

Nepal's Buffer Zone Programme: A Showcase of a Participatory Approach to Protected Area Management

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Abstract

Protected area management is now focused on meeting people's basic needs so that resource use pressures on parks/reserves decrease. The buffer zone programme has made remarkable progress, particularly in natural resource conservation, social mobilisation and social capital generation, development of alternative energy, and human resource development at the community level.

The institutionalisation of different community-based organisations in buffer zones is a stepping stone towards empowering and involving people in resource management. Revenue sharing in buffer zones is considered to be an important factor in reducing park-people conflicts and enhancing the community's perceptions about protected areas. User group formation at settlement level is found to be very effective in improving social integration and encouraging a high level of people's participation. The participatory decision-making processes of buffer-zone institutions have made the people more accountable to buffer-zone communities. Capital generation and mobilisation is one of the key components of community development initiatives.

For the sustainability of the institution and programme, it is strongly recommended to improve buffer-zone legislation, forging partnerships with all relevant partners, establishing sustainable funding sources, and strengthening the buffer-zone networking forum in order to share experiences among various stakeholders laterally and vertically. Furthermore, it emphasises improvement in management capability by providing training for community and staff at all levels. It is also suggested that a spatial strategy be introduced for promoting each protected area and developing a plan that is pro-poor, pro-women, and pro-special target groups. Adequate conservation awareness and outreach and skill enhancement programmes should be designed to meet the needs of the target groups and encourage local people to be custodians for the conservation of resources.

Introduction

Nepal, a magnificent land of biological, cultural, and ethnic diversity, lies in the central part of the Great Himalayan Chain. The country is sandwiched between the Tibet Autonomous Region of China to the north and India to the south, east, and west. The Himalayan Kingdom is positioned at the interface of the Indo-Malayan and Palaeartic biogeographic realms and contains 4 of 200 global ecoregions. By virtue of its geographical location and sharp altitudinal variation ranging from the lowland Terai (<150m) in the south to the superlative grandeur of the high Himalayas, including Mt. Sagarmatha (8,848m), in the north, Nepal hosts a wide variety of species of both flora and fauna and displays a unique ecological spectrum which is of global importance.

Over time, the situation in the lowland Terai has changed due to unprecedented population growth and mass migration of hill people on the promise of new land after the eradication of malaria from the Terai in the sixties. The average population growth

rate in this area in the past was 2.38% (Ninth Plan, NPC 1998). Heavy pressure was exerted on the natural resources to meet the growing needs of the people. As a result, most of the luxuriant sub-tropical forest began to decline or was fragmented following the clearance of pristine wildlife habitats for human settlement and national development. Big game animals also began to disappear due to rampant poaching and other insidious human influences. The influx of migrating hill people aggravated the problems, particularly in the Chitwan Valley, so that about 60% of the forests were cleared to establish settlements and national infrastructure. The protection of threatened species, such as rhinoceros and tigers, and their habitats has become a need of utmost importance and an uphill task.

This paper provides a brief description of the evolution of Nepal's protected area system and its adaptive management and presents a participatory model for managing the resources of protected areas for long-term viability.

Biogeographical features of Nepal

Nepal (which lies between 80° 13' 46" and 88° 14' 23" longitude and 26°10'57" and 30°35'07"latitude) encompasses an area of 147,181 sq.km. Broadly speaking, it has five physiographic zones: i) the Terai, ii) Siwaliks, iii) mid-hills, iv) high mountains, and v) high Himal. The Terai occupies approximately 23% of the total area of the country, whereas the hills and mountains cover 42% and 35% respectively. Nepal has 11 bioclimatic zones that range from tropical to nival and covers four ecoregions; namely, the Eastern Himalayan Broadleaf and Conifer Forests, Terai-Duar Savannas and Grasslands, Eastern Himalayan Alpine Meadows, and Western Himalayan Temperate Forests. There are more than 36 wetland sites; they serve as important wintering grounds for migratory and resident birds.

Phyto-geographically, Nepal is a meeting place of eastern and western Himalayan flora. Between these extremities, 118 types of ecosystems, 35 forest types, and 75 vegetation types have been identified, ranging from the luxuriant sal (*Shorea robusta*) forest of the Terai to the highland pastures and treeless zones of the trans-Himalayas (Stainton 1972). Floristically the Nepal Himalayas are rich and are the home of many species of orchids and medicinal and aromatic herbs. About 370 plant species are endemic to Nepal, several of which are endangered. Nepal contains about 2% of the flowering plants, 8% of the birds, 4% of the mammals, 2.2% of the fish, and 1.4% of the reptiles and amphibians found on earth, although it only occupies 0.1% of the global landmass (Table 1).

