Participatory management of buffer zone for natural resource conservation

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Nepal is endowed with a wide range of natural and cultural diversity. It has established a typical network of protected areas for conserving valuable resources. Nepal's conservation policy has been evolutionary and changing more towards peoples' participation in conservation. The buffer zone institutions formed at different levels aim at making the community self-reliant by involving them in implementation of various programmemes and capacity building. The programmeme has been successful, particularly in natural resource conservation, social mobilization, development of alternate energy and human resources development at the community levels. Mainstreaming the special target groups and women, ensuring their fair representation in the buffer zone institutions, and maintaining the group cohesiveness are some of the emerging challenges in the management. The constant support is required to change the attitude and perception of the people in conservation. There is a need to adopt a spatial strategy for developing a plan for each protected area that is pro-poor, pro-women and pro-special target groups. The present paper discusses these issues in detail.

Key words: Buffer zone, buffer zone institutions, biodiversity conservation fund, participatory approach, protected areas, special target group

Nepal lies in the Central Himalaya. By virtue of its geographical location and sharp altitudinal variation, the country is endowed with a wide range of natural environments, cultural diversity and ethnic compositions. It is not only known for its cultural richness but also for its unbroken sub-tropical forests and rich biological resources. However, over time, the luxuriant sub-tropical forest and big games began to decline following the clearance of pristine wildlife habitat for human settlement and infrastructure development. The migration of hill people in the promising new land was great.

In the early 70s, Nepal endeavored to revert this trend and conserve the dwindling populations of various endangered species of wildlife by introducing protected area system in the country. In the last 30 years of Nepal's conservation history, the country has made progressive changes in conservation policies - from the early emphasis on species preservation with strict law enforcement practices to a more conciliatory and participatory involvement of local people in conservation. The buffer zone programme is basically a people-centered participatory approach in protected area management and benefit sharing with local communities for biodiversity conservation and community development.

This paper attempts at presenting a brief account of evolutionary change in biodiversity conservation in Nepal and share some of the lessons learned from participatory involvement in natural resources conservation with reference to protected area management.

Bio-geographical features

Phyto-geographically, Nepal is a meeting place of eastern and western Himalayan flora. And, Nepal Himalaya is the home to many species of orchids, medicinal and aromatic herbs. There are all together 118 types of ecosystems, 35 forest types and 75 vegetation types extending from Sal *(Shoria rubusta)* forest of the Terai to the highland pastures and treeless steppes of the Trans-Himalaya. More than 5000 species of flowering plants, of which 246 are endemic, have been recorded (DNPWC 1996). Moreover, IUCN has identified 172 major plant species of the wetlands.

Similarly, about 181 species of mammals, 861 species of birds, 147 species of reptiles and amphibians, and 184 species of fish have been documented in the country (DNPWC 1996). Twenty seven species of endangered mammals are listed as protected species in the country including Greater one-horned

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rhinoceros, Bengal tiger, wild Asian elephant, gaur, snow leopard, musk deer, and red panda. The gharial crocodile, golden monitor lizard and Asian rock python are protected species of reptiles in Nepal.

Extent of protected area system

After the enactment of the National Parks and Wildlife Conservation Act in 1973, biodiversity conservation initiatives in the country began with the establishment of Royal Chitwan National Park in the same year. More protected areas in the mountains and Terai developed after 1976. At present, there are 9 national parks, 3 wildlife reserves, 3 conservation areas and one hunting reserve. In addition, His Majesty's Government has initiated the establishment of Buffer Zones around the parks/reserves and buffer zones of 6 parks and one reserve is complete (Fig. 1). Now, the protected area system covers 80 ecosystem types and a total area of 28,026 km^2, which is just over 19.0% of the total area of the kingdom.

A number of Nepal's protected areas have been given the international recognition for their outstanding natural characteristics. Sagarmatha (Mt. Everest) National Park and Royal Chitwan National Parks were designated as World Heritage Site in 1979 and 1984, respectively. Likewise, Shey-Phoksundo National Park has been proposed for nomination as a World Heritage Site in 1999. Four of the country's wetlands of international importance have been designated as the Ramsar Site. These wetlands are Koshi Tappu Wildlife Reserve, Bishazari *tal* (lake) in Chitwan, Ghodaghodi *tal* in Kailali and Jagadispur reservoir in Kapilbastu District. While Koshi Tappu was listed in the Ramsar Site in 1987, the rest were designated in 2003.

