



Nepal:

People and Nature

Location

Nepal, a country of amazing extremes is the home, of the world's highest mountains, historic cities and the forested plains where the regal tigers and the armor plated greater one-horned rhinoceros trundle at ease.

Situated in South Asia and surrounded by the Tibetan Autonomous Region of China in the north and by India in the south, east and west, the Federal Republic of Nepal covers an area of 147,181 sq. km (between 80° 4' and 88° 12' East and 26° 22' and 30° 27' North). The length of the Nepal is 885 kilometers east to west, and varies between 145 to 241 kilometers north to south.

It represents a transitional zone of two biogeographical realms: the Palearctic and the Indo-Himalayan. It is also at the crossroads of the Southeast Asian, Northeast Asian (Chinese) and Mediterranean tracts. Nepal can be divided broadly into three ecological zones: the lowland (Terai), the mid-hills and the high mountains.

The altitude of the Himalayan region ranges between 4,877 m. to 8,848 m. It includes eight of the highest 14 summits in the world, which exceed an altitude of 8,000 meters including the world highest mountain Sagarmatha (Mount Everest).

The mountain region accounts for about 64% of total land area, which is formed by the Mahabharat range that soars up from 4,877 m. and the lower Churia range. The lowland Terai occupies about 17% of the total land area of the country.

Similarly, the climatic condition ranges from the sweltering heat of the Terai in the lowland to the freezing cold in the Himalayan highland. As a result of extreme variations in altitude and climate, the flora and fauna of Nepal demonstrates a wide range of diversity.

Competing for space within 1,000-km. east west and 200 km. north south, this small rectangle of topographical and hydrological extremes host over 6,500 flowering plant, 181 mammal, 862 bird and 640 butterfly species. It is also home to more than 26 million people. Although Nepal occupies only 0.09% of the total land surface of the earth, it has nearly 5% of mammalian species of the world total.

Realities and Challenges

Nepal has been classified by the United Nations Environmental Programme (UNEP) as the highest risk zone in Asia in terms of the ecological crisis. The root cause of all environmental problem being poverty compounded by an ever-growing population. The direct impact of the country's socio-economic realities on the natural and cultural diversity is magnified by widespread illiteracy, inaccessibility to basic services and financial constraints.

The country is predominantly agricultural with many subsistence farmers depending on marginal lands for their livelihood. The

fast growing population has had serious repercussions on the nation's economy and ecology. They depend on agriculture and fast depleting forests for fuel, fodder and timber.

The situation has been further aggravated by commercial logging, shifting cultivation, uncontrolled grazing and encroachment of forest lands. All this has resulted in increased soil erosion, sedimentation, floods and landslides. Similarly, the inadequate ecological consideration in development activities and the uncontrolled influx of visitors in ecologically fragile regions have further intensified environmental degradation.



Drive for Conservation

Nepal recognized its susceptibility to ecological risks as early as the 1960s. By the mid 1970s, Nepal Government took the first initiative to establish national parks and reserves in areas of biological and natural significance. Within three decades, Nepal has set aside more than 19% of the total land area as protected areas under various categories.

However, the earlier efforts in conservation were identical to the western system where national parks and reserves were considered as islands of wilderness amidst a sea of people. Once demarcated, the people were forfeited from their traditional rights to use the natural resources inside the parks and reserves. In other words, the concerns of people living in the park periphery were ignored. This led to intense park-people conflicts negating the achievements made in terms of conservation.

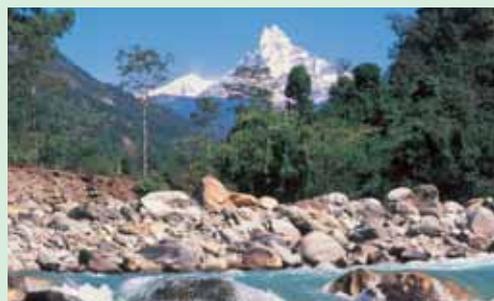
These realities pointed to the need for Nepal to come up with alternative approaches for effective conservation measures while addressing the needs of the local people. The underlying objectives of such a plan were to be able to fulfill the basic requirements of the local people while maintaining a balance between nature conservation and sustainable development.

As the government did not have this flexibility, this called for establishment of an institution, preferably an institution which had the capacity to work like a non-governmental organization that would be able to supplement and complement the government's efforts in nature conservation and sustainable development. This led to the establishment of National Trust for Nature Conservation (NTNC).

National Trust for Nature Conservation

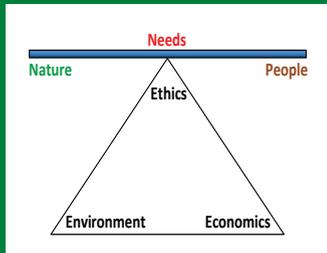
The National Trust for Nature Conservation (NTNC) was established in 1982 by a Legislative Act as an autonomous and not-for-profit organization, mandated to work in the field of nature conservation in Nepal. For over two decades, the Trust has successfully undertaken over 200 small and large projects on nature conservation, biodiversity as well as cultural heritage protection, ecotourism, and sustainable development. The Trust's experience over the years has shown that conservation efforts in low income economies, such as Nepal, cannot be successful, much less sustainable, unless the needs and welfare of the local people are addressed. Holistic and integrated conservation and development program with active people's participation aimed at promoting local guardianship have been the focus of all the Trust activities.

