

3.4 Conservation Successes

As mentioned earlier, HMG has implemented the Agriculture Perspective Plan, and the Master Plan for Forestry Sector since 1997 and 1989 respectively. The livestock and horticulture master plans also provide a basis for implementing environment-friendly activities. The finalisation and implementation of the Nepal Biodiversity Action Plan (NBAP) will be another milestone in conserving biological species of both wild and domesticated plants and animals in different ecosystems.

Within the broad framework of the above policy, legislation and master plans, several activities implemented in the agriculture and forestry sector have been proved successful and they have been replicated in other areas. Community involvement activities in natural resource management, particularly, community forests provided a basis for policy formulation for people's participation in irrigation water management, soil and watershed conservation, and buffer zone management through the user group concept.

The community forestry programmes have been instrumental in conserving the forests and meeting the demands for forest products. This has also minimised time required for fetching water, fodder and firewood (Box 3.4). Soil conservation activities have been expanded (see Box 3.1) with people's participation and over 800 community soil conservation user groups has been very active for soil conservation and watershed management. Separate federations of community forestry user groups, and water users associations have been established to assist local level users. The Federation of Community Forestry Users, established in 1995, has expanded its offices in over 60 districts.

Several conservation successes are found in protected areas due to increase of wildlife and habitat improvement. Sixteen protected areas have been established during the last three decades and the land covered by such areas totals 18.14 per cent (26,696 km²) of the total area. There has been a sharp increase in the establishment of protected areas in Nepal (Figure 3.1). Of them, the conservation area covers 40 per cent of the total protected areas (PAs), followed by national parks (39 per cent) (Figure 3.2).

Box 3.4

Economic Benefits of Community Forests

Located at about 30 km east of Kathmandu Valley in Dhulikhel Municipality, the 21.5 ha Gaukhreshwor forest was handed over to the community forestry user group in December 1995. The forest is dominated by Chilaune (*Schima wallichii*) and Katus (*Castanopsis tribuloides*), and provides habitat to jackal, leopard, jungle cat and squirrel. Thirty-five households manage the forests. Extensive forest management practices have increased quantity of leaf litter, fodder, agricultural implements and water. It has contributed to increasing soil fertility, and crop and livestock products, thereby enhancing per capita income of the users.

The users have made rules and regulation for the management and utilisation of forest products. The forest is opened for 28 days every year from mid-November to mid-March to collect one load per household of firewood a day. The users get seasonal employment in the forests in nursery, plantation, weeding, value added processing of Japanese lokta (*Edigworthia popyrifeba*) and alaichi (*Amomum subulatum*). The user group earned about NRs. 252 thousand during the period of three years (1996/97 to 1998/99). This income has been used for adult literacy programmes, installation of electricity poles in Gaukhreshwor Ghat for religious purposes, purchase of a stretcher for emergency services, petrol-max lamp, and additional support to victims of natural disaster.

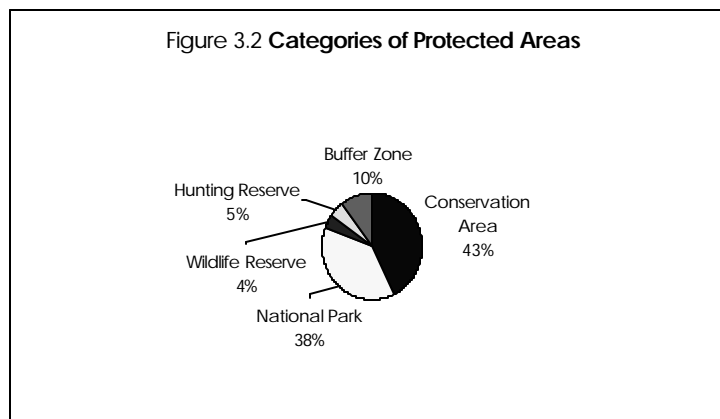
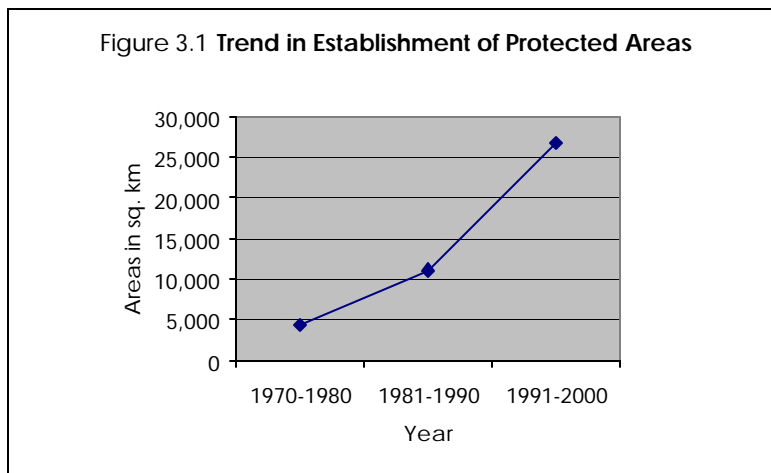
The forest has also contributed to increasing greenery, reducing landslides, enhancing drinking water source, and promoting eco-tourism. Besides, cash income and contribution to environmental conservation, a study has concluded net saving of 3.625 hours per family per day after the formation of this community forestry user group, resulting to over 46 thousand hours of saving a year for total households. At the rate of 8 hours working day, and Rs. 75/day, the monetary value

reaches NRs. 0.434 million a year. This time saved time spent on the collection of firewood, fodder, grasses and other forest products prior to the formation of forestry user groups.

