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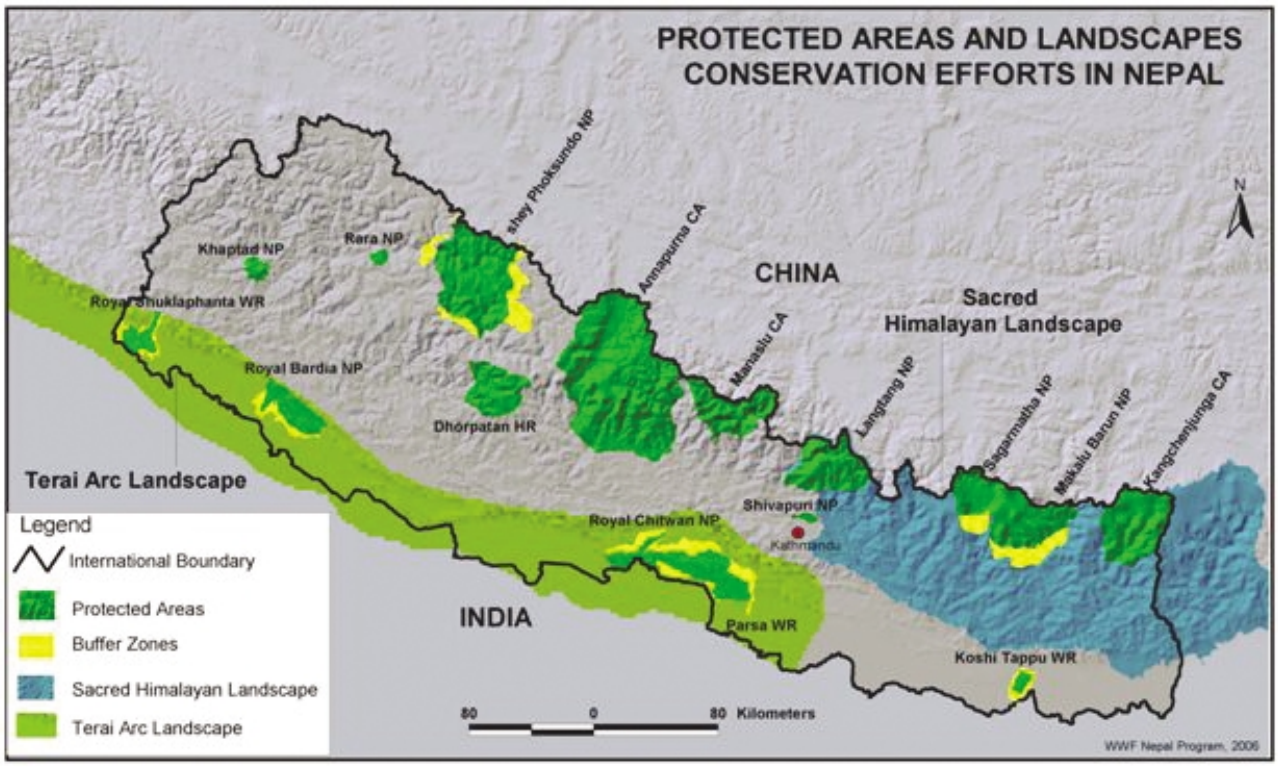
NEPAL

Management Effectiveness Assessment of Protected Areas using WWF's RAPPAM Methodology



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Management Effectiveness Assessment of Protected Areas using WWF's RAPPAM Methodology

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RAPID ASSESSMENT AND PRIORITISATION OF PROTECTED AREA MANAGEMENT IN NEPAL

SUMMARY

The history of wildlife conservation in Nepal began in the 1840s, with the enactment of the Wildlife Conservation Act 1957, which has now been replaced by the National Protected Areas and Wildlife Conservation Act (NPWCA), 1973. Nepal has been at the forefront of the wildlife conservation movement since the early 1970s. It now possesses 16 protected areas covering approximately 18.66% of its landmass. Investment in protected areas started not only to conserve land and water resources for financial gain and human use. They have been invested in to protect biodiversity values and watersheds, to mitigate against floods and storms, to enhance tourism and the local economy, for non-timber forest products (NTFPs), for soil conservation, CO_2 sequestration, and research, education and cultural values. But despite the long list of benefits, Nepal's protected areas are under threat from encroachment, poaching, grazing, recreation, exotic species, NTFP collection and agriculture.