Policies, legislation and plans

The Constitution of Nepal elucidates 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." The forestry sector policy also 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..."

Similarly, the National Conservation Strategy also emphasizes sustainable use of natural resources and compatible land use practices. Likewise, the Nepal Biodiversity Strategy and the government's periodic plans also accentuate on the sustainable utilization of resources and involvement of local people in

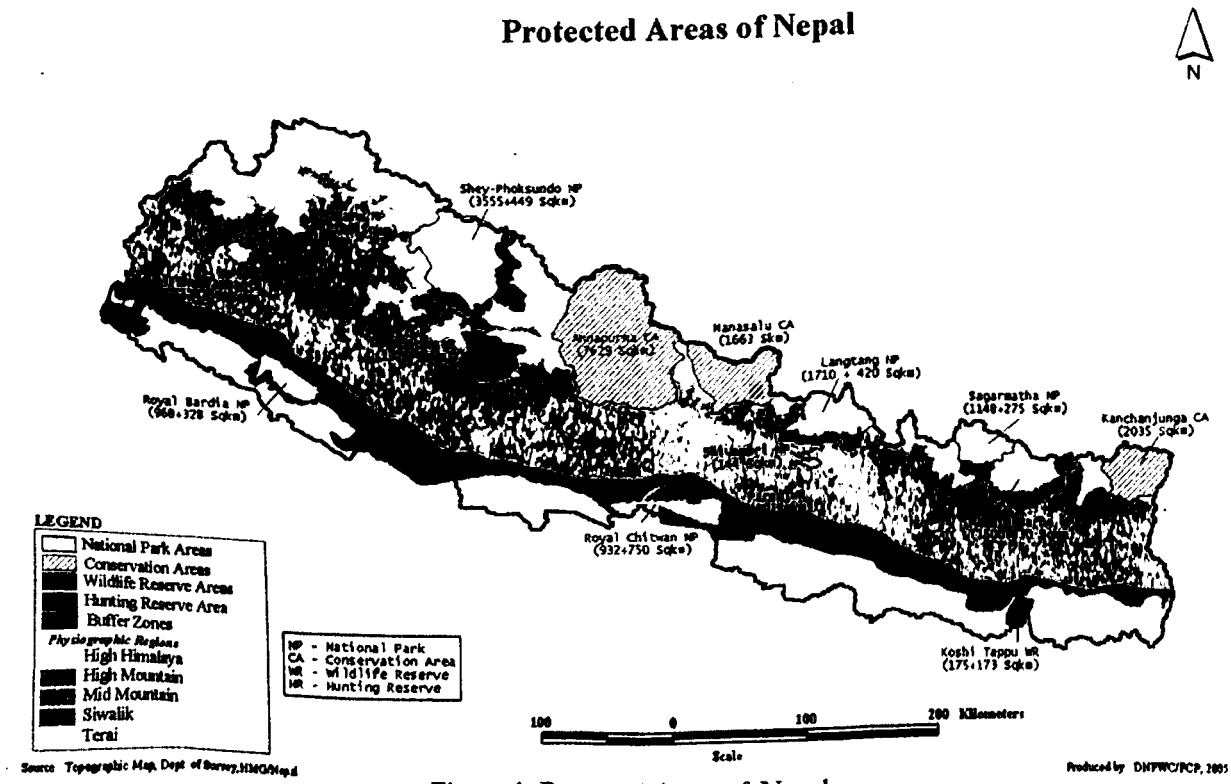

Figure 1: Protected Areas of Nepal

conservation of biodiversity. Nepal's tenth five-year Plan, in continuance with previous plans, stresses sustainable use of natural resources for poverty reduction.