Geographically, the Trust activities have spread from the sub-tropical plains of Chitwan, Bardia and Kanchanpur in the lowlands to the Annapurna and Manaslu region of the high Himalayas, including the trans-Himalayan region of Upper Mustang and Manang. Currently, the projects of Trust are divided into three geographical areas - the lowland, the mid-hills (Kathmandu Valley) and the high mountains. The Trust's activities in the lowlands are based in and around the Chitwan National Park, the Bardia National Park and the



Shuklaphanta Wildlife Reserve located in the central, western and far-western development regions of Nepal, through the Biodiversity Conservation Center (BCC) in Chitwan, the Bardia Conservation Program (BCP) in Bardia and the Suklaphanta Conservation Program (SCP) in Kanchanpur. Similarly, the Annapurna Conservation Area Project (ACAP) and the Manaslu Conservation Area Project (MCAP) are two major protected areas managed by the Trust in the mountain region. The Central Zoo is the only project of the Trust in Kathmandu Valley. As a new initiative, the Trust has established an Energy and Climate Change Unit to address the emerging issues of climate change through mitigation and adaptation approach and renewable energy technologies. The Trust has also started work on urban environment conservation with the Bagmati River Conservation Project.

Mission Statement of NTNC



“To promote, conserve and manage nature in all its diversity balancing human needs with the environment on a sustainable basis for posterity - ensuring maximum community participation with due cognizance of the linkages between economics, environment and ethics through a process in which people are both the principal actors and beneficiaries.”

NTNC’s mission of promoting, managing and conserving nature in all its diversity in Nepal is supported by the following guiding principles:

- Always ensure a balance between human needs and the environment to guarantee long-term sustainability;
- Always ensure maximum community participation with people recognized both as the actors and clients; and ensuring equity and gender sensitivity in all its work
- Always linking economic, environmental and ethical factors in conservation activities;
- Always managing operations based on sound business-oriented principles (high quality work, efficiency, effectiveness, quick decision making based on facts/evidence, client oriented, responsive to environmental changes and requirements);
- Always working towards fostering strong partnerships with various stakeholders (community, Government, civil society and international stakeholders) so as to ensure quality in all its activities and conforming to client requirements;
- Always abiding by principles of good governance.



Achievements of NTNC

- A national organization that is recognized nationally and internationally for pioneering, conceptualizing and implementing innovative ideas, such as:
 - o ICDP (community-based conservation interventions) model designed, tested, piloted and implemented; examples – ACAP and Baghmara Community Forestry in Chitwan
 - o Pioneered the implementation of a self-financing national conservation modality (ACAP)
 - o Significantly contributed in developing and implementing eco-tourism model
 - o Piloted and successfully implemented captive breeding
 - o Pioneer in wildlife science research
 - o Implemented landscape level conservation programs (tiger, rhino)
 - o Successfully managed and is managing two Conservation Areas in Nepal
 - o Managing the only national Zoo in the country in a financially sustainable manner
 - o Linked micro-hydro promotion with forest protection in program areas;
- Instrumental in providing science- and evidence-based inputs for policy dialogue and policy formulation at the national level; as well as being the national knowledge base in biodiversity conservation;
- Initiated formulation of Conservation Area Regulations and buffer zone regulations;
- Trusted partner of the Government and international development partners
- First national institution to be entrusted by multilateral organizations such as the ADB, GEF and UNF to implement conservation and biodiversity programs/projects;
- Recognized internationally and awarded the following for its unique achievements:
 - o Tourism for Tomorrow – Worldwide and Asia-Pacific
 - o J. Paul Getty Conservation Award
 - o UNEP Global 500 Award
 - o Deutscher-Riesburo-Varband Award of Tourism and Environment
 - o Abraham Conservation Award from WWF for the Tourism Management Sub-committee of Chhomrong Village
- Human resources of NTNC recognized and in demand nationally and globally;
- Fully managed by Nepalese personnel.



NTNC Program Focus

Natural Resources Conservation
Wildlife Conservation
Conservation Education
Alternative Energy
Sustainable Community Development
Eco-tourism Management
Women Development
Agriculture and Livestock Development
Research and Monitoring
Capacity Building
Climate Change
Urban Environment Conservation

Annapurna Conservation Area Project (ACAP)



Launched in 1986, the Annapurna Conservation Area Project (ACAP) is the largest undertaking of NTNC and also the first Conservation Area and largest protected area in Nepal. It covers an area of 7,629 sq. km. and is home to over 100,000 residents of different cultural and linguistic groups. ACAP is rich in biodiversity and is a treasure house for 1,226 species of flowering plants, 102 mammals, 474 birds, 39 reptiles and 22 amphibians.

Other features that also make the Annapurna region a unique the country is due to the fact that it has one of the deepest Kali Gandaki Gorge, which is 3 miles long and 1.5 miles wide, a valley with fossils from the Tethys Sea dating 60 million years ago. The region contains the world's largest rhododendron forest in Ghorepani and the world's highest lake, Tilicho, in Manang, south of the Annapurna massif.

The biological diversity of the Annapurna region is equally rivaled cultural diversity.

Gurung and Magar are the dominant groups in the south, whereas Thakali, Manange and Loba are dominant in the north. Each of these groups speaks their own dialect, and have unique cultures and traditions. Besides, there are also Brahmin, Chhetri and other occupational castes although in comparatively smaller numbers. Hindu, Buddhist and pre-Buddhist religions along with a mixture of all these are prevalent across the region. The local people reside in the 5 districts of the 57 Village Development Committees (VDCs) of the Annapurna Conservation Area (ACA).

The natural and cultural features of ACA have made it the most popular trekking destination in the country, drawing more than 60 percent of the country's total trekkers. Tourism over the years has been firmly established as one of the most important and competitive sectors of the local economy. There are over 1,000 lodges, tea-shops and hundreds of other subsidiary services to cater to the thousands of trekkers, pilgrims and their support staff.

The soaring number of visitors, whose fuel wood consumption is twice more than that of the local people, has exerted immense pressure on forest resources already stressed from the growing local population. Similarly, litter, particularly the wastes produced by trekkers and hoteliers, is another major concern. It is estimated that an average trekking group of 15 people generates

about 15 kgs. of non-biodegradable and non-burnable garbage in 10 days trek, producing tons of garbage in mountain regions annually.