Although small in size, this community forest has a great potentiality for additional economic benefits to local communities and for environmental conservation. The *Forest Act, 1993* (amendment 1998) has made provisions to invest at least 25 per cent of the total earning in forestry development activities and this is expected to contribute to the conservation of natural resources in the long run.

Source: Roy, 1999.

Community forests now exist all over the country, and some of them are over 15 years old. However, some studies on increment rate analysis indicate low growth rate. Furthermore, forest products extracted in such areas exceed the local demand. Hence, HMG and local people are planning to operate forest-based industry by utilising additional products in sustainable manner in order to generate more income for community development (Box 3.5).



Protected areas are sites for the protection of unique ecosystems, revival of key stone species, and sites for sustainable tourism development. They are also the prime sites for *in situ* conservation of biodiversity, wild plants and animals, including protected and endangered mammals. Similar focus has been accorded to ensure *in situ* and *ex situ* conservation of plant resources through botanical gardens and conservatories (Box 3.6).

Box 3.5

Commercial Utilisation of Community Forestry Products

Realising the severe degradation of forests in Sindhupalchok district in the mid-1970s, local people with the assistance of the District Forest Office (DFO) started plantations till the end of 1990s, resulting in a community plantation area of about 12 thousand hectares. After launching of the community forestry (CF) programmes, HMG handed over 18 thousand ha of planted and national forests to the community forestry user groups (CFUGs). Although, only plantation concept remained till 1980s, CFUGs have started harvesting and selling of surplus forest products since mid-1990s. Overstocking of the community forests, dominated by over 20 years old pines (*Pinus roxburghii* and *P. patula*) encouraged the District Forest Office and the Nepal-Australia Community Resource Management Project (NACRMP) to conceptualise the operation of a joint sawmill to utilise the planted pines of Chautara ridge areas. Some CFUGs discussed and decided to operate such facility but this joint approach did not materialise. However, the Shree Chhap CFUG continued its activity to operate the sawmill for the sustainable utilisation of pines.

Two hundred and six households are managing the 125 ha Shree Chhap CF forests. Women, poor and rich people have equal access and play an active role in decision-making process in the CFUG. The forest products extracted from thinning activities will be more than the local requirement. The pine-dominated forest is considered overstocked, and a joint increment rate analysis study carried out by DFO and NACRMP concluded low growth rate of pine since the last decade. The amended Operational Plan (OP) estimated the possible extraction of about 15 thousand cft annually.

With a view to promote sustainable use of forest products, CFUG members discussed several times within themselves and with DFO and NACRMP officials, and the CFUG's General Assembly decided to operate a sawmill based on an operational plan. The CFUG has registered the sawmill as a cottage industry. In that connection, DFO and NACRMP provided training to CFUG members in tree measurement, calculation, marking and selection.

This new venture will likely develop a replicable model to promoting sustainable use of people managed forests, and generate more income for community development. An environmental assessment study should be carried out for this new activity in accordance with the provisions of the *Environment Protection Rules, 1997*. The study will help in making the sawmill proposal environment-friendly and sustainable.

Source: R. K. Shrestha, Assistant Forest Officer, District Forest Office, Sindhupalchowk.

Box 3.6

Conservation of Plant Genetic Resources in Botanical Gardens and Conservatories

HMG has so far established 11 botanical gardens and conservatories in extreme topographic variations and multiple bio-climatic zones with focus on landscape development, and for *in situ* and *ex situ* conservation of plant resources, education and research, and aesthetic and recreational purposes. Of them, the Royal Botanical Garden is the oldest one, established in 1962. This is also a good depository of important plants planted by foreign dignitaries.

Name	Site for	Remark
Godavari, Lalitpur, 1515m, 82ha	Several species of medicinal plants, orchids, ferns and ornamental plants.	Royal Botanical Garden
Maipokhari, Ilam, 2100m, 10ha	Several medicinal and aromatic plants, and a home of several beautiful orchids.	Natural lake of 1.6 ha
Dhanushadham, Janakpur, Below 200m, 120ha	Planned for the development of a depository of tropical and sub-tropical religious plants including plants used in Ramayana period.	Religious site
Tistung, Makawanpur, 1900m, 15ha	Rich in epiphytic orchids including cultivated economic and medicinal plants.	Germplasm conservation
Daman, Makawanpur, 2320m, 15ha	Rich in epiphytic orchids including cultivated economic and medicinal plants.	Germplasm conservation, tourist area
Vrindaban, Makawanpur, 500m, 100ha	Cultivation of medicinal and aromatic plants (MAPs).	A renowned rock garden
Dhakeri, Banke,	Depository of cultivated MAPs such as	Represents