The National Parks and Wildlife Conservation Act amended in 1993 has made provisions for active participation of local community in conservation and use the plowed back revenues for local community development programmes that endure conservation and strengthen community-based organizations. The government has also made a new policy of handing-over of management responsibilities of protected areas to NGOs along with new provision of wildlife farming. These provisions have opened new avenues for public-private partnership in the management of protected areas, while encouraging farming of some species of wildlife to improve local people's living conditions and poverty reduction.

Paradigm shift from strict protection to participatory, and to landscape conservation approach

The approach of adaptive management of protected areas was developed in view of the needs and emerging challenges faced by the protected area management and also to suit local conditions. In the early stage of development, there was an urgent need for the protection of key wildlife species, whose populations were declining fast as a result of rapidly growing human population, subsistence rural economy and unsustainable anthropogenic pressure on forest resources. So the focus was mainly aimed at the revival of key species, which were under constant threat.

Although, in the beginning, strict law enforcement practices in protected area management proved successful in controlling illegal human activities in the core areas and in the remarkable growth of wildlife populations. To cite an 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 park authorities and local people for the use of forest resources and the damage caused by wildlife. Thus, Nepal's experience has shown that strict law enforcement practice alone is not enough for effective wildlife conservation in the long-term.

Nepal's protected areas are virtually isolated and are the last refuge for several endangered and other co-habitant wildlife species. And, the conservation at landscape level is to provide larger habitat for wildlife species and ensure the long-term survival of endangered mega wildlife species. Therefore, gradually the management focus has shifted towards the ecosystem and landscape in conservation.

In the process of evolutionary change in protected area management, local people were annually permitted to collect grass and reeds from the protected areas of lowlands to meet their household needs. Annual consultation meetings were held with local communities to improve park-people relationships and generate public awareness about the importance of protected areas. In mountain national parks, local people's traditional practices of using forest products was legitimized by the Himalayan National Park Regulations 1979, permitting local people to collect firewood, fodder and graze their livestock on rotational basis.

In the development of conservation policy, a participatory approach was adopted in the early 1990s with the introduction of Annapurna Conservation Area based on the principle of integrated conservation and development.

The fourth amendment of National Parks and Wildlife Conservation Act made in 1993 is considered a landmark in biodiversity conservation, especially for the policy shift from conventional approach of management to a participatory one where local people are recognized as partners in biodiversity conservation. This amendment not only made a provision of designating buffer zone around protected areas but also sharing of park revenue for community development and enhancing natural resource management. The concept and approach of establishing buffer zone as initiated by the Department and implemented through the Parks People Programme during 1995-2000 advocated social mobilization by striking a balance between conservation and human needs. This approach is aimed at improving the socio-economic conditions of buffer zone communities and to contribute to biodiversity conservation by reducing conflict by forging partnership with local communities.

Buffer zone programme at a glace

Development of the buffer zone

Buffer zone means a designated area surrounding a national park or wildlife reserve. Literally, an impact zone where people have usufruct rights on the natural

Table 1: Buffer zone coverage

Buffer Zone	Declared Year	Area (Sq. km.)	No. of Districts	No. of VDCs/ Municipality	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
KT	2004	173	3	16	10693	77950
Total		4,277	18	147	98, 768	6,25,958

Source: DNPWC; Note: RCNP- Royal Chitwan National Park, RBNP- Royal Bardia National Park, SPN - Shey Phoksundo National Park, LNP- Langtang National Park, MBNP- Makalu Barun National Park and SNP-Sagarmatha National Park, RSWR- Royal Suklaphanta Wildlife Reserve, KT- Koshi Tappu

resources. The use of forest resources by local people is regulated to ensure the sustainability of the resources. It necessitates environmental conservation and is aimed at making economic benefit from the buffer zone. However, the contribution of local community in buffer zone management is imperative. It is believed that through active social mobilization, local community becomes 'active social workers' in decision-making process.

Promoting participatory involvement in conservation

The primary goal of the establishment of buffer zones is to promote and motivate local communities for their participatory involvement in biodiversity conservation and community development. In addition to reducing park-people conflict and developing a sense of ownership in local people, results are already showing in socio-economic conditions of local communities through income generating activities, strengthening of local institutions, Women participation in IGA empowerment of women and disadvantaged groups, and effective mobilization of resources for buffer zone management.