WWF's Forests for Life Programme promotes the concept of viable networks of protected areas (PAs) worldwide, representing a significant percentage of each of the world's forest types. The Rapid Assessment and Prioritisation of Protected Area Management (RAPPAM) methodology is used to offer policy-makers a tool for achieving that goal by enabling a rapid assessment of the overall management effectiveness of protected areas within a particular country or region. Therefore, based on the RAPPAM Methodology all 16 Protected Areas (PAs) of Nepal were assessed.

The principal objective of such an exercise is to improve conservation of protected areas through effective management- both for individual sites and protected area systems. The findings of the evaluation can be used to help managers improve on-going management, to influence policy, to improve accountability, and to raise awareness.

Since the establishment of the first Pas in Nepal management problems have been observed. Especially during the current political crisis management problems are rising rapidly and the values of Protected Areas decreasing in parallel. Therefore, to assess the values of PAs, it is essential to evaluate their effectiveness and particularly the effectiveness of their management.

Effective management of protected areas is only possible with appropriate levels of planning, inputs and processes. For the protected areas studied the elements of planning and process were, on the whole, deemed adequate for critical management functions. The workshop participants generated a list of pressures and threats faced by the protected areas. The assessment focused on determining the degree and magnitude of each of these. Several studies (JICA, NBS, TAL Strategic Plan) have shown collection of firewood and fodder, grazing, crop-raiding by wild animals, rhino & tiger poaching, environmental pressure from tourism, factory effluent pollution. fishing using explosives and poison, hunting, deforestation. hydropower plant construction, refuse and garbage, collection of medicinal plants, fires in the chir pine forest, excessive tourism pressures, human encroachment, slash-and-burn agriculture and waste disposal as main problems or pressure in the PAs. The degree of pressures and threats were analysed based on their extent, impact, permanence and probability in between 5 years and after 5 years. The analysis shows that hunting, grazing and illegal collection of timber were the main pressures and likely to become the principal threats.

A set of questionnaire survey analysis was carried out to know the context, appropriate planning, efficiency and effectiveness of the Protected Area management. As per the scoring majority of the answers were "mostly yes", i.e. above average.

The analysis of planning shows that management plans seem to be weak in most of the parks and if one exists it is generally not properly implemented. Unless the support of local communities is gained, conservation is difficult. Therefore, one of the objectives of DNPWC would be to raise awareness among all levels of stakeholders for biodiversity conservation and ensure that wide support is generated for the country's PAs.

Legally, DNPWC has a clear and strong authority to conduct conservation programs. Both the government and community are participating equally in conservation to minimize the illegal activities within the Protected Areas either by forming anti-poaching units or through community based anti-poaching units. Especially after the buffer zone concept was put into practice, local communities have been participating more in conservation activities.

The overall layout, site designing and having zones for management has improved in almost all the parks. The low land area has the Terai Arc Landscape as the pilot landscape level program encompassing four national parks within Nepal and eight in India. WWF Nepal with ICIMOD and TMI are working in a Sacred Himalayan Landscape in the eastern sector to work on a landscape level across India, Bhutan and Nepal borders. But due to the unstable political situation, management work in these zones has slowed down.