Table 1: Status of biodiversity in Nepal			
Flora		Fauna	
Angiosperms	5160	Birds	844 ^a
Gymnosperms	28	Mammals	181
Algae	687	Reptiles	100
Ferns & fern allies	380	Amphibians	43
Mosses	463	Fish	185
Lichens	465	Butterflies	635
		Moths	6000
^a Currently 861 species of birds have been recorded by Bird Conservation Nepal (BCN) Source: BPP 1996			

The endangered mammals include the rhinoceros, tiger, wild elephant, snow leopard, musk deer, swamp deer, red panda, and dolphin. Similarly, the gharial crocodile and python are among the endangered reptiles. Common animals include three species of deer (chital, hog deer, and barking deer), common leopard, Himalayan tahr, black bear, sloth bear, monkeys, and others.

Status of protected areas

During the last three decades, Nepal has not just been an exemplary model of conventional wildlife conservation, but has also successfully established a model of participatory management of protected areas by introducing the concept of buffer zones in the peripheral areas of parks. In 1971, the National Parks and Wildlife Conservation Section under the Department of Forest was established to carry out the task of wildlife conservation. The National Parks and Wildlife Conservation Act (1973) was promulgated for wildlife conservation and protected area management in the kingdom. The Royal Chitwan National Park was designated as the first national park in the country for protecting the rich biodiversity of the area and the endangered rhinoceros and tiger. In 1980, the Department of National Parks and Wildlife Conservation under the Ministry of Forest and Soil Conservation was created, in view of the increasing responsibility for wildlife conservation and management of an extensive network of protected areas.

More national parks, reserves, conservation areas and buffer zones were established in the mountains and Terai after the establishment of the Royal Chitwan National Park. This trend continued and protected area coverage increased tremendously by 194% and 98% in the periods 1981-90 and 1991-1998 respectively (Annex 1). These protected areas encompass representative examples of various ecosystems in the Kingdom, extending from the tropics of the lowland Terai to the Himalayas and trans-Himalayan region. They cover a total area of 28,149 sq.km., which is over 19.4% of the total land area of the country. Today, there are nine national parks, three wildlife reserves, three conservation areas, one hunting reserve and buffer zones of nine national parks and wildlife reserves (Annex 2).

Among these protected areas, Sagarmatha and Chitwan were designated as World Heritage Sites in 1979 and 1984 respectively. Koshi Tappu Wildlife Reserve, Bishazari Tal, Ghodaghodi Tal, and Jagadishpur Reservoir were listed as Ramsar Sites in 1987 and 2003.

Conservation policies, legislation, and plans

The Constitution of Nepal 1990 states that the:

“State shall give priority attention to the conservation of the environment... and also make special arrangement for the conservation of rare animal species, the forests and the vegetation of the Kingdom” [Article 26 (4)].

The Nepal Environmental Policy and Action Plan 1993 underlines the importance of preservation of endemic and endangered species and their habitats, the promotion of private and public institutions for biological resource inventory and conservation, and the strengthening of the capacity of the Department of National Parks and Wildlife Conservation. The National Conservation Strategy for Nepal 1987 emphasises sustainable use of natural resources and compatible land use.

The Master Plan for the Forestry Sector (1989), which is the main forestry policy, stresses that:

“..... representative examples of ecosystems unique to Nepal, areas of special scientific, scenic, and recreational or cultural values will be protected. Maintenance of the ecological and environmental balance and biological diversity is needed for the sustained well-being of the nation..... Tourism that affects protected areas will be regulated and kept within the carrying capacity of the local ecosystems.”

Besides the ‘Plan for the Conservation of Ecosystems and Genetic Resources’ (MPFS 1989), one of the primary sectors of the Forestry Master Plan deals with in situ and ex situ conservation of biodiversity. It has formulated relevant policies on conservation and designed programmes for effective management of protected areas.

Likewise, the Nepal Biodiversity Strategy (NBS 2002) emphasises the importance of resource conservation, sustainable use, and fair and equitable sharing of benefits. The strategy also focuses on five key areas: forests (protected area, community forestry, and non-timber forest products, wetlands, rangelands, mountain biodiversity, and agrobiodiversity (livestock genetics). The document equally emphasises the importance of the landscape approach and integrating people’s participation in conservation planning and resource management.

The Wetlands Policy (WP 2003) places value on the conservation of wetland biodiversity and its wise use through participatory management of wetlands. It further emphasises the need to identify and classify the wetlands of Nepal and has identified six types of wetland based on management regimes: community-managed wetlands, private wetlands, leasehold wetlands, collaboratively managed wetlands, religious wetlands, and government-managed wetlands.

In 2003, His Majesty’s Government of Nepal promulgated three important policies related to conservation and management of protected areas in order to promote public-private partnership in conservation and to facilitate the sharing of benefits from conservation to improve the standards of living of the poor. These policies are: Wildlife Farming, Breeding and Research; Captive Elephant Management; and Contracting the Management of National Parks, Reserves, and Conservation Areas to non-government organisations (NGOs) 2003.

The National Parks and Wildlife Conservation Act (1973) provides the legal framework for wildlife conservation and the management of protected areas. The Act has defined various categories of protected areas and listed 26 species of mammals, 9 species of birds, and 3 species of reptiles that are endangered as protected species of Nepal. Several separate byelaws and guidelines have been framed to strengthen the effective management of protected areas; among them the Royal Chitwan National Park Rules, Himalayan Park Rules, Conservation Area Rules, Buffer Zone Management Rules, and Buffer Zone Management Guidelines.

