

Protected Areas in Nepal

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Abstract

Nepal has set aside about 21.4 percent of its territory in the protected area and the buffer zone system. It includes nine national parks, three wildlife reserves, three conservation areas and one hunting reserve. Of them the Royal Chitwan National Park and the Sagarmatha (Everest) National Park are UNESCO's World Heritage Sites. Similarly four wetland sites are included in the Ramsar list. All these properties are described as assets for tourism development in Nepal.

Conservation of wildlife biodiversity is argued for its sustainability through tourist dollars and their distribution reaching to the livelihood of local people. Protected areas of Nepal covers a wide range from tropical Terai ecosystem to frigid Himalayan regions. However, the issue of biodiversity to livelihood of people remains to be the same.

1. Introduction:

The protected area (PA) network is one of the success stories of biodiversity conservation in Nepal. A great deal of effort has been made over last thirty years in Nepal to protect and manage such areas. It has been recognised that biodiversity is the mainstay of Nepal's natural endowment and of the well being of its people. Nepal has acceded to a number of international convention and other agreement to conserve it. Many mechanisms are already in place for biodiversity protection and resource management and Ministry of Forest and Soil Conservation (MOFSC) has been instrumental in putting most of those in place.

The expansion of protected area network has been remarkable by any account in Nepal. The first national park was established in 1973. In 1989 only 7.4 percent of the total land area was protected. Since then the network of PAs has expanded and now covers 21.4 percent (Shrestha: 2005) of Nepal's land area. Expansion was rapid during 1990's because of the newly declared buffer zones to reduce park and people conflicts.

Despite past success, management problems and challenges remain. Unless they are addressed, success is not likely to be sustainable and threats may reappear. Some of the basic

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issues persistently to be addressed may be summarized as follows:

- Low levels of public awareness and participation;
- High population pressure and prevailing poverty;
- Weak institutional, administrative, planning and management capacities;
- Lack of integrated land and water use planning;
- Inadequate data and information management; and
- Inconsistent policies and strategies for biodiversity conservation.

These and other fundamental problems that may be identified through a broad-based analysis hold the key to successful biodiversity conservation in Nepal. Until these fundamental problems and root causes are addressed, success is not likely to be sustainable and the threat will reappear. (DNPWC; 2002). Modern day park management has to deal and devote more time and resources with the community of people than those with wilderness and wildlife.

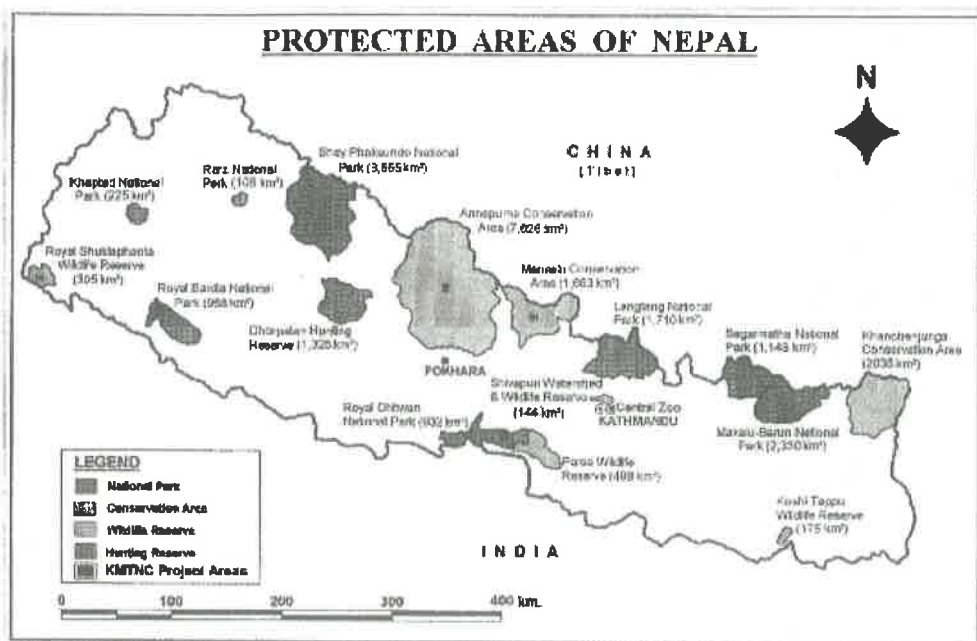
National Parks and Wildlife Reserves in Nepal are not only protecting the environment, but also has made a significant contribution to the local economy- increasing wealth, national income and levels of national economic output.