The second component of the analysis deals with inputs, i.e. what is being put into the PA system in order to make it work. Analysis of input elements show that there are few trained staff and more training support is needed particularly amongst the mid-level and junior staff. Overall communication of data and resources are very weak in all the PAs. Transportation facilities are available in the Terai but weak in the mountain areas.. Funding scarcity is high after the unstable security in the country and has restricted management practices. Funding is ok in case of conservation areas, where KMTNC, WWF and UNDP support programs are launched.

Even if a park has great planning and enough resources to implement activities, the projects could still end up in failure. Therefore, the other important component to have effective management of PAs is to look at the processes of management. It was revealed that some of the PAs should either review their management plans or make new ones in order to better manage the area.

In brief, the outputs have not been adequately consistent with the threats and pressures, PA objectives and annual work plan within the last 2 years. For a more thorough analysis an impact assessment would be necessary to know if we have been able to address the threats and pressures, and have successfully met the PA objectives. We will only get unbiased answers from the questionnaire if the department conducts regular field visits and evaluations of impacts. The outputs here refer to the effectiveness of PA management, analysing the results of management processes. Though investment in all the PAs has been long-standing, the system has still not been able to address the prevailing threats, restore or manage habitat, share information on a large scale or strengthen research and inventory.

The overall management effectiveness reflects the sum of the scores from questions relating to protected area planning, inputs and processes. The analysis reflects whether PAs have really achieved the goal with their appropriate planning and management processes. From a strategic management perspective it is important to understand the relationships between the three main variables- planning, inputs and practices. The planning process and preparation of management plans are emphasized by the department. Therefore, there are very good plans prepared but the plans themselves are not able to improve management. Once the planning is done then it is essential to have sufficient inputs (finance, staff, housing, communication, etc) and various levels of participation with communities.

CHAPTER I

BACKGROUND & INTRODUCTION

In 1995 WWF, launched the Forests for Life Campaign. The initiative aimed to halt and reverse the continuing degradation and loss of the world's forests by protecting 10% of the world's forests by 2000 (from 6% in 1994). WWF believed this was a global priority given that some of the highest areas of biodiversity on this planet are forests.

The initiative not only brought to international notice the alarming state of the world's forests (forest loss was running at between 11- 13 million hectares per year – the size of Nepal), but also mobilised heads of state, governments, institutions, communities and people to protect their forests.

In 2000 WWF proudly announced that protected areas covered 10% of the world's forests. But the organisation felt that it could not rest on its laurels. Though the global network of protected areas had increased exponentially WWF realised that this was insufficient – biodiversity hotspots and forests with globally important fauna and flora remained unprotected and protected areas continued to be weakened by a multitude of threats and were, in many cases, protected only in name (the 'paper parks' phenomenon).

WWF set a new challenge for the global community – to establish a network of fully viable and representative protected areas systems worldwide. In order to support this challenge WWF and its partners worked to sharpen their 'conservation toolkit'. This included tools to identify biodiversity-rich eco-regions, to leverage greater financial support, to gain greater governmental buy-in, as well as, to support protected areas management.

The recent Conference of Parties of the Convention on Biological Diversity (CBD) (Feb 2004) produced a very tangible, target driven Programme of Work on Protected Areas. Each Party must now evaluate their protected areas and protected area systems and implement key recommendations before 2010. The RAPPAM assessment is one step in meeting Nepal's commitment to the CBD. Program Element 4 focuses on conducting the effectiveness of protected areas management. Especially **Goal 4.2** has outlined the target saying by 2008**,** frameworks for monitoring, evaluating and reporting protected areas management effectiveness at sites, national and regional systems, and trans-boundary protected area levels adopted and implemented by Parties.

