

Biodiversity and sustainability: issues in communities in Nepal

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Introduction

Nepal is endowed with rich biodiversity which is a reflection of its unique geographical position, and altitudinal and climatic variations. The land distribution in Nepal is as follows:

Types of Land	Area in Ha. (Year 1998)	Percentage	Area in 1978	Percentage
Forest Area	4.27 million	29	5.42	37
Shrubland	1.56 million	10.6	0.71	5
Grassland	1.75 million	12	1.75	12
Farmland	3.0 million	21	3.05	21
Uncultivated	1.0 million	7		
Other	3.22	20.4	3.82	26

According to the National Biodiversity Action Plan (NBAP) because of Nepal's extreme altitudinal gradient there are 10 bio-climatic zones, from tropical to high Himal. This occurs within a horizontal span of less than 180 km, making Nepal a treasure house of biological and cultural diversity. A total of 118 ecosystems, 75 vegetation and 35 forest types have been identified. Nepal comprises seven ecological zones which occur in the following order from south to north: (a) Terai, (b) Siwalik zone, (c) Mahabharat Lekh, (d) Midlands, (e) Himalaya, (f) Inner Himalaya, and (g) Tibetan marginal mountains.

The biodiversity of Nepal has international importance in terms of the number of globally threatened wildlife and floral elements as well as the diversity of ecosystems represented within the area. Within the lowlands there are 1,885 species of angiosperms, 61 species of bryophytes, 81 species of pteridophytes, and 648 species of birds. In the Midhills there are 3364 species of angiosperms, 493 species of bryophytes, 272 species of pteridophytes, 16 species of gymnosperms, 557 species of butterflies, 76 species of fishes, 29 species of amphibians, 56 species of reptiles, and 691 species of birds. And, in the highland area there are 38 major ecosystems, over 2,000 phanerogamic species and large number of endemic species. (NBAP 1998)

Rangelands include grasslands, pastures, shrubland and degraded forest land. These areas provide a variety of medicinal and aromatic plants from upper Himalayan region, and supply forage or vegetation for grazing and browsing animals. Nepal's rangelands have high biodiversity as they range from subtropical savannas to temperate grasslands and alpine meadows, and a cold, arid steppe north of the Nepal Himalayas. Nepal's total grassland area is estimated to cover about 1.75 million hectares, or nearly 12 percent of the total land area. Key sources of rangeland in Nepal come primarily from high mountains and high Himal areas which make up nearly 79.83% of Nepal's total rangeland. Nepal's high altitude rangelands are home to a unique assemblage of flora and fauna which comprises about 131 endemic plant species (53% of the total number of endemic plants in Nepal), 41 key non-timber forest products (including primarily medicinal herbs). Endangered wildlife species also predominantly live in this region; they are the snow leopard, Tibetan wolf, Tibetan argali, lynx, brown bear, Tibetan wild ass, and wild yak (status unclear). Although bird species diversity is low, 9 species are restricted to alpine rangeland and 5 species have international significance in rangeland. Of over 20 indigenous breeds of livestock species that are found in Nepal, 8 endemic breeds are from the alpine region. (NBAP 1998)

Problem and Issues

People living in different ecological zones of Nepal depend upon traditional medicine for themselves and for livestock. There is abundant local knowledge, and people have been using such medicines for centuries. This knowledge is transmitted from parents to selected children, mainly male members of a household. However, there is a danger of such knowledge disappearing, because there is no system to record the information, and because of a belief that if such knowledge becomes open the treatment will not work.

Another threat to biodiversity and its sustainability is the increasing demand for NTFP. People are aware that such products are in demand and available in their area, and NTFPs are being harvested indiscriminately. Traditionally collection and use was limited to local needs, but now there is no system, at least in the government forest, and even though licenses are required for collecting products this is not enforced. Within Community forestry the focus is mainly on timber and fuelwood, creating an open access or "Tragedy of Commons" scenario for NTFPs.