2. Protected Areas and Economics:

There are tangible benefits of protected areas. It can generate income and employment contributing to national economy. It is especially significant to the economy of developing countries, such as Kenya, Rwanda, Tanzania and Nepal. Kenyan's National Parks and Protected Areas are visited by over 7,00,000 visitors and generate about half a billion US dollars, thus making ecotourism the country's leading smokeless industry. It is estimated that one lion in Kenya living to age seven generates US \$ 5,15,000 in tourist dollars. If killed for its skin, the same lion would bring about US \$1000. Similarly each of Kenyans 20,000 elephants bring in about US \$ 20,000 per year in tourist income. It is said over a lifetime of 60 years, a Kenyan elephant is worth close to \$ 1million in tourist dollars. Another interesting comparison reveals that the economic yield from tourists who came to see one lion in Amboseli National Park of Kenya is equal to the income from a herd of 30,000 cows, making ecotourism more profitable and attractive (Jha. 1999).

About 25 percent tourists visit National Parks and Wildlife Reserves in Nepal. The Royal Chitwan National Park (RCNP) was visited by 57,603 (i.e. 27.4 percent of total tourist visiting Nepal in 1993) and generated over half a million tourist dollars. A total 74,010 tourists visited protected areas of Nepal in 2004, the Royal Chitwan National Park was visited by 43,061 of which 2,904 where from SAARC and 9,546 were Nepalese visitors, remaining were foreign tourists. The RCNP, designated as World Natural Heritage Site, receives about 70 percent of eco-tourists in Nepal. The second most popular eco-touristic destination is Annapurna Conservation Area. Though there are 9 national parks, 3 wildlife reserves, one hunting reserve and 3 conservation areas covering about 21.4 percent of its valuable land, but the pressure is mostly concentrated on above mentioned two protected areas. These popular eco-touristic spots require special attention to avoid overcrowding, (Jha, 1999: 491-92)

- Protected areas are often significant revenue-earning entities and can make an important contribution to local economies. For instance Canada is expected to create \$ 6.5billion dollars in Annual GDP from wildlife-related activities. This sustains 159,000 jobs and creates \$ 2.5 billion in tax revenue each year. Australia receives over \$ 2 billion from 9 national parks- at a cost to governments of \$60 million. In Costa Rica, it can be seen that from some \$12million per annum spent to maintain national parks, income of more than \$330 million in foreign exchange was generated in 1991 with 5,00,000 visitors arriving, representing the second largest industry in the economy. Similarly in 1996 over 781,000 tourists visited Costa Rica and more than 66 percent visited natural protected areas.
- There is a clear message from the above that investment in protected areas (map below) can provide a significant return to national and local economies. Far from being locked up and lost to local users, these areas represent opportunity for sustainable industries and for the generation of financial returns. With proper management, the 'product' on offer can be sold over and over again without diminishing its value. Unlike extractive industries, the string of returns can be maintained over a long period for the benefit of a a wide range of users and stakeholders. Realizing the growing economic significance of protected areas many countries have set aside protected areas. Ecuador, Venezuela and Bhutan stand first, second and third on the earth as these countries allocated 36,22 and 20 percent of their total land area under protection respectively. Nepal stand 12th and USA 20th in the global ranking by percentage of area under protection (Jha and Ghimire, 1999).



Source: KMTNC, Annual Report, 2003 & DNPWC-2005.

3. National Parks and Wildlife Reserves

The modern era of wildlife conservation in Nepal can be traced back to the enactment of the National Parks and Wildlife Conservation Act in 1973. This Act assigned the responsibility of nature conservation to the Department of National Parks and Wildlife Conservation (DNPWC). Primary objectives include conservation of the country's major representative ecosystems and unique natural heritage, and protection of valuable wildlife. The establishment of protected areas through legal declaration thereafter is itself seen as the response to the threats faced by wildlife and their habitats from anthropogenic causes, as well as natural consequences.

The idea of protecting certain areas as the wilderness of nature is universal through out the history of human civilization. Some areas are set aside as saved sites while others are protected as hunting grounds for rich and powerful, and also as special areas for cultural and resource uses. Therefore protected areas are of diverse types and diverse uses. The World Conservation Union (IUCN) has defined protected areas as "an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources and managed through legal or other effective means" (IUCN 1994 a). Protected areas include natural ecosystem such as wetlands, forest lands, grass lands, costal and marine eco-systems, or mountain ecosystems. These ecosystems provide habitats/living spaces for living organisms. Historically wildlife species like tigers, elephants, rhinoceros, birds, reptiles and amphibians captured human imagination to protect them from being extinct. The Royal Chitwan National Park was created to protect the one-horned rhinoceros. This animal is used as a "flag-shig species" to raise public concern and global support to protect its habitats of grasslands, wetlands and forest lands in the Madhesh or Doon landscape of Chitwan valley. Other charismatic species like the Royal Bengal Tiger or the Snow Leopard play special role to manage wilderness areas for national protection.