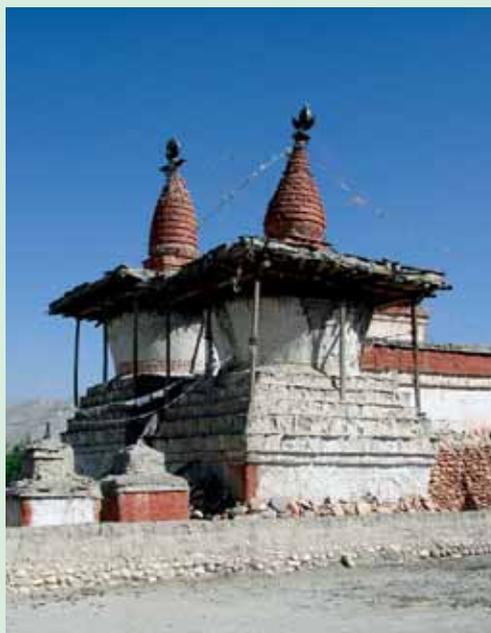
The multifaceted problems of ACA have been addressed through an integrated, community-based conservation and development approach, an experimental model which has been in the vanguard of promoting the concepts of “Conservation Area” through an “Integrated Conservation and Development Programme” approach in the country and abroad. ACAP was first tested as a pilot Program in the Ghandruk Village Development Committee (VDC) in 1986. After being notified in the Gazette as a “Conservation Area” in 1992, ACAP’s Program covered the entire area.

Additionally, ACA is the first protected area that has allowed local resident to live within the boundaries as well as own their private property and maintain their traditional rights and access to the use of natural resources. It is also the first protected area, which has refrained from using army assistance to protect the dwindling natural resource base on which the region depends. Instead, it invests whatever financial resources available for community development and social capital building in the region. NTNC receives no regular funding support from the government for the operation of ACAP, but has been granted the right to collect entry fees from visiting trekkers. One hundred percent of the revenue is ploughed back to implement conservation and development activities in ACA. Additional funds are raised from national and international donors. This is an exemplary achievement of a Non-Government Institution ability to manage a significant portion of the protected area system in Nepal.

In order to manage ACA more effectively, it has been divided into 7 unit conservation offices - Jomsom, Manang and Lo Manthang in the trans-Himalayan region and Bhujung, Sikles, Ghandruk, and Lwang on the southern flank of the Annapurna range. The focus of Jomsom, Manang and Ghandruk, which are among the most popular trekking destinations,

is on integrated tourism management and other development activities that benefit the local communities and the environment. The Program priorities for Bhujung, Sikles and Lwang are poverty alleviation and integrated agriculture development and agro-forestry. Similarly, while the focus in upper Mustang, which came under the jurisdiction of ACA in 1992, has been on managing controlled tourism on a sustainable basis, and promoting heritage conservation which is the major tourist attraction. The Conservation Education and Extension Program is being implemented in the entire region of ACA and forms the backbone of all its endeavors.

The first management mandate given by the Government to NTNC to manage ACA ended in 2002. The Government has given another management mandate of additional 10 years to the Trust. NTNC believes that areas such as the ACA will ultimately have to be managed by the local people themselves in perpetuity. Therefore, the focus is on building local capacity, both at the institutional and individual levels, to meet all the conservation and development aspirations of the people.





Major focus of ACAP

- Under natural resource conservation program (NRC), local level Conservation Area Management Committees (CAMCs) and subsequent sub-committees are formed to mobilize local people to carry out different programs and to encourage and institutionalize their interests in the overall conservation and development of ACA. This Program includes activities such as nursery management, plantation, community mobilization, wildlife monitoring, capacity enhancement of local people in conservation area management.



- Alternative energy program (AE) focuses on reducing pressure on forest resources and provides access to energy alternatives to fuel wood. The field level activities include promotion of fuel efficient cooking and heating devices and alternate energy, such as back boilers, solar heaters, smoke water heaters, biogas, kerosene stoves and improved stoves. Activities such as management of local level kerosene depots and LPG

depots are managed at the community level. Introduction of biogas plants, bio-briquette and energy saving appliances are other interventions of this program.

- Conservation education and extension program (CEEP) aims at spreading the conservation awareness message to every part of the ACA and beyond. Different activities are organized to deliver the message of conservation and development through formal school education at grade 6, 7 and 8 with special curriculum, and, informal education such as, adult literacy classes and mobile awareness camps. This is the backbone of ACAP program as it is based on the ethic that only education can change the attitude of people and through this program local people as well as visitors are given series of awareness on the different approaches and programs undertaken in the Conservation Area.
- Under the community development program (CD), activities of community based infrastructures development works are carried out. Buildings ranging from school, CAMC offices, community halls, community lodges, day-care centre buildings, trails, railings, drinking water, irrigation canals, sanitation works are constructed and developed with

active participation of the local community. Introduction of energy efficient community building using passive solar architecture technology for demonstration and providing safe drinking water using ozonation technology along the trekking routes are innovative role played by ACAP in technology dissemination and creating demonstration effects at the local level.



- The tourism management program aims to carefully balance between ecology, local livelihood needs and visitors' satisfaction. The program gives high priority to reduce the negative impacts of tourism and enhance the positive impact. For this, visitors' information centers and tourism check posts and eco-museums are managed with different exhibits and information related to ACA, creating awareness on the minimum impact code for visitors, preparation of audio-visuals, sign posting and tourism related awareness camp conduction are some of the activities of this program. At local level, capacity enhancement of local people in managing tourism and tourism enterprise development activities are conducted.
- Women development program (WD) focuses on bringing the women, marginalized and socially outcast people in the conservation and development mainstream through the gender empowerment activities to enhance their participation in decision making and program implementation. Activities include enhancing their skills in income generations, providing opportunity for better education, capacity building and exposure tours and operation of day-care centers.
- Agriculture and livestock development program is an important feature as many people in the region still depend on it. By the diversifying agriculture production and livestock to enhance the agriculture based rural income, activities under this program ranges from multipurpose nursery operation, introduction of field tested improved varieties of crops through conservation farmers, promoting cash crops and fruit tree plantation at local level, improved breed selection and veterinary services are carried out.
- General and reproductive health program aims at delivering better approach to health care for the local people. Activities include conducting health camps and providing general health services to the local people in remote areas and where no regular health services are available.
- Under the heritage conservation program, activities are geared to preserve the existing culture arid heritage of the region. The activities include supporting local level traditions and festivals, repair and maintenance of religious shrines such as monasteries, temples and support for the operation of monastic schools.