The main use of NTFP in Nepal is for herbs which are transformed into medicines. As demand for herbal medicines is increasing, the danger for disappearance of these herbal plants is also increasing proportionately. In the Higher Himalayan region NTFPs overshadow timber because timber is mainly used for local construction. Herbs, however, are used locally in small amounts, with larger quantities sold for export. This demand is increasing every year. The demand if translated from legal exports which was 2690770 Kgs. in 1998 and 2140405 Kgs. in 1999 rose to almost 3500000 Kgs. in 2000. Probably, similar amount or more is traded illegally. So it can be assumed that 8 thousand to 10 thousand metric ton of herbal products are being exported from Nepal.

Villagers even from far away places are primary collectors of medicinal plants. They collect seasonally from forest area and also from grasslands based on demand and price. They are very poor, live a hand-to-mouth existence, and do not have regular employment. Collecting herbs from the forest is an opportunity for making money, and collectors often travel for several days and stay in the area while the season lasts. Even schools are closed to allow students to go for collection. The products are sold to local agents who pay based on demand and surplus. In many cases, the collectors have already taken advance from the agents so they are forced to sell at a price which is quite low. Thus, to get more money collectors maximize their harvest with little thought to the impact on the sustainability of the resource. Because there is no collection system, and little knowledge about regeneration and sustainability, species are being endangered every year.

Causes of Problems

Forest loss became a problem in Nepal when indigenous management was replaced by Department of Forest, in name but not in action. Even though indigenous forest management systems were hierarchical and dictatorial, biological resources were taken care of. The traditional system was undermined, however, without adequate personnel or sufficient local knowledge to effectively manage and protect the vast and diverse forest resources in Nepal. Biological resources, especially NTFPs, are being endangered because of indiscriminate and premature harvesting, over-grazing, burning, the lack of knowledge and a system for monitoring collection, and greed and poverty.

Another problem in the mind-set of forest officials who think they have absolute rights over forests, and do not follow national policies nor support existing local

management systems. Forest officials also lack knowledge about the area and products. As scientists and technicians they are supposed to offer technical guidance on ecosystem management; instead, however, they are often implicated in a web of contributions, shares and bribery to higher levels and middlemen. The result is local people respond by "stealing" products rather than managing the resources. With the lack of regulation and de facto open access, they do so indiscriminately thinking that if they do not collect others will collect anyhow. In one case study, within a span of 200 km. the collectors of NTFPs had to bribe forest officials and police in 11 different places. When this was reported to the then Director General of Forests, he did nothing.

Case Studies

In spite of this very grim situation, there are some good examples emerging where local people are managing and sustainably harvesting NTFPs with the help of NGOs. The two case studies are given below;

Humla, one of the most remote districts in the north-western part of Nepal, is endowed with 316 species of plants which can be used for herbal medicines, aromatic and essential oils. There was an indigenous system of management of forestry resources in the area, but with introduction of so-called new development paradigm the local system faded. At the same time, demand for Humla's NTFPs increased and agents started penetrating in the area. Being a very poor area, people took this as an opportunity to increase income, and this began to affect the valuable biological resources and biodiversity of the area. ANSAB started an action research project to address this issue. It formed a local people's organization: Humla Conservation and Development Association (1997) which participated in the action research, and developed guidelines for sustainable harvesting. As collectors were exploited by the agents, collectors' cooperative was formed with its own processing unit: Humla Oil Private Ltd. HCDA also promoted community forestry in the area. When community forestry were established, they developed operational plans to address issues of NTFPs. This initiative has influenced other areas in the Karnali, Seti and Bheri Zones - some of the most remote and poorest areas in Nepal. Because of this initiative, people are now starting to get a better price.