Below 200m, 4.5ha	<i>Cymbopogon sp.</i> , <i>Asparagus sp.</i> , <i>Piper longum</i> , <i>Rauwolfia serventina</i> etc.	western Terai (plain area)
Mulpani, Salyan, 1500m, 5.5ha	About 30 species of orchids conserved, and a number of economic and medicinal plants cultivated.	Focus on landscape development
Devariatal and Godavari, Kailali 250m	Tree species in natural conditions.	Low altitude plants of western Nepal
Lumbini, Rupandehi, About 200m, 65ha	Educational and research centre of tropical and sub-tropical plants with due emphasis on plants used by Lord Buddha	Birthplace of Lord Buddha
Dhtachaur, Jumla, 2550m, 5ha	Several high altitude medicinal and economic plants such as <i>Aconitum sp.</i> , <i>Ephedra gerardiana</i> , <i>Meconopsis sp.</i> , <i>Dactylorhiza hatageria</i> , <i>Podophyllum hexandrum</i> etc.	Repository of high altitude plants, and alpine conservatory

Source: M.S Bista, Director General, Department of Plant Resources.

HMG has also emphasised of developing biogas plants to minimise pressure on forests. Out of total 1.5 million households with potential biogas generation, only about 0.1 million plants have so far been installed and utilised. In the Eighth Plan period, 32,119 biogas plants were installed, which generated 75 megawatts of energy. This generated capacity represented only 3 per cent of the total potential of 2,400 megawatts. The current plan has a target for installing additional 90,000 biogas plants. Similar attention has been given to solar energy photovoltaic systems and the Ninth Plan targets to install this system in 38,000 households.

HMG is in the stage of finalising the Nepal Biodiversity Action Plan to further mainstream biodiversity conservation in the spirit of the Convention on Biological Diversity. The two protected areas, the Royal Chitwan National Park (Terai ecosystem), and the Sagarmatha National Park have been listed in the World Heritage List in 1994 and 1979 respectively. These protected areas have been instrumental in conserving biodiversity resources. Furthermore, award and punishment provisions in the *National Parks and Wildlife Conservation Act, 1973* and the *Forest Act, 1993*, including the launching of anti-poaching activities has also contributed to minimising the decline in wildlife population and their habitats within and outside the protected areas. Similarly, HMG has declared the Koshi Tappu Wildlife Reserve as a Ramsar Site in 1987 and has implemented various activities in the spirit of the Ramsar Strategic Plan.

The forest also serves as a sink for greenhouse gases (GHGs) such as carbon dioxide. The Ministry of Population and Environment is launching a two-year Project on *Enabling Activities for the Preparation of Initial National Communication* through GEF funding as a part of the implementation of the UN Framework Convention on Climate Change. In order to implement the project, a Steering Committee, a National Climate Change Committee, and four Task Forces have been formed. The Task Force will conduct GHG inventory, vulnerability and impact assessment, prepare mitigation options, national action plan and national communication processes. After these activities are completed, detailed programmes will also be developed to address climate change and its impacts, including abatement and sink enhancement.

Similar attention has been given to implement the UN Convention to Combat Desertification. HMG has already submitted the first report to the Convention's Secretariat for the implementation of this Convention. The Ministry of Population and Environment (MOPE) organised a national seminar on *Desertification and Land Improvement* in November 1997, and conducted few studies in order to generate information for the preparation of the National Action Programme under the Convention. To expand the

information base, the Ministry is conducting five studies in this fiscal year 2000/01. These studies are on: traditional knowledge, know-how, practices and technologies; identification of financial, technical and technological needs; identification for capacity building and public awareness activities including outreach materials; data requirement needs and identification of desertification monitoring and evaluation parameters (Indicators); and potential linkages between the UN Convention to Combat Desertification, Convention on Biological Diversity, and the UN Framework Convention on Climate Change, and identification of issues for necessary regulatory measures.

HMG is also in the process of expanding managerial initiatives through the development of standards, and strengthening inter-agency coordination to facilitate environmental undertakings. Environmental assessment system has been institutionalised as a decision-aiding tool for the incorporation and safeguard of environmental aspects in projects and programmes. Strengthening of environmental institutions will be continued, and environmental planning has been introduced in local government. Furthermore, private-public cooperation has been extended. Stakeholders' participation has also been expanded in developing regulatory and non-regulatory measures on the environment. Partnership arrangement has been the key approach for launching public awareness activities. Several NGOs are working at the grass-root level to make the local people aware of the importance of and need for environmental management. HMG has recognised the role of non-governmental organisation, community-based organisation, academic and private institutions in mainstreaming environmental management programmes. These aspects are clearly reflected in the current Ninth Plan as well as in the sectoral policies, strategies and plans.

In view of the environmental challenges in the agricultural and forestry sectors, which are a prioritised and lead sectors for socio-economic development and poverty alleviation, more effort and additional attention is required for sustainable agriculture and forestry development, and also for ensuring biodiversity conservation and establishing their linkages with poverty alleviation programmes.