Buffer zone coverage

Between 1996 and 2004, buffer zones of 7 national parks and wildlife reserve have been declared covering a total area of 4,277 sq km, 98,768 households and 6,25,958 population living in the buffer zone. (Table 1).

Buffer zone institutions

The objective of the establishment of buffer zone is to reduce biotic pressure in core areas and improve the socio-economic conditions of buffer zone communities by strengthening and mobilizing community-based buffer zone institutions. In the process, over 4000 User Groups, 106 User Committees and 7 Buffer Zone Management Committees have been formed covering 100 Village Development Committees (Table 2 & 3). And, more than 220 millions of Nepali rupees have been channeled for the implementation of buffer zone programmes in the last 6 years.

Revenue sharing

His Majesty's Government has made a provision of plowing back up to 50 percent of the revenue earned by the concerned parks and reserves and has disbursed over NPR. 220 millions to the buffer zones of 4 national parks between the fiscal year 1995-96 to 2003-04 for the implementation of biodiversity conservation, community development, income generation, conservation education, and administrative cost (Table 4). Around 61,494

Table 2: Community institutions in buffer zones

S. N.	Particulars	Unit	Buffer Zone of							
			RCNP	RBNP	LNP	SPNP	MBNP	SNP	RSWR	Total
1	BZMC	No	1	1	1	1	1	1	1	7
2	UC	No	21	15	21	17	12	3	17	106
3	UG	No	1468	83	315	90	88	28	450	2522
4	FO	No	54	76	34	42	73	7	11	297

Source: DNPWC, '04; Note:, BZMC- Buffer Zone Management Committee, UC- User Committee, UG-User Group, FO- Functional Organization i.e. Community Forest User Groups, Irrigation User Groups, etc.

Table 3: Community institutions in proposed buffer zones

S.N.	Particulars	Unit	Proposed Buffer zones					
			KNP	RNP	KTWR	PWR	Total	Remarks
1	BZMCs *(Ad hoc)*	No	1	1	1	1	4	
2	UCs	No	8	8	8	10	34	
3	UGs	No	317	109	434	633	1493	
4	FO	No	-	-	69	73	142	

Source: DNPWC, '04; Note: KNP- Khaptad National Park, RNP- Rara National Park, KTWR- Koshi-Tappu Wildlife Reserve and PWR- Parsa Wildlife Reserve

households and 403,455 buffer zone residents of Chitwan, Bardia, Langtang and Sagarmatha national parks have benefited from this programme.

The buffer zone of Royal Chitwan National Park received the largest sum of NPR 17, 69, 09, 296.39 (Table 4) and spent NPR 133,480,691.25 and a large amount of NPR 43,428,605.10 still remains unspent. The large amount of unspent money indicates that the absorptive capacity of community institutions is still under-developed in planning and efficient management of the programmes.

Buffer zone community forests

Over 42,371.40 hectares of buffer zone community forests (additional 59,400 in the process of handover) have been handed over to local communities for management and sustainable utilization to meet their needs. So far, 39,205 households are benefiting from the community forestry programme. Besides, these community forests have become extended habitats for several wildlife species (Table 5).

Biodiversity Conservation Facility: Community capitals for income generating opportunities

The community savings and credit scheme has become the key to keep local community group cohesive and active. The community capital is an internal resource that helps carrying micro-credit based income generating activities and a huge sum of NPR 73 million has been saved and mobilized among the group members with nominal interest. Similarly, the Biodiversity Conservation Facility is the seed money provided to communities to promote and develop appropriate rural technology for resource management. About NPR 26 million has been disbursed to 7 protected areas, where Participatory Conservation Programme (PCP) is presently implemented (Table 6). Mobilization of such funds has been very popular and successful among the communities. Several programmes are underway to institutionalize the mobilization of such fund through cooperatives. Until now, 38 cooperatives have been registered and 60 new ones are under the process of registration.