Since sustainable conservation is not conceivable without active participation of the local community, the National Parks and Wildlife Conservation Act was amended in 1993 to accommodate people’s involvement in conservation. This amendment has become a marker in protected area management for switching from a conventional approach to a collaborative one in which sharing revenues and people’s participation became mandatory.

The government's periodic plans also accentuate the sustainable use of resources and involvement of local people in conservation of biodiversity. For example, the Eighth Five Year Plan (1992-97) (NPC 1992) stresses the conservation of ecosystems and genetic resources through equitably sharing the benefits with local people, whereas the Ninth Five Year Plan (1997-02) put priority on the development of a protected area management plan, involvement of stakeholders in preparation of conservation legislation, and implementation of environmental impact assessment guidelines. The Tenth Five Year Plan (2002-07) emphasises sustainable use of natural resources for poverty reduction or improvement in rural people's living standards.

Species' conservation plans, such as the 'Tiger Conservation Plan for the Kingdom of Nepal (DNPWC 1999)' and 'Terai Arc Landscape Strategy and Management Plans for Chitwan and Bardia National Parks', have been approved and several more are being prepared.

Conventions and conservation partners

Nepal is a State Member of the World Conservation Union (IUCN) (1974); a State Party to the Convention on International Trade in Endangered Species of Flora and Fauna (CITES) (1975); and a member of the World Heritage Convention; the United Nations Educational, Scientific, and Cultural Organisation (UNESCO) (1978); the Wetland Convention (1987); the Convention on Biological Diversity (1992); and the Global Tiger Forum (2001). There has been important assistance from the World Wildlife Fund (WWF) and the United Nations Development Programme and Food and Agriculture Organization (UNDP/FAO) from the very beginning in wildlife conservation. Several conservation partners (UNDP, WWF, the UK Department for International Development [DFID], Netherlands Development Agency [SNV], IUCN, and King Mahendra Trust for Nature Conservation) are supporting Nepal's conservation efforts. Nepal is also promoting transboundary cooperation in conservation with its neighbouring countries since wildlife do not recognise political boundaries.

Evolutionary changes in protected area management

An approach of adaptive management of protected areas has been taken considering the needs and emerging challenges faced by the management and also to suit local conditions. In the early stages of development, there was a dire need to protect endangered species of wildlife and their habitats, as their populations were declining fast as a result of mounting anthropogenic pressures on forest resources. Hence, the major focus was on species' conservation for their revival, as they were under constant threat from rampant poaching and habitat degradation.

The strict law enforcement practices in protected areas proved successful in controlling illegal human activities in the core areas and in facilitating the significant growth of wildlife populations. For example, the rhino population has reached an estimated 612 (Rhino Count 2000) from less than 100 individuals. However, it also gave rise to conflict between the park management and local people over the use of forest resources and the damage caused by wildlife.

These protected areas have been developed as popular tourist destinations for wildlife viewing. Over 60% of tourists coming to Nepal visit protected areas for trekking, mountaineering, and wildlife observation. As a result, tourism has become a major source of income to most of the protected areas, and it serves as the financial backbone for the implementation of buffer zone programmes (Table 2).

Table- 2: Annual visitors and revenue in protected areas

Fiscal year	No. of visitors	Revenue (NRs.)
1995/96	111,211	77,072,353
1996/97	152,252	72,395,881
1997/98	139,286	79,247,543
1998/99	148,728	89,599,892
1999/00	163,574	93,502,138
2000/01	161,020	134,098,495
2001/02	124,108	67,220,748
US\$1= NRs 56 (1996); NRs 77 (2002) approx . Source: DNPWC (2002)		

Thus, Nepal's experience has shown that strict law enforcement alone is not enough for effective wildlife conservation in the long term. While the use of forest resources has degraded wildlife habitats, poaching has threatened the loss of several species. In the process of seeking local people's support while meeting their needs, local residents have been permitted to collect grass and reeds from protected areas of the Terai annually to meet their basic household needs.

Likewise in mountain national parks, local people's traditional practices of using forest products were legitimised by the Himalayan National Park Regulations 1979, permitting local people to collect firewood and fodder and graze their livestock on a rotational basis. In all protected areas, annual consultation meetings were held with local communities to improve park-people relationships and generate public awareness about the importance of conservation.

A participatory approach was adopted in the early 1990s with the introduction of conservation areas based on the principle of integrated conservation and development. The Annapurna Conservation Area Project was established in 1986 and the responsibility for its management was entrusted to the King Mahendra Trust for Nature Conservation in partnership with the local people. In this respect, the fourth amendment to the National Parks and Wildlife Conservation Act made in 1993 is a landmark in biodiversity conservation, especially in light of the policy shift from a conventional approach to management to a participatory one in which local people are recognised as partners in biodiversity conservation.