Manaslu Conservation Area Project (MCAP)

Since 1986, Nepal adopted a new and innovative approach in protected area management, which was first implemented in the Annapurna Conservation Area. The Annapurna Conservation Area Project (ACAP) managed by NTNC has successfully demonstrated that conservation and development can be mutually complementary to each other for meeting both the environmental concerns and basic needs of the local people.

With the experience from ACAP, the Trust started its program in the Manaslu region from the beginning of 1997 as the Manaslu Eco-tourism Development Project with funding support of the Government of Nepal and the Asian Development Bank under the Ministry of Culture, Tourism and Civil Aviation's Second Tourism Infrastructure Development Project. The project was able to develop basic eco-tourism infrastructure in the area. MCAP completed the Ecotourism Project in 2001. The program activities undertaken under this project have assisted and increased the capacity of the locals to take a leading role in managing their natural resources. NTNC is embarking on other programs that will add value to what has been achieved in the past.

Manaslu, a mountainous region in north Gorkha District, has a fragile natural resource

base and a rich cultural environment. In order to conserve the unique environment and extremely rich biodiversity, a protected area status - "Conservation Area" - was given to the Manaslu region. Manaslu Conservation Area (MCA), declared on 28 December 1998, is the third and youngest conservation area in Nepal. MCA encompasses a 1,663 sq. km. area with 7 VDCs. There are about 9,000 inhabitants living in MCA and 2,000 species of plants, 33 mammals, 110 birds, 3 reptiles and 11 butterflies in 11 types of forest have been reported from the area.

Government of Nepal handed over the management responsibilities of MCA to NTNC for 10 years. This is the second conservation area under the direct management of the Trust besides ACA. The objective was to improve the capacity of the local communities in the Manaslu area to benefit from tourism in an environmentally benign manner for sustainable development. With the expiry of the management mandate, on the request of the local communities, the District Development Committee of Gorkha and the major political parties in the district, the Government of Nepal has extended the management mandate for another 10 years till 2018.

The area was neglected in terms of infrastructure development as well as all basic services, which directly affected the livelihood of the people. The local people were deprived of the benefits of access, safe drinking water supply and electricity. Education and health services were almost non-existent. Since no other economic opportunities were available, they had to depend on marginal agriculture, animal husbandry and exploitation of natural resources for survival. As Manaslu is a food deficit region, high dependency on natural resources was constantly straining the capacity of the ecosystem. Tourism, due to the semi-restricted area status of the six VDCs adjoining the Tibet Autonomous Region of China, is limited to 1,000 trekkers per annum, and only about 60% of the quota is subscribed. The local people do not enjoy the benefits from even these low numbers, as the groups have to visit the region in organized groups that are self-sufficient in all their requirements before they start the journey.

Manaslu has a lot to offer to the trekkers, from the beautiful scenery of the majestic Himalayan ranges and high altitude glacier lakes to rich biological and cultural diversity. The culture is equally attractive and most follow Buddhism. The rich cultural heritage is evident in the several large Buddhist monasteries like Shringi Gompa in Bihi, as well as Mu and Rachen Gompas in Chhekampar. Local examples of the harmony between religion and environmental conservation can be seen throughout the region, as Lamas (religious leaders) from monasteries have prohibited the locals to hunt wildlife. This has



helped the wildlife to prosper and increase in MCA and is a prime habitat for the elusive snow leopard, grey wolf, musk deer, blue sheep and the Himalayan Thar.

The Trust has been implementing various field program in the region to motivate and mobilize the local people to take the lead in managing their own resources. As in ACAP, the main backbone of all these program is Conservation Education. Extensive extension programs are underway to create awareness among the local people so that they understand and become an integral part of the undertaking. Without their active participation and support, no program, however novel or well designed, is going to achieve success. The capacity of the local Conservation Area Management Committees (CAMCs) is regularly enhanced through regular training and they are entrusted with the responsibility of managing the natural resources of their region in a sustainable manner.

Research is conducted regularly to develop database on biodiversity and socio-economic conditions in the region on through the collection of data to record physical and social changes.



Major focus of MCAP



- Under natural resource conservation program, MCAP provides both technical and financial support to strengthen CAMCs. The CAMCs are regularly given capacity building trainings to make them more capable to manage their natural resources in a sustainable manner. Under this program, nurseries have been set up for community and private plantation. Regular forest patrolling is undertaken by the CAMCs to reduce poaching.
- Through the alternative energy program, kerosene depots and four micro hydro power stations are in operation, which aim at reducing pressure on the forests of the region. Solar lightening facilities are provided to community where micro-hydro power is not feasible. The local operators are regularly provided training on micro-hydro operation and repair.
- Under community development program, construction of helipads, rescue shelter, bridges, drinking water, trail repair and maintenance, community/private toilets and school buildings are carried out to help community with better facilities. Support to construct lodges, school buildings, health posts are among others provided to improve facilities.
- Under eco-tourism program, sign posts are erected on various routes to make the visitors aware that they are in an ecologically fragile area. The local people are made aware of tourism potentials through awareness camps and exposure tours. Tourism catering skill trainings are given to locals so that they can earn income from tourism activities. To manage waste, dumping pits and rubbish bins are placed at regular intervals.
- To encourage conservation education, MCAP has regular conservation awareness



camps for the local people. It supports by providing scholarship grants in public school for local students.