Partnerships: Programme coverage by various partner conservation organization

His Majesty's Government has initiated partnerships with a large number of national and international conservation and development organizations, donors, and stakeholders for biodiversity conservation in the country. Various organizations including UNDP, WWF Nepal Programme, DFID, CARE/Nepal and KMTNC (King Mahendra Trust for Nature Conservation) are major partners involved in

Table 4: HMG fund allocation to buffer zones of different parks

Fiscal year	RCNP	RBNP	LNP	SNP	Total (NPR)
1995/96	280832.75				
1996/97	24145331.08	1231219.84			
1997/98	24075096.35	3740415.22			
1998/99	27271888.89		2209410.00		
1999/00	30864147.32	3807884.29			
2000/01			4818384.52		
2001/02					
2002/03					
2003/04	70272000.00	8397121.49	7099403.56	12604944.00	
Sub-total	**17,69,09,296.39**	**1,71,83,640.84**	**1,41,27,198.08**	**1,26,04,944.00**	**22,08,00,000.00**

Source: DNPWC, 04

Table 5: Community forests and beneficiaries

S.N.	Buffer Zones	No. of CF (Handed over)	CF in hectare	Beneficiaries HH	Remarks
1	RCNP	17	2810.00	8424	46 CF constitution registered
2	RBNP	32	8935.31	9719	
3	LNP	35	4572.14	9071	
4	SPNP	18	5323.78	1507	
5	SNP	4	19457.40	278	
6	RSWR	10	549.88	2094	
7	PWR	6**	723.00	2075	**handed over by district forest office
8	KTWR	1**			
9	*MBNP*	*88**	*59400.00*	*6037*	* in the process of handover (handover not yet complete)
Total		123+88*	101,771.51	39205	

Source: DNPWC/PCP Annual report '03

Community participation in river training

implementing buffer zone programmes of the Department of National Parks and Wildlife Conservation.

Major activities in buffer zone

The major activities in the buffer zone include management of natural resources, promotion of alternative energy, institutionalization and capacity building of community-based organizations, generation of community capital and its institutionalization through cooperatives, gender mainstreaming including special target groups in different buffer zone institutions, conservation education and anti-poaching programmes.

Major accomplishments

- The buffer zone management guidelines have been approved in 1997 and its first revision was completed in 2003 to make it more users-friendly. Similarly, the buffer zone management plans of four national parks have been approved.
- The buffer zones of six national parks and one wildlife reserve covering an area of 4104 km^2 have been declared.
- Over NPR 220 millions have been disbursed for the implementation of buffer zone program and more than 403,455 people are benefited.
- A total of 4574 buffer zone institutions at various tiers have been formed.
- The total community capital generated by 3,299 user groups of seven protected areas reached NPR 73 million rupees, whereas the amount for biodiversity conservation facility reached NPR. 26 million. Altogether, 38 Cooperatives have been registered.

Table 6: Community capitals and biodiversity conservation facilities (NPR)

S. No.	National Park/Reserve	Community Savings	Biodiversity Cons Facility
1.	Royal Chitwan National Park	39,573,060.00	58, 94, 636.00
2	Royal Bardia National Park	73,613,050.00	36, 16, 353.00
3.	Royal Suklaphanta Wildlife Reserve	11,849,667.00	41, 81, 863.00
4.	Parsa Wildlife Reserve	7,134,944.00	58, 49, 950.00
5.	Koshi Tappu Wildlife Reserve	5,325,638.00	30, 74, 364.00
6.	Khaptad National Park	2,332,646.00	10, 29, 599.00
7.	Rara National Park	1,290,167.00	23, 65, 892.00
Total		**73,696,066.00**	**2, 60, 05 , 657.00**

Source: DNPWC/PCP Annual report '03

- Likewise, a total of 42,371.40 hectares of forests have been handed over as community forests and more than 39,205 households are benefited.
- Over 3,440 biogas plants have been installed in the buffer zones between 1996 and 2003.
- More than 9,691 persons have received various training for skill development under capacity building. Over 16, 692 people have benefited from the non-formal education.
- A buffer zone networking forum has been formed with the objective of sharing experiences of buffer zone management among the various stakeholders.