Specific activities of the DNPWC include conservation of endangered species, scientific management of habitat for wildlife and creation of buffer zones in and around parks and reserves. It is also responsible for regulating eco-tourism to improve the socio-economic conditions of local communities and increasing conservation awareness through education programs.

The Protected Area (PA) system in Nepal (including conservation areas and buffer zones) accounts for 21.4 percent of the country. Some of these PAs are of global significance. For instance, the Sagarmatha National Park and the Royal Chitwan National Park are listed as World Heritage Sites in 1979 and 1984 respectively for their unique natural, cultural and landscape characteristics. The Koshi Tappu Wildlife Reserve, a wetland of international significance, was declared a Ramsar Site in 1987. Three additional Ramsar Sites have been added to the list since 2003 i.e. the Ghodaghodi Tal of Kailali district, the Jagdispur Reservoir of Kapilvastu district and the Bishazari Tal of the Chitwan district.

Buffer zones are created around National Parks and Reserves to ease the biotic pressure on core areas and to promote sustainable management of natural resources through sharing the benefits of park revenue from touristic activities. This conciliatory approach is aimed at

motivating local communities through User Groups to undertake participatory management of natural resources to fulfill their own resource needs as well as to provide ecological support to the protected area and protected species, wild flora and fauna that form major tourism resources of Nepal. Growing urban population and shrinking natural and wilderness areas have made protected areas more and more precious as tourist destinations. As such wild flora and fauna, mountain beauties of the Himalaya and the cultural heritage of indigenous people have immensely contributed to develop tourism industry in Nepal. The assets of biological diversity present great prospects to enhance eco-tourism in Nepal. There is a record of 852 species of birds in Nepal that accounts to 9.3 percent of global wealth of bird species. It includes the highest flying bird the Bar-headed Goose that crosses Himalayan crests of over 8000 m. altitudes, the Bearded Vulture with widest wing span of 3 m. while flying, the tallest flying bird Sarus Crane, most colorful Danphe the Impeyan Pheasant which earns the title of Nepal's national bird and so on. The wealth of butterfly species accounts to 640 which comes to 2.6 percent of the world wealth of butterflies. Similarly 181 species of mammals with a large number of globally endangered species like the Bengal Tiger, the Asiatic Elephant, the One-Horned Rhinoceros, the Snow Leopard, the Gangatic Dolphin and the like add great value to wildlife conservation in Nepal. All these diversity occur in a country that has a mere area of 0.1 percent of the world land surface. Nepal claims 2.7 percent of world wealth of flowering plants. They include over 300 species of orchids, about 70 primroses and 30 rhododendrons.

The National Parks and Wildlife Conservation Act 2029 B.S. (1973), the Forest Act 2049 B.S. (1992) and the Environment Protection Act 2053 B.S. (1996) as well as the regulations under each of them have stipulated provisions for the protection of wild flora and fauna. Notably, the Constitution of Nepal 2047 B.S. (1990) spells out directive principles specifically for the protection of wild flora and fauna of the country. Conservation organizations and local communities complement the governments' conservation efforts.

Protected areas have been established not only to let nature work on its own but also to restore, improve and conserve wildlife habitats such as grasslands, wetlands and waterholes including the maintenance of wildlife corridors and the integrity of land-scapes. Likewise protected areas function as open laboratory to conduct applied and other research as on ecology, wildlife behavior, genetic diversity, and human impact on wildlife habitat. The DNPWC has also initiated captive breeding of elephants, musk deers and gharial crocodiles in order to releasing them back into their natural habitat to maintain viable population. Moreover, there is conservation of several species in the Central Zoo. Wildlife species such as greater One-Horned Rhinoceros have been trans-located from one park to another to set up other viable populations. The ongoing tiger project focuses on tiger ecology through regular survey, census and monitoring.

The DNPWC has initiated trans-border cooperation with India and China for biodiversity conservation to curb poaching and illegal trade of endangered species and their products. Training of staff members and exchange of information and ecotourism development has been an important part of the Protected Areas management in Nepal. The prime objective of ecotourism in Nepal has been to promote a symbiotic relationship between tourism and the

environment, with a particular focus on uplifting the local host economy. This concept is equally applicable in the context of villages situated in and around the protected areas (PAs). Protected areas in Nepal offer important attractions for visitors, given the pristine environment in mountain regions with the enthralling beauty of the Himalaya and proven experiences of witnessing large exotic mammals in tropical jungles of the Terai. Of a total of 275,468 tourists in 2002, over 36 percent paid a visit to different protected areas (MOCTCA, 2002). It has also helped to distribute tourism income to different parts of the country.