Another gradual but major policy change has been the embracing of a landscape approach in conservation planning in order to provide larger habitats for mega wildlife species and ensure the long-term survival of endangered wildlife species. This approach is based on the belief that the larger the habitat the better the chance of survival of a species in the long run. His Majesty's Government of Nepal has implemented the Terai Arc Landscape Programme in collaboration with WWF Nepal and the Western Terai Landscape Programme with the support of SNV and the UNDP and Global Environment Facility. The evolutionary policy changes can be summarised as follows.

1970s	-	More focus on species or strict protection
1980s	-	Participatory approach/Integrated Community Development Project (Conservation Area)
1990s	-	Buffer zone concept (revenue sharing)
2000 onward	-	Landscape-level conservation, partnership, and so on

Buffer zone concept and policy context

Protected areas are the cornerstone of the conservation movement. They are at one end of a spectrum of land use ranging from strict protection to multiple use. The overarching goal of the protected area system is to showcase the relevance of protected areas to sustainable development as well as biodiversity conservation and to secure the benefits of the enduring resources of protected areas for present and future generations. Successful integration of protected area management with local community development requires systems to encourage the involvement of local people at all levels and designed to suit local needs.

Today protected areas are perceived as community assets and tourism as a means to help local economies. Protected areas, therefore, are a crucial element in achieving sustainable development and contributing to global goals – for instance those proposed by the World Summit on Sustainable Development and the United Nations Millennium Development Goals (5th IUCN World Parks Congress 2003) In addition, most countries have enacted conservation laws, established institutions and created protected areas to deal with the issues. There has been a global recognition that local communities must be actively involved and their needs and aspirations considered if biodiversity is to be conserved and sustained. Community-based conservation involves management of biodiversity by, for, and with local communities.

Biodiversity is a vulnerable resource and will suffer from pressure. If people in and around a protected area lack adequate economic alternatives, their survival strategies are likely to threaten resources inside the protected areas. It is a universal fact that damage to crops and property by wildlife is one of the most widespread and significant problems faced by frontline communities living in or next to protected areas. Thus, the management approach has been tailored from an absolute conventional type of preservation to a participatory one.

Today there is more emphasis on people's participation in the management and strengthening of community institutions to ensure the sustainability of protected areas. Though the notion of participation was brought into focus in the 1930s, it is only since the late 1960s and 1970s that the concept started to be used in the context of the newly-developed sub-discipline of development administration (Garcia-Zamor 1985).

Nepal's experience has also shown that sustainable conservation is possible only with people's involvement. The country has developed a strong foundation in community-based conservation, management of natural resources, and livelihood development. This provides a critical platform upon which to build. People-centred programmes in the buffer zones of protected areas and community forests in productive areas have been implemented throughout Nepal. Thus, the fourth amendment to the NPWC Act not only made a provision for designating buffer zones around parks/or reserves but also for sharing park revenues for community development and to improve natural resource management. The buffer zone programme, therefore, is aimed at institutionalising community-based organisations; improving the livelihood conditions of buffer zone communities; and contributing significantly to biodiversity conservation by reducing prevailing conflicts through forging partnerships with local communities.

Buffer zones have been defined as designated areas surrounding national parks or reserves within which the use of forest products by local people is regulated to ensure sustainability. In other words, it is practically an impact zone. The buffer zone may

contain forests, grasslands, grazing lands, wetlands, private, and public land. It is explicitly mentioned in the legislation that land tenure will not be affected by establishing a buffer zone.

The Buffer Zone Management Rules (HMGN 1996) have clearly spelled out the criteria for designing buffer zones; requirements for management plans and user committees' operation plans; and provisions for community, religious, private, and buffer zone forests. The rules strictly restrict the export of timber from community forests out of buffer zones unless the demands of the buffer zone community have been fulfilled. In addition, it mentions the institutionalisation of community-based organisations and allocation of funds and provides guidelines for planning and prioritising programmes to be implemented in the buffer zone.

The Buffer Zone Management Guidelines (1999) have further simplified the provisions given in the rules to facilitate smooth implementation. The guidelines have made provisions for formation of user groups at settlement level and have fixed a ceiling to the a percentage of the budget allocated for conservation (30%), community development (30%), income generation activities (20%), conservation education (10%), and administrative costs (10%). It has also given added responsibilities for programme monitoring to the buffer zone management committee, the apex body in the buffer zone.

The user committees prepare five-year plans by compiling the needs and aspirations of the user groups. These plans are then compiled to prepare a buffer zone plan which forms the basis for using the buffer zone fund received from park revenue. The activities are implemented by user groups and committees and public auditing; participation is the backbone of success. User committees ensure coordination and organise all the partners working in their area according to the buffer zone regulations and guidelines. The chief warden is the member secretary of the buffer zone council and not only facilitates the flow of funds from the centre to users but also ensures that the fund is used as per the norms. The council, committee, and groups meet as per their needs. The council acts mostly on policy and decisions and the committee is a bridge between the council and users, filling an implementation/facilitation role. Necessary staff members are hired from the local community to assist the programme, and the respective sector offices and range posts support the buffer zone programmes. Partners working in the field also collaborate with the buffer zone organisation to make the programme more effective.