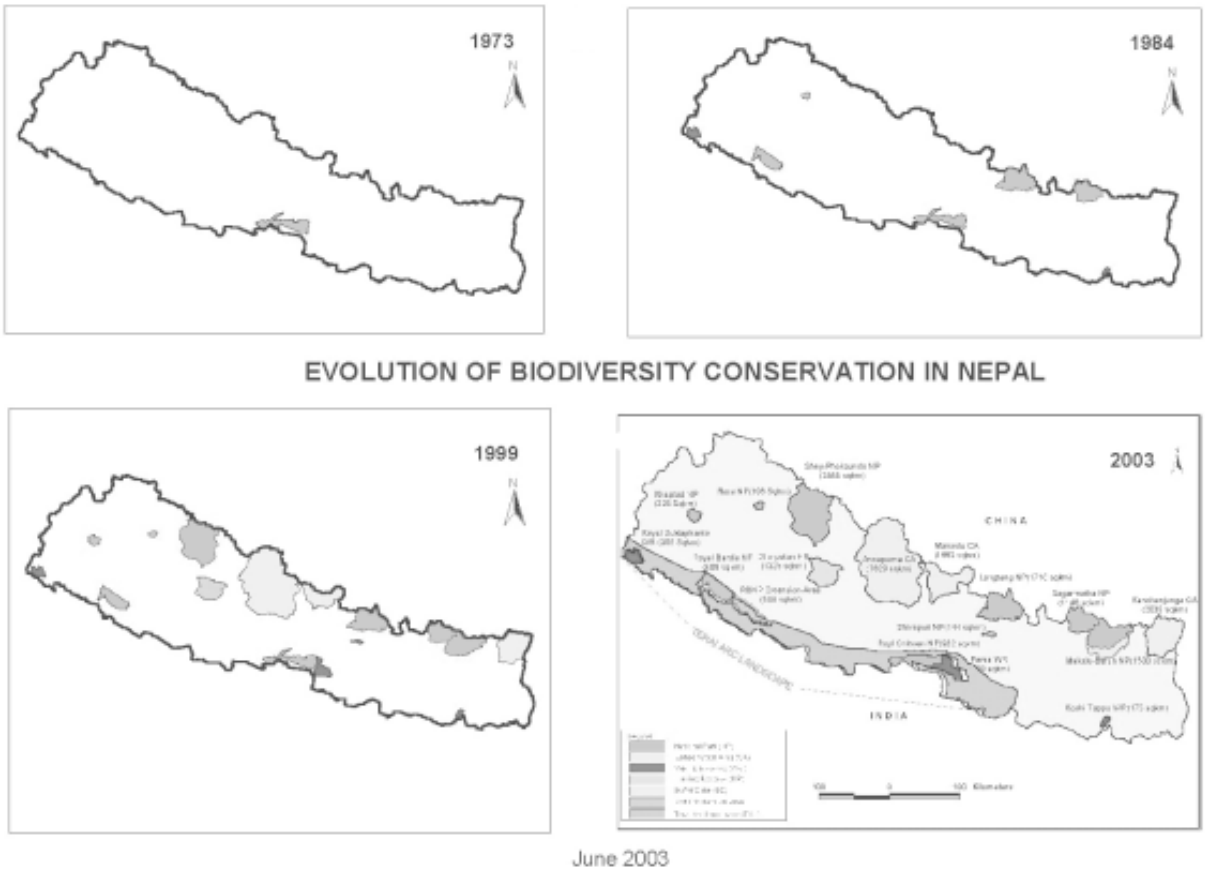
GENESIS OF THE PROTECTED AREA SYSTEM IN NEPAL

The history of wildlife conservation in Nepal began in the 1840s with the restriction on hunting of certain animals like rhino, tigers and elephants (HMGN/MFSC, 2002). With the enactment of the Wildlife Conservation Act 1957, which has now been replaced by the NPWCA 1973, HMG/N due importance has been placed on the protection of wildlife in all five year development plans (NARMA Cons. Report 2004). More than a century later, His Majesty's Government (HMG) of Nepal recognized conservation of wild fauna and flora in its first five year plan (1956-61). As a result of this plan, rhino patrolling was established in 1961 in Chitwan valley to halt the spate of rhino poaching. Subsequently, the second five year plan (1962-67) focused on the need for wildlife conservation in Nepal and the first national park – Royal Chitwan National Park was established in 1973. Nepal, like many other Asian countries, began developing national parks and wildlife reserves in the 1970s. With the establishment of these protected areas, traditional practices and customary rights of local people became severely restricted. The Royal Nepalese Army (RNA) was deployed as protection units in protected areas to ensure strict law enforcement and prevent deforestation and poaching of endangered species like tiger and rhino. Various organisations like FAO, UNDP, Smithsonian Institute, WWF Nepal, KMTNC and others have been involved in the conservation of rhino, tigers, and their habitat and for the establishment of protected area systems since 1967.