The government has made legal provisions for setting up and carrying out hotel and lodge business in and around protected areas to support high value low volume tourism. Environmental Impact Assessment (EIA) has now become a pre-requisite before new hotels and lodges are allowed to operate. Local people are provided trainings on various aspects of tourism with the focus on eco-tourism. All the PA initiatives have aimed at maximizing benefits to local people while maintaining the integrity of the local ecosystem. Examples from RCNP, ACAP, SNP and LNP suggest that community members have been able to draw some benefits from involvement in tourism activities.

Protected Area System of Nepal has considerably enlarged in a short span of time in order to conserve the diversity of natural resources. Ecotourism development has been an essential part of this whole process and hence tourism and the PA system reinforce each other. Therefore, a brief account of National Parks and Reserves is presented hereunder.

1. Royal Chitwan National Park: Royal Chitwan National Park spread over an area of 932 sq. km is known for its sal ramnant pure forest of (*Shorea Robusta*), riverine forests and grasslands. The Park hosts 570 species of flowering plants, 40 species of mammals, 486 bird species, 17 reptiles and 68 fish species (DNPWC, 2002) Because of the occurrence of many endangered plant species such as the tree fern, screw pine and several rare orchids and endangered mammals such as tiger, rhino, wild elephant (*Elephas Maximus*), gaur (*Bos Gaurus*), striped hyena (*Hyaena Hyaena*), sloth bear (*Melursus Ursinus*) and Gangetic dolphin (*Platanista Gangetica*), it was declared a World Heritage Site in 1983.

Due to its closeness to the capital and its collection of valuable wildlife, the Park has been one of the major attractions for tourists in Nepal. There were altogether 46,705 visitors to the Park in 2002 of which more than 26 percent were domestic visitors (MOCTCA, 2002), This data suggest that this destination is gaining popularity among Nepalese too. Its popularity has led to the growth of tourist facilities both inside and outside of the Park area. While there are a number of hotels/lodges inside the Park, over 60 of such accommodations are in operation outside the Park. These hotels and lodges have added greatly to the fuel wood demand, which is estimated to be 452,000 kg annually. Therefore, tourism has been putting pressure on local forests.

The declaration of buffer zone and its management with the active participation of local communities has been effective in easing pressure on the national park. Natural resource management, community development, tourism infrastructure development are some of the key activities of the buffer zone management. Ecotourism initiatives in particular have been very successful.

Tourist arrivals in Nepal and RCNP (2001-2004)

Year	Total no. of Tourists	Share of arrival in all protected areas	Share of arrival in RCNP
2001	361237	128956	82542
2002	275468	99483	46705
2003	338132	123309	56303
2004	385297	74010	43061

Source: DNPWC, Annual Reports and Nepal Tourism Statistics (2004) MOCTCA

2. Sagarmatha (Everest) National Park: Established in 1976, Sagarmatha (Mt. Everest) National Park (SNP) is spread over an area of 1,148 sq. km in the High Himalayan Region of Nepal. The park includes the upper catchment areas of the Dudhkoshi and Bhotekoshi rivers and is largely composed of rugged terrain and gorges, ranging from 2,845 m. at Monjo to Mt. Everest the top of the world-Sagarmatha at 8,848 m. Other peaks in the region that are above 8,000 m. include Lhotse (8,516m) Chooyu(8201m), Thamserku (6623m.), Nuptse 7855m., Pumori (7161m.) and Amadablam 6812m. These mountains are geologically young and are broken up by gorges and glacial valleys.

The vegetation include pine and hemlock forests at lower elevations, while fir, juniper, birch and rhododendron, and juniper scrub, and alpine plant communities are common at higher altitude. The park is home to Red Panda, Snow Leopard, Musk Deer, Himalayan Thar, Marten, Himalayan Mouse Hare and over 118 bird species including the Impeyan Pheasant, Blood Pheasant, Red Billed Chough and Yellow Billed Chough and many more.

World famed Sherpa people, whose lives are interwoven with the teachings of Buddhism, constitute the cultural attraction of the region. The renowned Tengboche and other monasteries are places of sacred teaching and learning, and are site of special significance to celebrate religious festivals such as Dumje and Mane Rumdu. In addition, Thame, Khumjung and Pangboche are other famous monasteries of the region. UNESCO listed the SNP as a World Heritage Site for its superb natural characteristics.

His Majesty's Government of Nepal declared a buffer zone around the park in 2002 with the objective of reducing biotic pressure on the slow growing vegetation and to enhance people's participation in nature conservation. The government has also made a provision of ploughing back 30-50 percent of the revenue earned by the park to community development activities in the buffer zone. The buffer zone conserve biodiversity through active local participation.