Case study of buffer zones

Secondary information was gathered from the protected areas, a review of relevant literature and documents, the report on the Impact Assessment of the Buffer Zone Programme in Nepal (PCP 2004) and the author's own long experience in protected area management. In the following, the overall buffer zone programme in Nepal is assessed with particular reference to the Royal Chitwan National Park.

The Royal Chitwan National Park, a World Heritage Site, is situated in the lowland Terai of central Nepal. This was the first national park in the country; it has a buffer zone of 750 sq.km. The buffer zone was established in 1996. The park is surrounded by 37 village development committees (VDCs) and two municipalities. Various conservation and community development programmes have been carried out in the buffer zone. Since its inception it has received the largest sum of money of all the buffer zone areas. Community-based organisations have already successfully completed their five-year

terms and buffer-zone institutions have been reorganised according to the Buffer Zone Management Guidelines 1999.

Achievements

Buffer zone coverage and institutions

Nepal's experience in biodiversity conservation has revealed that successful conservation is not possible without local people's support, especially from those living on the fringe areas. His Majesty's Government of Nepal initiated the establishment of buffer zones around the parks/reserves in an endeavour to make local people self sufficient in forest resources and develop their stewardship in conservation. The objective of the buffer zone programme is to reduce biotic pressure in core areas and improve the socioeconomic conditions of local communities by strengthening and mobilising community-based buffer zone institutions.

In this process, over 4,000 user groups, 140 user committees, and eight buffer zone management committees have been formed; they cover 147 village development committees and municipalities and a population of more than 565,000 inhabitants including those in the proposed buffer zones (Tables 3-5).

Table 3: Buffer -zone coverage						
Buffer Zone	Year of Declaration	Area (sq. km.)	No. of Districts	No. of VDCs/ Municipalities	Households	Population
RCNP	1996	750	4	37	36,193	223,260
RBNP	1996	328	2	17	11,504	120,000
LNP	1998	420	3	34	12,509	54,326
SPNP	1998	1349	2	17	2,695	11,600
MBNP	1999	830	2	12	6,000	32,000
SNP	2002	275	1	3	1,288	5,869
RSWR	2004	152	1	11	17,886	100,953
KTWR	2004	173	3	16	10,693	17,950
PWR	2005	298	3	10+1 hamlet	7,228	43,228
Total		4,574	21	157+1 hamlet	10,5996	609,184
KTWR = Koshi-Tappu Wildlife Reserve; LNP = Langtang National Park ; MBNP = Makalu Barun National Park ; RBNP = Royal Bardia National Park ; RCNP = Royal Chitwan National Park ; RSWR = Royal Suklaphanta Wildlife Reserve; SNP = Sagarmatha National Park; SPNP = Shey Phoksu ndo National Park ;						

Table 4: Community institutions in buffer zones										
	RCNP	RBNP	LNP	SPNP	MBNP	SNP	RSWR	KTWR	PWR	Total
BZMC	1	1	1	1	1	1	1	1	1	9
UC	21	15	21	17	12	3	17	8	10	124
UG	1468	83	315	90	88	28	450	434	633	3589
FO	54	76	34	42	73	7	11	69	73	439
BZMC= buffer zone management committee; FO = functional organisation eg., community forest user groups, irrigation user groups, tourism management sub committees, etc; UC= user committee; UG = user group										

Table 5: Number of community institutions proposed in typical buffer zones			
	KNP	RNP	Total
Buffer zone management c ommittees (ad hoc)	1	1	2
User committees	8	8	16
User groups	317	109	426
KNP = Khaptad National Park; RNP = Rara National Park			

Sharing of park/reserve revenue

The government has made a provision for ploughing back up to 50% of the revenue earned by national parks and wildlife reserves. More than 220 million Nepalese rupees have been channelled into the implementation of buffer zone development programmes in four national parks between fiscal years 1995/96 and 2003/04 (Table 6). About 61,494 households and 403,455 buffer zone residents in Chitwan, Bardia, Langtang, and Sagarmatha national parks have benefited from this programme.

Table 6: HMG fund allocation to buffer zones of different parks

Fiscal year	RCNP	RBNP	LNP	SNP	Total (NRs)
1995/96	280,833				
1996/97	24,145,331	1,231,220			
1997/98	24,075,096	3,740,415			
1998/99	27,271,889		2,209,410		
1999/00	30,864,147	3,807,884			
2000/01			4,818,385		
2001/02					
2002/03					
2003/04	70,272,000	8,397,121	7,099,404	12,604,944	
Total	176,909,296	17,183,641	1,41,27,198	1,26,04,944	220,825,000

LNP = Langtang National Park; RBNP = Royal Bardia National Park ; RCNP = Royal Chitwan National Park; SNP = Sagarmatha National Park

The buffer zone of Royal Chitwan National Park has received the largest sum and used NRs 133,500,000 in various activities in the buffer zone. An amount of NRs 43,500,000 remains unused. The trend of present expenditure is in accordance with the buffer zone management guidelines. Previously, NRs 82.7 million was spent on infrastructural development as the people's priority was on community development rather than conservation. Huge amounts of unspent money indicate that the absorptive capacity of community institutions is still underdeveloped in terms of the planning and efficient management of programmes. At present, people's contribution in kind is about 36%, which is less than expected.