Another case study is related to a nomadic group, called Chepangs or Praja. Chepangs refer to themselves as "king of forests" and live in forests by hunting

and gathering. But as forests started to degrade and then became community forests their way of life was endangered. They tried to switch to agricultural production, but they lacked knowledge and skills and the land that they had occupied was not appropriate for crop production. Because of this, one NGO SEACOW started to work with them, helping them to grow and collect NTFPs. This was also an action research project in collaboration with the Praja Community Development Programme. After raising awareness about the availability and possibility of NTFPs and field visits to various areas, the Praja collectors decided to form a cooperative which is still operating. SEACOW itself developed an Alternative Herbal Industries (AHI) in 1998 for processing and marketing but the Praja Cooperative and other collectors are also taken as share holders. AHI has since expanded its activities in various areas. It has started becoming profitable now. One example is given below to show its effect on collectors' incomes:

Price Nrs. per Kg. to the Producers of the Products (1999):

Herbs (NTFPs)	Alternative Herbal	Local Companies	Local Agents
Amala (Amalaki)	79.83	38.00	15.00
Harro (Haritaki)	66.03	25.00	10.00
Barro (Vibhitaki)	59.13	22.00	8.00

The above figures show how primary producers and collectors are exploited by the agents and local companies. AHI has assisted Prajas to form community forests and develop operational plans focusing both on NTFPs and timber which does not exist right now in degraded forests. It has also started working with other community forests, collecting and processing *bel* (which has medicinal value) for making squash.

Possible Solutions and Recommendations

Nepal is rich in biodiversity and NTFPs, especially herbal plants. These plants were being used locally, but are gradually being replaced by other kind of medicines. However, because of the increasing demand from international markets, herbal products are being collected aggressively and indiscriminately. Driven by a profit motive, every one is trying to make as they can as fast as possible. This short-term perspective and lack of oversight is endangering the biodiversity of Nepal. However, attempts are being made to systematically monitor and manage collection, through community forestry user groups and NGOs that are concerned with

protection, regeneration, and maximizing benefits for collectors and/or primary producers. There is need to study these initiatives so that they can be replicated in other areas.

In Nepal, according to the Master Plan for the Forestry Sector, 61% of forest land is supposed to be handed over to local communities as community forest. Communities have shown that they have the interest, willingness, commitment, and capability to manage forest areas when they are given usufruct rights in perpetuity. Until now, however, only about 17% of forest land (about 1.2 million Ha.) has been handed over to 14,000 user groups. Another 2.2 million Ha. remains to be handed over to user groups, probably amounting to another 30,000 groups or so. While developing management or operational plans of CF, NTFPs should also be prioritized - especially to allocate open spaces for plantation of NTFPs and management of already existing NTFPs to poorer users so that their livelihoods can be improved. For this interest groups or cooperatives need to be formed, and their management rights made secure.

Grazing areas, meadows, and shrubland should be placed under community management, because they are also degrading and depleting very fast. The same process followed in community forests should be used for forming user groups and handing over management rights of these areas. The grazing and management of biodiversity need to be balanced. These resources need to be regenerated and/or replaced until they can be sustainably harvested and used.

There is ample proof that the DoF has neither the capability nor the commitment to manage natural resources so their role has to be changed. They should offer scientific and technical advice, and act as facilitators for forming user groups rather than as policemen and Thulo maanche. They should monitor processes, programs, and provide necessary feedback and inputs.

NTFPs can be a main source of livelihood for those who do not have land or other resources. Examples have shown that collectors are ready to form groups and cooperatives, and develop management plans by consensus for sustainable management of NTFPs. This should be encouraged. Resources should be made available to CBOs, NGOs, and local groups. The case studies in this paper demonstrate that there is possibility of increasing income for collectors by 600/700 times, through the proper management and marketing of herbal products. To stop illegal collection, a locally developed and agreed licensing system should be

developed and enforced. The system developed by RUGMARK is a useful model. Research has shown that externally developed certification systems are quite cumbersome, complicated, and generally not suitable for local communities.

Many users and collectors have started processing units. *Be/squash*, Nepali hand-made papers, herbal tea, essential and aromatic oils are some of those products. Local industries can be started with proper shares to collectors. But principles of fair trade must be enforced.

The Institute of Forestry or other institutions should start short-term courses and a diploma specializing in NTFP management to produce specialized human resources that can promote management properly.