The use of firewood by tourists, trekkers and mountaineers team is prohibited in SNP. Alternative arrangements have been made through Kerosene depots at Syangboche, Dole and Phortse.

The economy of the Sherpa community is not too different from other economics in the northern parts of Nepal. People in these areas are traditionally dependent on agriculture, livestock herding and trade with Tibet. However, the growing international mountaineering expeditions and trekking tourism have opened up many new opportunities for locals.

3. Royal Suklaphanta Wildlife Reserve: Initially, the Royal Shuklaphanta Wildlife Reserve extended over an area of 155 sq. km and was managed as a hunting reserve. In 1976 it was gazetted as a wildlife reserve and the area was expanded by adding 150 sq. km, which increased the reserve area to 305 sq. km. It is famous for deer species, which include the endangered swamp deer (*Cervus Duvauceli*). Among the other wild animals found in the reserve are spotted deer (*Axis Axis*), blue bull, elephant, wild boar (*Sus Scrofa*), tiger and crocodile. The park exhibit spectacular blossom of "the flame of the forest" during the spring time. Despite its attractions as a nature travel destination, there were only 203 visitors in 2002, of which the majority were Nepalese (MOCTCA, 2002).

4. Rara National Park: Rara National Park gazetted in 1976 with an area of 106 sq. km and located in Mugu and Jumla Districts is the smallest park in the country. The park was established to protect Rara Lake, which extends over an area of 10.8 sq. km and serves as an important staging area for migratory birds such as Bar-headed Goose, Sheloducks, Mallards, Crested Pochards and Teals. The other purpose was to conserve the representative flora and fauna of the western Himalaya. The park flora consists of 1,074 species, of which 16 are endemic to Nepal. Over 51 species of mammal including musk deer (*Moschus Chrysogaster*), and 212 species of bird including *Cheer Pheasant* are available in the park (DNPWC, 2002).

Rara Lake is measured to be 157 m deep and is isolated from other water bodies. As a result there are several snow trouts not found else where in the world. They are *Schizothorax Raraensis*, *S. Nepalensis* and *S. Macrothalamus*. These fishes are endemic to lake Rara (Terashima, 1984).

The park can be reached either after a 3 days trek from Jumla or from Surkhet after 10 days trek. The Park area hosts only a small number of visitors each year because of its remoteness.

5. Langtang National Park: Langtang National Park, gazetted in 1977 with an area of 1,710 sq. km represents the central Himalayan ecosystem. Though it is often considered as a high-Himalayan park, a full complement of mid-hill flora and fauna are also found in the southern part and deep river valleys lying below 3000 masl. With a wide altitudinal variation ranging from 1,000 to 7,245 masl, the park hosts great floral and faunal diversity, from sub-tropical forests to alpine scrubs and perennial snow where as many as 32 species of mammals, 246 species of birds, and 15 endemic plant species are found. As the people in Langtang area produce enough food only to last a quarter of the annual requirement, forests serve as seasonal sources of food, medicine, fodder, fuelwood and utility tools (DNPWC, 2002),

Three trekking areas- Langtang, Helambu and Gosainkunda Lake form the major trekking routes in the National Park and the southern Helambu region. All these routes cater to both free independent trekkers and group trekkers and offer a choice of moderate to more difficult

hiking ranging from three days to three weeks duration. The MOCTCA data shows that altogether 4,798 people visited the Park during 2002 (MOCTCA, 2002), Therefore, this park has yet to make further efforts for gaining popularity as tourist destination.

6. Royal Bardiya National Park: The Royal Bardiya National Park is the largest protected area in the Terai region and encompasses an area of 968 sq. kms. The park was designated as Royal Hunting Reserve in 1968 but was re-designated as the Royal Karnali Wildlife Reserve in 1976 and finally declared as the Royal Bardiya National Park in 1986. The area is covered extensively with sal (*Shorea Robusta*) forest, and grasslands and riverine forests in the floodplains of the Karnali and Babai rivers. Important wildlife includes Tigers, Elephants, Rhinoceros, and Five Species of Deer. Periphery of the park hosts the rare Black Buck "*krishna sar*" in Khaira Panditpur of Bardiya district. Small populations of two crocodile species and some resident Gangetic Dolphin (*Platanista Gangetica*) are found in the river systems (DNPWC, 2002).

About 126,000 people reside in the villages surrounding the National Park. They include the indigenous Tharu, but Brahmin, Chettri, Magar and other occupational caste groups also live together in the settlements. There were 5,254 visitors to the park in 2002 (MOCTCA, 2000). There are seven hotels outside the Park and one concissionaire inside catering to tourists. Local guides are available.