While strict protective measures and stationing of armed protection units inside protected areas greatly enhanced conservation efforts in the country, conservationists in Nepal soon realized that an alternative approach to conservation was needed. Despite the presence of Royal Nepalese Armed Forces, local people continued poaching, hunting and logging as their needs grew larger than their fear of reprisal or interest in conserving forests and wildlife. As a result, Nepal became one of the first countries in the world to move beyond a strict protectionist approach to conservation and protected area management approach.

To date, Nepal has an array of protected areas including nine national parks, three wildlife reserves, three conservation areas and one hunting reserve covering over 18 percent of the nation's surface area (map-1). These protected areas are distributed

Map 1: Evolution of biodiversity conservation in Nepal



throughout the country to conserve and protect biologically rich areas and endangered species of wild flora and fauna. Furthermore, these protected areas were established to represent various ecological zones including Terai[1], mid-hills and high mountains.

Nepal was one of the first countries in Asia to adopt a community-based conservation (CBC) approach in managing its protected areas. This was mainly because of widespread park/people conflicts, successful experiences in community forestry and the worldwide trend in participatory resource management. This approach has been reflected in the country's institutional, legislative and regulatory framework since the mid 1980s. Nepal is a signatory party to over 25 major international convention and treaties, including United Nations Convention on Biological Diversity (CBD) of 1992, Convention on Wetlands of International Importance (Ramsar Convention of 1971), World Heritage Convention of 1972, Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) 1975, UN Framework Convention on Climate Change of 1997 and UN Convention to Combat Desertification of 1994.

NEW APPROACH IN CONSERVATION

Many of the protected areas in Nepal are isolated as they are surrounded by various land use practices. Moreover, many of the protected areas are like islands and too small to support viable population of endangered species and ecological processes. In Nepal, the current policies and legislations do not allow protected area managers (wardens) to intervene beyond protected area boundaries.

The meeting of the World Commission on Protected Areas (WCPA) held in Albany, Australia in 1997 recommended the establishment of biodiversity friendly corridors[1] and restoration of corridors between protected areas as a larger landscape. The biodiversity vision workshop held in Kathmandu in 1999 proposed various corridors between and among protected areas in Nepal that will promote conservation through comprehensive and adequate representation of distinct natural communities and ecological process within the landscape by promoting network of protected areas. The landscape level approach of conservation was adopted to enhance ecological processes and promote maintenance of viable population of endangered species, which is not possible by the existing protected areas network as these are like islands.

Nineteen ecoregions and seventeen conservation landscapes are identified in the Eastern Himalaya Ecoregion[2] Complex which includes parts of Nepal,

[1] Terai: A 8-24 km wide belt of swampy grass jungle generally between the Himalayan foothills and the plains extending from northeast Uttar Pradesh (India) in the east, through southern Nepal and northwest Bengal (India) to northwest Assam (India) and adjacent parts of extreme southern Bhutan

India, Bhutan and Myanmar. Among these seventeen landscapes, the Terai Arc Landscape is one of the priorities based on landscape integrity (primarily available habitat and size of remaining habitat blocks, and extent of protected areas) and biological importance (species richness, endemism, ecological and evolutionary processes). The Terai Arc Landscape represents Terai-Duar Savannas and grasslands of WWF's Global 200[3] ecoregions.