- Under the women development program, adult literacy classes are conducted in the different villages of MCA for which women are given priority. In order to empower women, mothers' groups have been formed and women from different VDCs are provided with various skill development trainings so that they can earn extra income and become financially more independent.
- The agriculture development program aims to enhance the skills of local conservation farmers so that they become self-sufficient and capable to increase the productivity of their marginal land. They are trained to establish private nursery and on conservation farming practices so that they become the demonstrators for other farmers to follow. The conservation farmers are supported with the required agricultural tools and new variety of seeds to test on their farm lands.
- Under the cultural heritage program, local people receive training on Thangka painting, The local people are trained in monastery repair activities to preserve and enhance experience for visitors to the region.



Biodiversity Conservation Center (BCC)



In 1989, after Smithsonian Institution, USA completed its assignment in the Chitwan National Park (CNP), Nepal and handed over the Nepal Terai Ecology Project to NTNC, the Trust established the Nepal Conservation Research and Training Center (NCRTC) to conduct biological research and monitoring of flora and fauna in the lowland (Terai) protected areas of Nepal. In the course of time, the Center widened its focus and added a human dimension to its conservation efforts. The expansion in scope is also reflected by renaming NCRTC to Biodiversity Conservation Center (BCC) in January 2002. The emphasis has been on integrated conservation and development program with the twin objectives of applied biological research and sustainable development of local communities by

providing alternative livelihood options. This has helped in minimizing the conflicts between the park and the people residing in the periphery of the CNP. BCC has been providing technical expertise to CNP in the translocation of rhinos, census of flagship species and research within and outside the park. BCC has implemented the first landscape level conservation project in Nepal with the support of Global Environment Facility (GEF), United Nations Foundation (UNF), and United Nations Development Programme (UNDP). The Center seeks affiliation with other international universities, conservation partners and training institutions to develop the center as a regional conservation training center.

BCC has undertaken various conservation initiatives from single species conservation to landscape level biodiversity conservation. BCC has been regularly carrying out monitoring of rhino, tiger and its prey base and birds. Vulture breeding center has recently been established with an objective to revive the dwindling population of two species of vultures in the wild.

Since its inception, BCC has been instrumental in assisting local communities living on the periphery of CNP to plant and



regenerate degraded forest land into green corridors, thereby, reinstating frequent visits and resettlement of endangered species like rhinoceroses, tigers and other wild animals and bird species within the rehabilitated area. It has also provided ample resources for the

local communities living within the buffer zone for community development activities.

BCC is also supporting local communities by providing diversified economic options such as capacity building, income generation, alternative energy, and health and sanitation.

Major focus of BCC

- Natural resource conservation has been the major focus of BCC. It has been involved in monitoring of tigers, rhinos, ungulates, birds and vegetation in and around CNP. Tiger/Rhino census is held in every five years in the CNP. Similarly, a long-term monitoring program has been designed with establishment of permanent vegetation study plots and transects lines for wildlife observation in different habitats of CNP and Barandabhar Corridor Forest (BCF). Under wildlife management program BCC has provided technical support in translocation of rhinos from the Chitwan National Park to the Bardia National Park and Suklaphanta Wildlife Reserve and blue bulls from Lumbini to the forest of Banke District. BCC has helped to capture problem animals such as man-eater tigers and has helped in medication of rhinos, elephants, leopards, wild water buffalo and other wildlife species. It provides support to the Elephant Breeding Center and Gharial Crocodile Breeding program of the Department of National Park and Wildlife Conservation.
- Under its forestry program, degraded land in Baghmara, Jankauli, Kumrose, Kathar, Bhandara, Piple and Ratna Nagar have been restored through active local participation. Consequently, park animals have colonized the extended habitats, which has helped to enhance the biodiversity of the area. Seedling of fruit, fodder, fuel wood and timber species have been distributed to encourage local community in income generating activities. Community forests are fenced to prevent livestock grazing and improve regeneration.
- One of the major achievements has been single species research to landscape level





research where a number of Ph.D and Master thesis have been produced. It has also organized several national and international workshops, training and seminars.

- Endowment fund has been provided to support anti-poaching operation, mobile patrolling and to create awareness and to encourage involvement of local people in anti-poaching activities.
- To reduce the pressure on the forests due to extraction of fuel wood, alternative energy devices such as biogas, improved cooking stoves and husk stoves are constructed and distributed to the communities living on the fringe of CNP.
- Under community development program, Savings and Credit groups and cooperatives, above and below the east–west highway, have been established and are on the process of registration. Support is provided to develop and improve community infrastructure such as school buildings, bridges, culverts, village roads and community buildings.
- Livestock development and vaccination program is initiated to reduce the number of unproductive livestock and to minimize risk of transferable diseases from livestock to wildlife and vice versa. Moreover, BCC has also introduced and distributed improved hybrid animals such as bulls, buffaloes and goats. Endowment fund for the Padampur Veterinary Center has been established for long-term sustainability of the center.
- Under health and sanitation program, endowment fund has been established for Pancharatna Health Center, Bacchauli Community Sub-Health Post, Saheed Ganesh Sub-Health Post and Patihani Sub-Health Post. The fund along with the regular income contribute towards the sustainable operation of these health centers.
- Through the heritage conservation program, construction of Tharu Cultural Museum was undertaken to promote sustainable tourism. Endowment fund was provided to Tharu Gurau Samuha (indigenous medicine practitioners) to promote the indigenous knowledge of the Tharu Community.



- Under capacity building program, user groups receive training in monitoring, evaluation and management, school students in environmental awareness, overseas students in community participation, wildlife and vegetation studies, as well as in ethno-botany, conservation biology and wildlife management and community-based ecotourism respectively. Training has also been provided to students from different academic institutions from across the country.

- With an aim to create awareness in conservation, Green Force Clubs and Environmental Teacher's Forum are formed. Fencing materials to schools for greening their premises and school material support are provided. Radio program on conservation education are aired via local FM radio fortnightly. Financial support is provided for the education of Disadvantage Group (DAG) children and other school children.