7. Shey-Phoksundo National Park: The Shey Phoksundo National Park, spread over an area of 3,555 sq. kms, is the largest National Park in Nepal and extends across Dolpa and Mugu Districts. The park area is topographically and climatically most distinct as it extends to the north of the main Himalayan divide. Physical characteristics coupled with complex geology and soil support the unique biotic systems in the park area. Large mammals of the park include the snow leopard (*Uncia Uncia*), Tibetan wolf, blue sheep, and the Himalayan thar. Over 105 bird species, primarily of the trans-Himalayan region, are also found in the Park.

The Phoksundo Lake with a depth of 137 m is known for its brilliant blue water body that makes it a torquise lake. The crystal mountain "Shey" harbours the famous shey grompha i.e. crystal monastery in the undulating landscape.

While the inhabitants within the park are from the Tibetan ethnic origin mixed ethnic/caste groups including Lama, Baiji, Rokaya, Gurung, Magar, Brahmin, Thakuri and Chettri live together in the buffer zone area. The Tibetan mode of life, the language that shows a relationship with Tibet and the ancient "Bon-po" religion is one of the added attractions for visitors to the region.

Despite its huge natural and cultural tourism potential, the park area remained closed to visitors for long. The southern part of Dolpa district was opened up for visitors only in 1989 and the upper Dolpa in 1992 for those holding a special permit, Permission for visiting the upper parts is granted only to groups organized by certified trekking agencies accompanied by a government liaison officer.

Tibetan medical doctors "Amchis" practices to traditional medicine using a large number

of Himalayan herbs including the infamous "yarsa gomba" the caterpillar mushroom of the Himalaya.

Despite the natural attractions, flora and fauna and interesting culture, tourism has not developed in a significant manner in this area. As shown by Ghimire (2000) only 500 to 600 visitors travel to the area each year. However, due to security reasons, even this number has not been attained in recent years.

8. Parsa Wildlife Reserve: Parsa Wildlife Reserve was gazetted in 1984 with an area of 499 sq. km and forms a contiguous protected landscape with the eastern boundary of the Royal Chitwan National Park. The reserve is dominated by the Churia hills, where sal and chir pine are abundant, and the Bhavar region with its sal forests. The area also suffers from scarcity of water resulting in dry habitat conditions. The wild elephant population in the Reserve is estimated between 35 and 40. There are 5 to 7 tigers, a stable population of gaur numbering 75 to 100, and a few Blue Bull or nilgai and other common wildlife species are leopard, sloth bear and several ungulate species. The reserve is also noted for approximately 300 bird species.

9. Khaptad National Park: Khaptad, which is also a religious site, was gazetted in 1985 as a National Park. It conserves representative mid hill ecosystems in an area of 225 sq. km ranging between 1,450 and 3,300 masl. Diverse habitats include coniferous forest, mixed hardwood forest, scrubs and grasslands. Some 18 species of mammal, 217 bird species, and 567 species of flowering plants including 25 endemic ones are available in the Park area. Rhododendron of various varieties add to the scenic beauty during its flowering season (Rai, 2000).

The National Park is also well known because of Khaptad Lake and Khaptad Baba, a revered saint who drew people from different parts of Nepal and India. Therefore, the park also carries spiritual importance. Despite these attractions there are no tourism facilities and not many international visitors to the park.

10. Annapurna Conservation Area Project: Annapurna Conservation Area Project (ACAP) was launched as a pilot program to integrate nature conservation and community development. This initial effort soon proved to be successful. After the area was gazetted as a Conservation Area in 1992, ACA program activities were extended to the entire area with local offices in Jomsom, Manang, Bhujung, Sikles, Ghandruk, Lo-Manthang and Lwang. Upper Mustang was brought under the jurisdiction of ACAP in 1992 (KMTNC, 2002).

Annapurna Conservation Area Project (ACAP) is the largest undertaking of King Mahendra Trust for Nature Conservation (KMTNC) and is also the first and the largest Conservation Area (CA) in Nepal, covering an area of 7,629 sq. km. It is home to over 120,000 people of different ethnic, cultural and linguistic background. Thakali, Manange and Loba are dominant in the northern areas, whereas Gurung and Magar are dominant groups in the south, with Brahmin, Cheetri, Damai and Kami in comparatively smaller numbers. Hindu, Buddhist and pre-Buddhist religions and a mix of all these are prevalent across the region. The cultural diversity is rivaled by the biodiversity.