Biodiversity conservation facility and community capital

One of the major aims of the buffer zone programme is to improve the socioeconomic conditions of local communities by creating income-generating opportunities. The community savings and credit scheme has become the key to keeping local community groups cohesive and active. Community capital is an internal resource that helps carry out micro-credit based income-generating activities and a large amount of Rs 73 million has been saved and mobilised among the group members with nominal interest. Similarly, the Biodiversity Conservation Facility provided the seed money to communities to promote and develop appropriate rural technology for resource management. About NRs 26 million has been disbursed to seven protected areas where a UNDP-assisted participatory conservation programme is being implemented (Table 7). Mobilisation of such funds has been very popular and successful among the communities. Several programmes are underway to institutionalise mobilisation of such funds through cooperatives. To date, 38 cooperatives have been registered and 60 new ones are in the process of registration.

Table 7: Community capital and biodiversity conservation facility		
National Park/Reserve	Community Savings	Biodiversity Conservation Facility
Khaptad National Park	2,332,646	1,029,599
Koshi Tappu Wildlife Reserve	5,325,638	3,074,364
Parsa Wildlife Reserve	7,134,944	5,849,950
Rara National Park	1,290,167	2,365,892
Royal Bardia National Park	73,613,050	3,616,353
Royal Chitwan National Park	39,573,060	5,894,636
Royal Suklaphanta Wildlife Reserve	11,849,667	4,181,863
Total	141,119,172	26,012,657

Buffer-zone community forests

About 45% of the forest has been identified as buffer-zone forest. Around 42,370 ha of community forests in buffer zones have been handed over to local communities for management and sustainable utilisation of forest resources to meet their needs. So far, 39,200 households are benefiting from the community forestry programme. These community forests have also become extended habitats for several wildlife species (Table 8). Similarly, nine private forests have been registered in Royal Chitwan National Park. After handing over the buffer-zone community forest, dependency on the protected areas for fuelwood has decreased from about 80% to about 60% (PCP Impact Assessment Report, 2004).

Table 8: Buffer zone community forests and beneficiaries				
Buffer Zones	No. of CF (handed over)	CF in hectares	Beneficiary HH	Remarks
KTWR	1			handed over by district forest office
LNP	35	4,572	9,071	in the process of handover
MBNP	88	59,400	6,037	
PWR	6	723	2,075	
RBNP	32	8,935	9,719	46 CF constitutions registered
RCNP	17	2,810	8,424	
RSWR	10	550	2,094	
SNP	4	19,457	278	
SPNP	18	5,324	1,507	
Total	123+88	101,772	39,205	
CF = community forests; HH = households; KTWR = Koshi-Tappu Wildlife Reserve; LNP = Langtang National Park; MBNP = Makalu Barun National Park; RBNP = Royal Bardia National Park; RCNP = Royal Chitwan National Park; RSWR = Royal Suklaphanta Wildlife Reserve; SNP = Sagarmatha National Park; SPNP = Shey Phoksundo National Park)				

The adoption of biogas plants has been very encouraging and successful. Up to 2003, the installation of biogas helped to conserve about 8,000 ha of forest annually, and the same could be used for fuelwood and fodder by the community. Biogas has reduced pressure on park forests; it could reduce the fuelwood demand by 12,000 tonnes annually (PCP Impact Assessment Report, 2004).

Similarly, crop production has increased by about 35% in the Royal Bardia National Park buffer zone and by about 25% in the Royal Chitwan National Park buffer zone

between 1996 and 2003. Cropping intensity increased to about 200% from 150% in both buffer zones as a result of increased irrigation facilities and stall-feeding of livestock (Impact Assessment Report, 2004). Nearly 9,700 people have received various types of training for skill development following the initiation of the buffer zone programme.

Main findings

The main findings from the buffer zone programme reveal that local people have been very motivated towards conservation and have begun to realise the importance of protected areas. It has harmonised the relationship between the park and people residing in the buffer zone, and they have developed a sense of belongingness to protected areas. There are still many more things to be improved in legislation, management, and administrative matters for effective implementation of the programme, however (Table 9). New challenges are emerging in this field of protected area management.

Issues and challenges

Some of the major challenges and issues are summarised below.