Major outcomes

According to the report of the study on "Impact Assessment of Buffer Zone Programme in Nepal, 2004," the following impacts have been observed:

- Community members agree that buffer zone programme has brought mutual understanding and harmonized the relationship between the park management and people.
- User Group (UG) members have initiated both on-farm and off-farm enterprises with credit from BCF/ICF and other institutional support after receiving necessary training.
- Some noticeable land cover changes were observed such as decrease in forest and grassland cover and increase in shrub and river/sand.
- The saving and credit programme (ICF) of User Groups is providing easy access to over 23,000 households in four buffer zones to meet financial needs at low interest rate. The Biodiversity Conservation Facility (BCF) is also playing a vital role for socio-economic upliftment of buffer zone community. Dependency on local money-lenders for micro credits has significantly reduced due to this programme.
- Buffer zone programme has not been able to include all the people in the planned development process including special target groups (30% of the *Dalit* households, 10.6% of the ethnic households and 5.5% of the other ethnic/caste households) in the group.
- Number of fuel wood and fodder trees per household and stall-feeding practices has significantly increased while livestock population per household has become half between 1996 and 2003.
- Reduction in dependency on the protected areas for fuel wood has decreased from about 80% to about 60% due to handing over of buffer zone community forest.
- Plantation and agro-forestry has created additional natural resource base for firewood and fodder that generated household income. Crop production has also increased due to the adoption of improved farm technology.
- The adoption of biogas plant by medium to high-income group has been very encouraging and the biogas installation programme has been successful. The results indicate that the biogas installation till 2003 has helped to conserve about 8,000 ha of forest annually which were used for fuel wood and fodder harvest by the community. It could have reduced the fuel wood demand by 12,074 tons annually.

Lessons learned

Some of the lessons learned from the implementation of the buffer zone programme are as followings:

- Park revenue sharing with local community is considered as an important incentive to reduce the park-people conflict and enhancing community's perception and approach towards protected areas.
- UG formation at settlement level is found to be very effective to enhance social integration and for encouraging high level of people's participation.
- Participatory decision-making process of buffer zone institutions has made the people to be more accountable to buffer zone communities.
- Capital generation and mobilization is one of the key components of community development initiatives. Group savings made during the formation of user groups have become the binding elements for keeping the group active and cohesive.

Emerging challenges

Some emerging challenges are as follows:

- Mainstreaming the special target groups and women in the buffer zone programme and ensuring their fair representation in the buffer zone institutions.
- Keeping the group in cohesive for the long-term functioning of social capital in buffer zones.
- Striking the balance between community development and conservation activities since people are mostly concerned with immediate benefits.

- Ensuring the sustainability of relief fund to support the affected family.
- Making sure the revenue sharing among buffer zones because there is a big difference in income of each park/reserve.

Conclusion and recommendations

The buffer zone programme has made notable progress particularly in natural resource conservation, social mobilization, development of alternate energy and human resources development at the community level. It has also moved towards conservation at local level as well as promotion of awareness programmes and community financing for micro enterprises. It has immensely helped communities to develop basic community infrastructures, which in turn, has positively changed local people's attitude towards conservation. Buffer zone communities have started to undertake self-reliant activities on their own initiative.

Since biodiversity conservation and community development require constant support, one time support is not enough to change the attitude and perception of the people as well as to get significant change in conservation. It is necessary to adopt a spatial strategy for promoting each protected area and developing a plan that is pro-poor, pro-women and pro-special target groups.

The programme should also stress on developing partnership with all relevant partners and agencies for wider participation and sourcing the funds from different sources. Serious thoughts should be given to establish a Buffer Zone Central Fund so that the protected area with low revenue could be supported from this fund.

The programme also should emphasize on expediting the handover process of community forest to community and promote community forest for providing economic benefits to poor households and special target groups. This would include production of medicinal, aromatic and other Non-timber Forest Product (NTFP) and also ensure market for fetching fair price of the products.

Adequate conservation awareness and out-reach programme, skill enhancement programme should be designed to meet the needs of the different target groups.

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