In response to the conservation and development needs of local people Annapurna Conservation Area Project (ACAP) carried out the activities mentioned below (Gurung and Coursey, 1994):

- All international visitors were charged an entry fee.
- Grants from donors channeled through the endowment trust and external resources were brought into ACA for development works such as drinking water, health care and education. To enhance fuel efficiency, solar heaters, back boiler heaters and micro-hydro power plants were established.
- Lodge Management Committees (LMC) were formed for better management of lodges and training programs were organized for lodge owners and LMCs.
- Individual and community plantations were established through local nurseries.
- Formation of Conservation and Development Committees (CDCs) and Forest Management Committees (FMCs) proved to be beneficial for balancing conservation and development.
- Similarly, conservation education and extension activities such as development of minimum impact code, adult education, environmental education for children were carried out.

11. Makalu-Barun National Park and Conservation Area:

Makalu-Barun National Park, (MBCNP) encompass 1,500 sq. km of pristine ecosystems of the eastern Himalaya. The physical setting of Makalu-Barun is unique. Within 40 km, the altitude varies from 435 masl at the confluence of the Arun and Shankhuwa rivers to 8,463 masl, the summit of Mt. Makalu. It shares a border with Sagarmatha National Park in the west and with the Qomolangma Nature Preserve in China in the north. The region embraces all ecological zones ranging from tropical to alpine. The area receives annual rainfall of over 4,000 mm, the highest precipitation record in the country. The region hosts 27 types of forests with 3,128 species of flowering plants. Of them 56 are rare and threatened species. The region also houses over 88 species of mammals, 421 bird species, 78 species of fish, 43 species of reptiles, 16 species of amphibians and 315 species of butterflies (KMTNC, 2002).

Villages are scattered in the conservation area where the Rai (57 percent) constitute the dominant ethnic community. Among others Bhote (30 percent) and Sherpa (10 percent) are predominant. Majority of the residents practice subsistence farming and pastoralism (Adhikary, 2000).

MBCNP has not been able to attract tourists like other National Parks and Conservation Areas in Nepal. Only 209 tourists visited MBCNP in 2002 (DNPWC cited in MOCTCA, 2002). The difficult terrain, limited access and prolonged monsoon conditions are cited as reasons for limited tourism activities. Therefore, unlike many other popular destinations, one does not see mushrooming tourists facilities in the region (Adhikary, 2000). However, MBCNP is a treasure trove of eastern Himalaya flora and fauna and has great potential to remain pristine. The National Park is buffered by a conservation area and there is no army in park protection.

Department of National Parks and Wildlife Conservation is preparing buffer zone management plan for MBNP. Ecotourism is one of the key activities of the plan. It is expected that the participatory approach to buffer zone resource management and community development would contribute to promote ecotourism in the area.

12. Dhorpatan Hunting Reserve: Dhorpatan Hunting Reserve is spread over an area of 1,325 sq. km in Myagdi, Baglung and Rukum districts. It was gazetted in 1987 for sport hunting of blue sheep. This is the only hunting reserve in the country open to both Nepalese and foreigners. Hunting licenses are issued for trophies of Blue sheep by the DNPWC.

The reserve provides refuge to several rare and endangered mammals such as snow leopard (*Uncia Uncia*), musk deer (*Moschus Chrysogastr*), red panda (*Ailurus Fulgens*) and the wolf, Cheer Pheasant and the Himalayan Pied Woodpecker, and 14 other breeding species of which Nepal may hold significant populations, are found in the Reserve.

Except for the north, the Reserve is surrounded by villages with the population of Mongoloid stock. Local residents are allowed to collect limited quantity of firewood for domestic use. Despite these special features tourists rarely visit this reserve. However, trophy hunting is the main attraction of the reserve.

13. Shivapuri National Park: Established in 1976 as a watershed and wildlife Reserve, Shivapuri was declared a National Park in 2002. It is situated to the immediate north of Kathmandu City. Only 12 km. away from the heart of Kathmandu, the gateway to Shivapuri National Park is Budhanilkantha which is 15 to 20 minutes drive from the city. Another option is via sundarijal which is about 30 to 45 minutes drive from the city and requires a trekking uphill.

It covers an area of 144 sq km and is a true representation of the mid hills in the protected area system and also contributes over 40 percent of drinking water needs of Kathmandu valley.