- How to mainstream the special target groups so that they form a substantive representation in buffer-zone institutions? At present, their representation in buffer-zone institutions is very low and their participation in decision-making is virtually nil.
- How to keep buffer-zone institutions cohesive and active or self-reliant, since a number of buffer-zone institutions have been formed at different levels with specific terms or timeframe?
- How to achieve the sustainability of the programmes undertaken by the buffer-zone institutions? The sustainability of programmes is always under scrutiny.
- How to motivate the community towards conservation rather than to the development of physical infrastructure? Past records show that infrastructural development has become dominant activity in buffer zones, since the groups are more interested in community development than in conservation because they are more concerned with immediate benefits and are less worried about long-term returns.
- How to strike a gender balance or increase women's representation on user committees and buffer-zone management committees? Women's representatives on user committees and buffer zone management committees are few. Under such circumstances, almost half of the population has been left out in the process of forging partnerships in the programme. And women have little say in resource use and benefit-sharing practices.
- How to cope with compensation for the lands that come into protected areas due to the change of river course/or bank cutting? This issue is proliferating in Terai protected areas and pressure is mounting to provide compensation since the National Parks and Wildlife Conservation Act has made provision for compensation.
- How to sustain the relief support for livestock depredation? The practice of providing relief support to affected families is relatively rare and pressure is mounting for appropriate relief.
- How to address crop compensation to individuals? Incidents and extent of crop damage are increasing in both mountain and Terai protected areas because of the growing population of wild animals.
- How to address the imbalance in revenue sharing among buffer zones? The amount of revenue allocation to buffer zones depends entirely on the income of the individual protected areas, which relies largely on the number of visitors to those areas.

Table 9: SWOT analysis of the buffer -zone programme

<p>Strengths (achievements)</p> <p>General</p> <ul style="list-style-type: none"> • Conservation for the people or people for conservation <ul style="list-style-type: none"> - Management authority given to community-based organisations , people's feeling of ownership - Friendly policy for people's participation (legal base) - Benefit-sharing with community • Community institutions established <ul style="list-style-type: none"> - Buffer zone management committees, user committees, user groups, functional groups, community forest groups, and so on • Improves resource management <ul style="list-style-type: none"> - Buffer zone community forest - Provides forest products to local communities - Livestock management - Conservation programme - Community-level anti-poaching campaign - Additional habitat for wildlife • Funding <ul style="list-style-type: none"> - Sufficient income from the park - 50% sharing of the park revenue - Biodiversity Conservation Fund - Internal community fund - Cooperatives - Relief fund • Enhances sustainable community development <ul style="list-style-type: none"> - Increases economic benefits to the people from tourism development - Resolving conflict • Capacity building <ul style="list-style-type: none"> - Programme planning and management - Buffer zone management plan - Operation plans of user groups - Skill development and income generation opportunities • Others <ul style="list-style-type: none"> - Conservation awareness - Buffer-zone networking forum 	<p>Weaknesses (internal constraints)</p> <p>General</p> <ul style="list-style-type: none"> • Inconsistency in legislation (Act s, Regulations , and Guidelines) • Different interpretation of buffer zone management regulations • Increasing people's expectations and needs • Slow declaration process for buffer zones (institutional conflict of interests) • Distortion of buffer -zone concept • Buffer-zone demarcation • Crop damage and depredation • More focus on physical development • Buffer zone management committee roles and responsibilities very limited • Special target groups not well addressed • Institutionalising Biodiversity Conservation Facility, integrated community forestry, and cooperatives • Capacity building <ul style="list-style-type: none"> - Low capacity of community-based organisations in planning and management - Staff's low level of skill in social mobilisation and community development - Basic training for operating biogas • Natural resource conservation <ul style="list-style-type: none"> - Land-use planning/zone - Encroachment - Accidental fire - Floods - Grazing - Driftwood policy - Slow handover of community forest - Lack of forests for community forest (mountains / Koshi-Tappu Wildlife Reserve) - Community forest's income and production and use not monitored and data not available • Administrative/management <ul style="list-style-type: none"> - Inadequate park staff - Inadequate monitoring of programmes - Inadequate coordination and networking - Monitoring and evaluation - Instalment disbursement of fund - People's participation not as expected - Inadequate physical infrastructure - Absorptive capacity of community • Financing <ul style="list-style-type: none"> - Inadequate resources - Distorted protected area income and its distribution - Difficult to carry small projects due to budget ceiling - Confusion in programme headings in guidelines • Others <ul style="list-style-type: none"> - Low level of conservation awareness - Baseline information/database - Research (ecological & social)
<p>Threats (external constraints)</p> <ul style="list-style-type: none"> • Political instability • Declining trend in park revenue • Low income of some parks/reserves • Compensation provision for river cutting • Encroachment in buffer zone 	<p>Opportunities</p> <ul style="list-style-type: none"> • Working in partnership • Developing alternative resources (fodder, fuelwood, biogas) • Diversifying income-generation activities (eco-tourism, fish farming, poultry, piggeries) • Reaching the poorest of the poor and ethnic groups (Majhi, Bote, Musar) • Mainstreaming gender (women's empowerment and representation in community-based organisations) • Outsourcing of funds

Strategies

The following strategies are recommended for improving the effectiveness and sustainable management of buffer zones in Nepal.

Improve buffer-zone legislation – There is a need to overcome the inconsistency in the Acts, Regulations and Guidelines pertaining to buffer-zone management and include/improve some of the provisions to address special target group representation, user groups, buffer-zone management committees, and compensation issues by amendments.

Initiate consultation for framing policies on crop damage and driftwood – The issue of crop damage and use of driftwood is becoming more prominent day by day. Conducive and sustainable mechanisms should be developed to address these issues in the future.

