedures are implemented to resolve conflicts. Finally, policymakers and development agents need to better understand the changing role of forest resources, especially NTFPs, for local livelihoods.

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