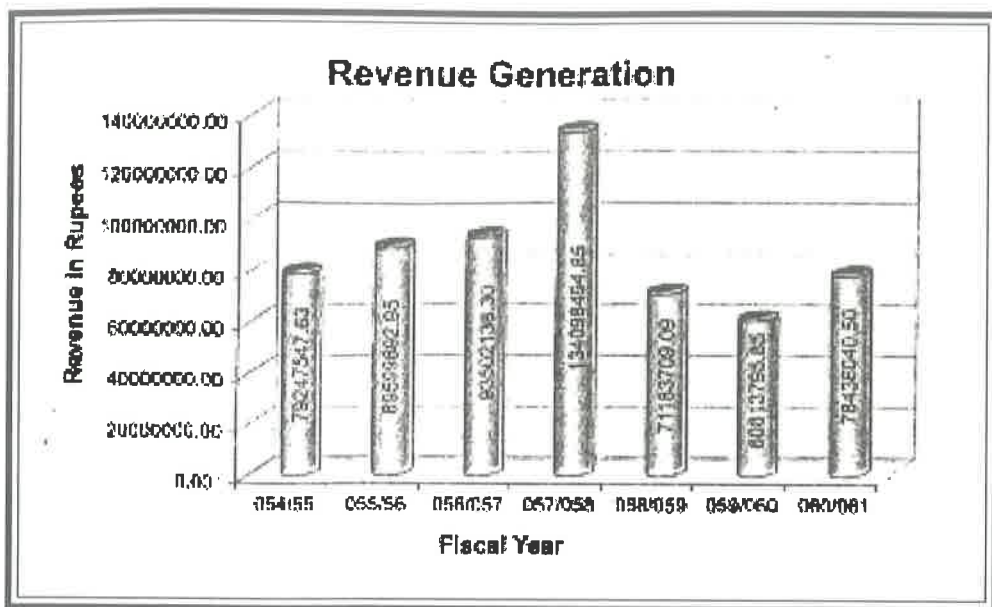
This is an easily accessible destination for viewing orchids, rhododendrons, pines, utis tree as well as many medicinal plants. Rising to a height of 2,732 m. Shivapuri is home to leopard, barking deer, and wild cat. A total of 129 species of mushroom, 150 species of butterfly (many endemic and rare), 177 species of birds and 19 species of mammal have been recorded in the park.

While there are 13 trekking routes inside the reserve itself, the most important one is the trekking route to Helambu. Therefore, it is one of the popular protected areas. Its great popularity also comes from its proximity to Kathmandu Metropolitan City. After Royal Chitwan and Sagarmatha National Park, it was the most visited area by third country visitors (5505) to Nepal in 2004. A total of 26,652 tourists visited this Park in 2002. However the majority of these visitors were Nepali nationals.

Tourism and Revenue Generation

Nepal is not only endowed with rich and varied biodiversity, but also with scenic splendors

and a mosaic of ethnic groups with their rich religious and cultural heritage. While the mountain parks attract international visitors for mountaineering expeditions, trekking and adventure tourism, the lowlands of the country lure tourists with jungle safari to view rare and endangered wildlife species.



Though tourism industry has played a crucial role in Nepal's economy, the ongoing insurgency and the breakdown in law and order situation hit hard on the tourism industry. During the fiscal year (2003-04) a total of 172,325 tourists visited in the protected areas and the total revenue generated was NRs. 78,436,040. Likewise, the total amount of expenditure incurred by DNPWC and the 14 protected areas and *Hattisars* (Camp for domesticated elephants and their handlers) under it was NRs. 117,942,158.

Despite the present slump in tourism, HMG/N has initiated the promotion of eco-tourism for poverty alleviation. DNPWC has launched the Tourism for Poverty Alleviation Program (TRPAP) with the support of UNDP, SNV and DFID in some protected areas.

New Policy on Protected Area Management

His Majesty's Government has approved a policy in-execution regarding the handing over of management responsibilities of protected areas to interested INGO/NGOs or local communities. The objective is to ensure maximum participation of local people in sharing benefits from conservation activities while contributing to biodiversity conservation and environmental protection. The decision of HMG/N to hand over the management responsibility is in conformity with the Tenth Plan and ensuring local peoples access to natural resources

and equitable distribution of benefits. After the policy came into force and upon receiving an application from the Kanchenjunga Conservation Area (KCA) Council, DNPWC issued a Letter of Intent to the Council. The Council would be formally entrusted with the management responsibility of KCA in the near future. The local people of the conservation area are highly motivated and have shown eagerness to take up the management responsibility. DNPWC has also issued a Letter of Intent to the KMTNC following its application for the management of Shey Phoksundo National Park, Rara National Park and Shivapuri National Park.

Conclusion:

In nutshell, it can be mentioned that role of tourism in conservation is very significant as conservation stays if it pays. It cannot be denied conservation of unique biodiversity of global value is the main responsibility of the government. Tourism is a non-consumptive activity for natural resources as its raw material is inexhaustible. In tourism, the raw material i.e. tourist is both input and output. Tourism products do not diminish with constant use. As a result of influx of tourists, the height and sounds of particular destination can be maintained and even enhanced with the generated revenue.

Therefore, there is need for the development of those protected areas such as Rara and Khaptad, which are visited by less number of tourists should be developed and conserved at the cost of revenue generated from the popular protected areas such as Royal Chitwan National Park and Sagarmatha National Park.

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