- Under women development program, women are encouraged in income generating activities. The poorest of the poor women are given wool spinning training and each trainee is provided with spinning wheel. They also receive pig farming training in which each trainee is provided with piglets as seed animals. Women also receive handicraft training, candle making training. Adult literacy classes are conducted in order to teach the local women to read and write in Nepali. In order to empower them, legal advocacy trainings are also conducted so that they are aware of their rights.



Bardia Conservation Programme (BCP)



NTNC's involvement in Bardia started in 1986 with the translocation of the first batch of rhinoceros from Chitwan National Park. The Bardia Conservation Program (BCP) was launched in 1994 as a regular project of NTNC focusing on biodiversity research and sustainable community development. BCP has been promoting biodiversity conservation in and around Bardia National Park (BNP) by strengthening the capacity of local institutions responsible for natural resource management. Besides, it also promotes sustainable agriculture and forestry, animal husbandry and livestock management, natural forest regeneration, alternative income generation schemes and nature-based tourism. BCP has also been supporting national and international students to conduct field research.

BCP successfully completed wildlife research project on prey and predator relationship, wild Asian elephant and gharial crocodiles. A series of scientific papers have been published on the research done in the Park. Similarly, short and long term training program are regularly organized for national park staff to enhance their capacity to carry out wildlife research and monitoring. Other research and monitoring activities include short and long term studies on ungulate populations mainly spotted deer, swamp deer, blackbuck, hog deer and barking deer, Gangetic dolphin, vegetation ecology and dynamics, and socio-economic status of the communities in the buffer zone.

On the other hand, BCP has been successful in integrating conservation and development work in south-western buffer zone of BNP with a focus on community forestry, alternative energy promotion, ecotourism, women development, conservation education, rural infrastructure improvement, community health services and rural livelihood improvement program. Activities related to institutional strengthening of users' groups and users' committees formed to carry out various conservation and development activities are regularly undertaken.



Major focus of BCP

- Under natural resource conservation program, severely degraded forest lands within the Bardia - Katarniaghat forest corridor that maintains effective linkage between BNP and Katarniaghat Wildlife Sanctuary in India has been restored through local participation. This has ensured the safe movement of wild elephant, rhino and tigers between these two protected areas which is being monitored on a regular basis.
- Research and monitoring program being its major focus, BCP regularly provides financial and scientific assistance to conduct doctoral, graduate and undergraduate studies. BCP also provides financial and technical supports to conserve and manage the only wild population of black buck in Khairapur, near Bardia District headquarters. BCP is actively involved in biodiversity research - mainly tigers, leopards, rhinos, ungulates, birds and vegetation. Techniques for monitoring key wildlife species inside the national park have been developed and field tested and is operational.
- To address the wildlife-people conflict, BCP has assisted the local communities to diversify their cropping pattern by planting unpalatable crops like mentha and lemon grass and has been supporting the communities to establish processing plants to add value and increase their income. Besides this, electric fences are being constructed along high wildlife affected borders of the BNP.
- To reduce pressure in the forest land, financial and technical support are being provided to install biogas plants in the southwestern Buffer Zone of BNP through its alternative energy program.
- BCP produces plant seedlings of multipurpose tree species every year for private and community plantations.
- Aiming to enhance the capacity of the local women, sewing and tailoring training program are regularly conducted under women development program. Local women





from various ethnic groups benefit from other women development activities such as skill enhancement training, awareness workshops, promotion of women's health and sanitation, micro-enterprise development and nature conservation.

- Under capacity building program local farmers are trained in hybrid livestock keeping (pig, poultry and goat), vegetable farming, bee keeping, fishery, agro-forestry, natural forest management, alternative energy scheme, and livestock management.
- With the dual purpose of cultural and heritage conservation and to promote community based tourism, BCP has constructed Tharu Cultural Museum building at BNP headquarters, Thakurdwara and wildlife viewing tower. BCP also conducts regular nature guide and lodge management trainings among local youths and local lodge owners, respectively. Tharu cultural groups are supported to conserve indigenous Tharu culture.
- Community health centers have been established in the southwestern buffer zone. Endowment fund has been provided to sustain the health centers which would directly benefit local people who totally depend on these centers for basic health services.
- BCP supports local schools for school greenery program and to improve their infrastructure through the conservation education program. To promote literacy among young non-school going children, scholarships are provided to entice them to attend school.



Suklaphanta Conservation Program (SCP)



NTNC started its conservation activities, mainly wildlife research and monitoring, in the Suklaphanta Wildlife Reserve (SWR) in 1999. Regular activities are being carried out since 2002. The main objective of the Suklaphanta Conservation Program (SCP) is to monitor and conduct research on the natural resources of the Reserve.

SWR has been identified as a potential site for the piloting the sanctuary approach to conserve the one horned rhinoceros. SCP also strives to enhance the capacity of the local people to safeguard endangered wildlife species, mainly the tigers and their habitats and prey base in and around the Reserve along with improving

the livelihood of marginalized communities, mainly Janajati and Dalits in the Buffer Zone (BZ) area.

The major initiatives undertaken to fulfill project objectives by building capacity of the local communities through promotion of conservation awareness, wildlife-people conflict mitigation, community health services, improvement of local school facilities, rehabilitation program, micro-enterprise development schemes, women development activities, alternative energy schemes, community forestry and promotion of eco-tourism.



Major focus of SCP



- Natural resources conservation is the major activity of SCP and has been monitoring wild animal populations like rhino, tiger and Barasingha (Swamp deer, *Cervus duvauceli*) in collaboration with SWR. SCP also supports the Reserve to carry out bio-diversity surveys in the Reserve. SCP provides financial support to the Reserve to improve wildlife habitat and has also made a provision for a relief fund to support victims of wildlife attack in the buffer

zone areas. SCP has a forest nursery to produce seedlings of multipurpose tree species for private and community plantation.