Institutionalise the biodiversity conservation fund – A large sum of money has been deposited in seven protected areas where the participatory conservation programme is working. This money has not been mobilised properly due to the fact that there is no institutionalised system in place, although some initiatives have already been taken, the process needs expediting.

Expedite handover of community forests – Several community forests have been handed over to communities, but there are still many more to be handed over. Due to the lengthy and tedious process of taking stock/inventory of the forests, it is taking longer than expected to hand over community forests. The inventory process should be simplified.

Focus on mainstreaming gender and special target groups – It is of the utmost importance to focus on gender as well as mainstreaming special target groups through improving legislation and programme intervention to bring these groups on to a level playing field with other groups.

Capacity building through training and awareness – Regular support to increase the capacity of the communities and the protected area staff is essential for the sustainability of the programme as well as of the buffer zone institutions. It is necessary to provide sufficient staff, maintain a database, strengthen the buffer-zone networking forum, and coordinate with relevant agencies to implement the buffer-zone programme.

Seek a sustainable source of funding – In most cases, adequate funding is always a problem. A sustainable source of funding for implementing new programmes and operating the system needs to be identified. Ecotourism should be encouraged in the protected areas and park-people partnerships forged with various stakeholders.

Conclusions and recommendations

Protected area management is now focused on meeting people's basic needs so that the pressure of resource use on parks and reserves decreases. The buffer-zone programme has made remarkable progress, particularly in natural resource conservation, social mobilisation and social capital generation, development of alternative energy, and human resource development at the community level.

The institutionalisation of different community-based organisations in buffer zones is a stepping stone towards empowering and involving people in resource management. Sharing revenue in the buffer zone is considered to be an important incentive to reduce

park-people conflicts and improve communities perception of protected areas. User group formation at settlement level is found to be very effective for enhancing social integration and encouraging a high level of participation.

The participatory decision-making process in buffer-zone institutions has made people more accountable to buffer-zone communities. Capital generation and mobilisation are key components of community development initiatives.

The following are strongly recommended for the sustainability of the institution and programme: improving buffer zone legislation, forging partnerships with all relevant partners, establishing sustainable funding sources, and strengthening the buffer-zone networking forum so that experiences can be shared among various stakeholders laterally and vertically. Furthermore, improving management capability by providing training to community and staff at all levels should be emphasised.

A spatial strategy should be adopted to promoting each protected area and developing a plan that is pro-poor, pro-women, and pro-special target groups. The handover process for community forests should be shortened and community forest laws should be amended to provide economic benefits to poor households and special target groups.

Finally, adequate conservation awareness and outreach programmes are essential. Skills training should be designed to meet the needs of the different target groups and to encourage local people to be custodians for conservation of resources.

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Annex 1: Protected areas established between 1970 and 1998

Protected Area	Area (sq.km)		
	1970-1980	1981-1990	1991-1998
Annapurna Conservation Area		2600	7629
Dhorpatan Hunting Reserve		1325	1325
Kanchenjunga Conservation Area			2035
Khaptad National Park		225	225
Koshi Tappu Wildlife Reserve	175	175	175
Langtang National Park	1710	1710	2130
Makalu-Barun National Park			2330
Manaslu Conservation Area			1663
Parsa Wildlife Reserve		499	499
Rara National Park	106	106	106
Royal Bardia National Park	358	968	1355
Royal Chitwan National Park	932	932	1682
Royal Suklaphanta Wildlife Reserve	155	155	305
Sagarmatha National Park	1148	1148	1148
Shey Phoksundo National Park		3555	4904
Shivapuri Watershed and Wildlife Reserve		144	144
Total	4584	13495	26758
Source: DNPWC (2004)			

Annex 2: Coverage of protected areas

Protected Area	Area (sq.km)	Year Declared	Buffer Zone (sq.km)	Year Declared
Annapurna Conservation Area	7629	1992	.	
Dhorpatan Hunting Reserve	1325	1987	.	
Kanchenjunga Conservation Area	2035	1997	.	
Khaptad National Park	225	1984	.	
Koshi Tappu Wildlife Reserve	175	1976	173	2004
(Ramsar Site, 1987)				
Langtang National Park	1710	1976	420	1998
Makalu-Barun National Park	1500	1991	830	1999
Manaslu Conservation Area	1663	1998	.	
Parsa Wildlife Reserve	499	1984	298	2005
Rara National Park	106	1976	.	
Royal Bardia National Park	968	1976/88	328	1996
Royal Chitwan National Park	932	1973	750	1996
(World Heritage Site, 1984)				
Royal Suklaphanta Wildlife Reserve	305	1976	152	2004
Sagarmatha National Park	1148	1976	275	2002
(World Heritage Site, 1979)				
Shey-Phoksundo National Park	3555	1984	1349 ^a	1998
Shivapuri National Park	144	1984/ 2002		
Sub-total	23,872		4575	
Total protected areas plus buffer zones = 28,447 sq.km				
[^a original estimate of 449 sq.km still shown in some sources was later revised, ed.]				
Source: DNPWC (2004)				



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