- Aiming to reduce pressure in the reserve as well as in BZ forests, alternative energy devices, such as biogas plants have been promoted through its alternative energy program.
- Under community development program, low-cost toilets are promoted in pilot project areas to improve sanitation and hygiene conditions of the local people. SCP has assisted the local community to improve access road networks in the rural areas.
- SCP has been supporting university students (B. Sc and M. Sc) to conduct research in the reserve and its Buffer Zone area to address the data gap.
- To improve general health, regular health check-up programs are conducted and medicines are provided free of cost. SCP also provides mother and child health care training to women volunteer health workers.
- Under the livestock development program, veterinary training has been provided to the reserve's veterinarian and financial support has been granted to establish a veterinary



medicine center at Badaipur. A revolving fund has been established for the center to procure required medicines.

- Under agriculture program, seasonal and off seasonal vegetable farming training is organized for members of vegetable farming group. In addition, seed money is provided to sustain the program after the termination of project support.
- Under the capacity building program, nature guide training for local youth of Buffer Zone are undertaken.
- In order to empower the women, gender sensitization and advocacy program are organized. Local women receive training on income generating activities which help them to uplift their living standard through economic opportunities.
- Under school infrastructure development program, local schools are supported for renovation of school building, toilet construction, and drinking water supply. Under conservation education program, Green Force Clubs are formed and provided supports for education materials and school greenery program. Endowment fund has been established to provide scholarship to school students (especially girl students) belonging to the marginalized groups.



Central Zoo



In December 1996, Government of Nepal entrusted the management of Nepal's Central Zoo, the only zoo in Nepal, located at Jawalakhel in the Kathmandu Valley to NTNC, with the aim to develop the Central Zoo as a center for ex-situ wildlife research and conservation education.

The Central Zoo, with an area of about 6 ha., provides shelter to a total of 870 individual mammal, bird, fish and reptile of 109 species. It also serves as recreational center for the visitors. Central Zoo uniquely serves as a historical cultural site for diverse groups of people.

Over one million visitors come to enjoy the displays at the Central Zoo annually. The main source of income has been the revenue collected from the entry ticket sales. With an aim of generating public awareness and participation in nature and wildlife

conservation, the Central Zoo has been successfully running a special membership-based program called the "Friends of Zoo" (FOZ) with a network of schools in Kathmandu Valley. The animal management unit is improving and enriching the enclosures to provide better habitats for the zoo animals and are now in a better situation with the operation of a recently established "Animal Hospital". New displays, of national and international species, are often added in order to educate and to introduce the visitors to the different wild species from within the country and abroad.

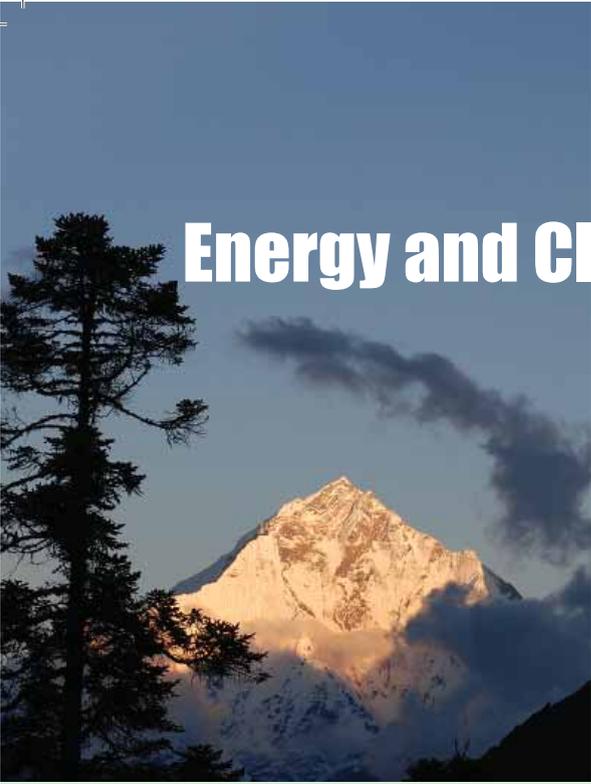




Major focus of Central Zoo

- One of the focuses of the zoo is to serve as a conservation education center in an urban environment. In order to facilitate the process, the zoo undertakes various interactive conservation education activities such as zoo guided tour, keepers talk program, treasure walk and zoo patrolling and publication of various manuals, books and posters for these events.
- Since its management handover to NTNC, under the FOZ program, a total of 22,000 members from different school have enrolled among which 3,000 are actively participating in various conservation programs. Educational tours, contests, training on different subjects and animal feeding programs are organized to enhance their knowledge about caring for wild animals. In addition, a FOZ teacher committee has also been formed and is working together with the Zoo in order to strengthen the relationships with the schools.
- Another focus is the animal management program. Different mammals, reptiles, fishes and birds are on exhibit at the Central Zoo. As a routine animal care and management practice, vaccination, parasitological examination and de-worming of animals in the zoo are being regularly carried out. A new "Animal Hospital" with additional facilities for the zoo animals has been constructed and is operational. To improve the living environment of the animals, a number of old enclosures have been demolished, some were renovated and new ones constructed. Exhibit enrichment materials are added on a regular basis.
- To add new wildlife species, the Central Zoo has an animal exchange program with a number of zoos abroad. The zoo also collects representative species from within Nepal that are not exhibited at present.
- With an aim to increase the flow of visitors, a number of recreational and physical facilities are regularly being improved. The major attraction has been boating, fishing and elephant ride. Central Zoo has been facilitating different workshops, seminars and trainings to a wide range of people including high level zoo executives from different parts of the world.
- As an ex-situ conservation center, the zoo has also embarked on captive breeding of wildlife. Among others, the major species that have successfully bred in the zoo are deer, black buck, hippopotamus, tiger, wild buffalo, Simang and leopard cat.





Energy and Climate Change

Climate change is the biggest emerging environmental challenge to date. Increasing scientific evidence, including the highly acclaimed fourth climate change assessment report by the Intergovernmental Panel for Climate Change (IPCC), has reaffirmed that the earth's atmosphere is already saturated with greenhouse gases, and that additional emissions will lead to disaster on a global scale. Several basic indicators in our surroundings, such as steady rise in temperatures, increasing concentration of greenhouse gases in the atmosphere, and growing weather or climatic uncertainties, show the collective effects of these changes. Climate change impacts lives and livelihoods, particularly of economically poor and climatically sensitive countries like Nepal.

In Nepal, we have seen our usual winter rains vanish and replaced by dry winters for the last couple of decades. Farmers have observed changes such as early flowering and ripening of crops and fruits by an average of two weeks. Southerly winter fogs have extended to Himalayan foothills, and haze is more intense over Nepal's mountain regions. These anecdotal evidences indicate that climate is changing in Nepal, but further scientific validation is required.

Although Nepal's share in polluting the atmosphere is negligible, its physical characteristics, geographic position, topography, and weak socio-economic conditions make it a highly vulnerable country to the impacts of climate change. Lack of information on the looming crisis resulting from climate change and the inability to develop viable adaptation measures to address these crises are key concerns for Nepal. Moreover, poverty and difficult terrain conditions serve as bottlenecks for addressing climate change. Thus, climate change has emerged as yet another hurdle to Nepal's progress in the path of development and nature and conservation.

The general principle is that any natural or human-induced risks affect the weaker, poorer, or marginalised people the most. This is because their level of exposure to risk is higher and their ability to cope with the stresses is lower. Thus, Nepal's poorly developed districts and socio-economically marginalised families are more prone to the impacts of climate change.

How can we best cope with the challenges imposed by climate change? Educating the public on emerging issues of climate change is a first step. Assessment of risks and vulnerabilities at the local level is essential to plan and implement adaptation and mitigation policies. This, however, can only be achieved by overcoming three challenges: investing in research and education, securing international funds that are set aside for disbursement to vulnerable developing countries, and placing the issue of climate change on national priority.

Given Nepal's geophysical conditions, it can benefit by:

- promoting water saving technologies, models and practices
- preventing erosion and soil loss through improved land-use practices

- promoting research and education on climate change
- developing alternative road access, such as ropeways
- expanding forest cover and participating in carbon trading
- setting policies to promote and transfer efficient renewable energy technologies.

NTNC's work on climate change includes raising awareness on the impact of climate change on biodiversity, natural resources and livelihoods. NTNC also advocates international policies that favor community adaptation and mitigation in Nepal.

Kyoto: Think Global, Act Local

The project 'Kyoto: Think Global, Act Local' has been extended to 2009 after the Dutch Government agreed to provide funding for two years for its fourth phase starting mid-2007. Accordingly, NTNC signed an agreement with ICIMOD, the regional partner of the project, and will implement the project in Nepal. Some key activities of the project are follow-up biomass survey through active participation of communities in Lamatar-Lalitpur District, Ilam District, and Manang District; advocacy and networking with national government and other agencies; and dissemination of research findings among the public.

Contribution to Policy Dialogues

Based on findings of the 'Kyoto: Think Global Act Local' project, NTNC supported MFSC in preparing the R-PIN (Readiness Project Idea Note) and submitting it to the World Bank in response to the Bank's call for proposals from developing countries to participate in REDD preparedness initiative. The R-PIN proposed a budget of US\$ 1 million for various capacity building components. KTGAL research findings and experiences proved very useful in developing the proposal.

NTNC also contributed to the dialogue for developing Nepal's view on REDD policy processes as per the decision of the Bali Conference. As part of the consultation process, Ministry of Environment, Science and Technology (MOEST) hosted consultation meetings among government and non-government agencies working in forestry and climate change to reflect Nepal's priorities and strategies in the process. Accordingly, MOEST submitted their viewpoint to UNFCCC Technical Committee in March 2008.

Awareness Raising on Climate Change

On request from local and national organisations to raise awareness on climate change issues and impacts, NTNC researchers presented papers at numerous local, regional and national seminars and workshops held in various parts of the country.



Bagmati River Conservation Project



The Bagmati River and its tributaries were instrumental in developing the Kathmandu Valley civilization. There is rich cultural heritage along the Bagmati River. Moreover, the river system currently serves as the source of water supply to nearly two million people living in the Valley.

Within the past few decades, the Bagmati River system has degraded rapidly as a result of rapid and unmanaged urbanization, particularly in Kathmandu Valley. Recent CBS data indicate that annual average growth in Kathmandu is 4.71%. There is heavy pollution of the river as a result of dumping raw sewage, uncontrolled extraction of sand, and land encroachment. One key indicator of declining river health is the disappearance of Asla (*Schizothorax progastus*)—a fish species regarded as a biological indicator of clear river water—at the point where the river enters into Kathmandu's settlement zone.

Several organisations are working to restore the Bagmati River system: government, non-government, and civil society. However, their work is conducted in a piecemeal manner that has resulted in weak governance in restoring and

conserving the Bagmati River system. Thus, the river continues to degrade and its water quality has reached a critical stage requiring urgent and immediate attention.

The Bagmati River Conservation Project was launched in 2007 with financial support from UNEP, Bangkok and recently by UN-HABITAT to restore and conserve the Bagmati River system. This is a joint project of the Government of Nepal and NTNC. The project's major activities are:

- document major roles and efforts of key actors in the Bagmati River system and assess their initiatives and strengths;
- develop pilot demonstration projects with viable technological options and assess their feasibility for replication; and
- synthesise all available research and plans into a single comprehensive, scientific and practical action plan.

NTNC is responsible for formulating the Bagmati Action Plan, which will be a guiding document for facilitating systematic and scientific interventions in the future. The Plan will be developed in collaboration and consultation with key stakeholders. A team of experts is visiting field sites, reviewing and analysing various documents, and consulting with stakeholders to prepare the draft Action Plan. Upstream and downstream issues in the river system will also be included in the Plan. NTNC is drawing upon its more than two decades of experience in resource management to prepare the Action Plan.