WWF, a close conservation partner of the Nepalese Government for over three decades, continues to work with the Department of National Parks and Wildlife Conservation (DNPWC) in numerous protected areas both within the Terai and in the Mountains. WWF's principal programme focuses on the Terai Arc Landscape within the Eastern Himalayas Ecoregion complex – a lowland forest, grasslands and wetlands stretching from the Bagmati River in central Nepal westwards to the Yamuna River in India. Within Nepal this encompasses 14 Districts containing 11.2 million hectares of forests and four protected areas (Royal Chitwan and Bardia National Parks and Parsa and Royal Suklaphanta Wildlife Reserves).

Nine National Parks are under IUCN category II, while the three wildlife reserves are under IV and three conservation areas with one hunting reserve are under category VI.

Figure 1: The Management Cycle

MANAGEMENT ASSESSMENT

PROTECTED AREA MANAGEMENT ASSESSMENT FRAMEWORK

There are now over 100,000 protected areas worldwide covering over 12% of the world's surface area. These protected areas fulfil an array of ecological and social functions, yet many are under threat and face an uncertain future. Recognition of the scale of the problems facing protected areas has forced a reassessment of their design and management and recognition of the need for better knowledge about their status and the effectiveness of their management. Political and public support for protected areas cannot be assumed and there are increasing demands for all public programs, including protected areas, to demonstrate their effectiveness and contribution to national well being and development processes.

However, managers in many countries lack the information needed to make an informed assessment of the present status of protected areas and the effectiveness of their management efforts. In response, IUCN's World Commission of Protected Areas (WCPA) set up a taskforce that developed an Assessment Framework. This is based on the premise that the process of management starts with establishing a vision (within the context of existing status and pressures), progresses through planning and allocation of resources and, as a result of management actions, eventually produces goods and services (below). Monitoring and assessment of the different stages of the management cycle enables planners and managers to learn from experience and helps governments, funding agencies and civil society to monitor the effectiveness of protected area networks. The principal objective of such an exercise is: to improve conservation of protected areas through effective management- both for individual sites and protected area systems. The findings of evaluation/ assessment can be used to help managers improve on-going management: to influence policy; to improve accountability and raise awareness.

[1] Areas of natural habitat (may include forests, grasslands or other natural terrestrial habitats) that contain the ecological conditions necessary for potential wildlife movement. Usually, forest corridors will link protected areas providing refuge for wildlife populations

[2] Ecoregion is a relatively large area of land or water that harbours a characteristic set of species, communities, dynamics and environmental conditions

[3] Global 200 ecoregions are a set of ecoregions that have been identified to be globally outstanding for biodiversity and comprise a representative portfolio of the Earth's Biodiversity (Dinerstein and Olson, 1998)

CHAPTER II

METHODOLOGY

WWF developed the RAPPAM methodology based on the assessment framework developed by the World Commission on Protected Areas. The Methodology is a tool for policy makers. It is designed for broad-level comparisons among protected areas. It is not designed to provide detailed, site-level adaptive management guidance to protected area managers. RAPPAM offers protected areas agencies a tool to:

- Identify management strengths and weaknesses
- Analyse the scope, severity, prevalence and distribution of a variety of threats and pressures
- Identify areas of high ecological and social importance and vulnerability
- Indicate the urgency and conservation priority for individual protected areas
- Help develop and prioritise appropriate policy interventions and follow-up steps to improve protected area management effectiveness.

The RAPPAM Methodology is administered through a questionnaire that follows the WCPA structure set out below:

The methodology, developed over a three year period, has been tested and refined in over half a dozen countries. It is now being deployed by WWF worldwide. To date the management of over 700 protected areas in Bhutan, Cameroon, China, Russia and South Africa have been assessed.

Figure 2: Assessment elements in RAPPAM

CONTEXT	PA DESIGN & PLANNING	INPUTS	MANAGEMENT PROCESSES	MANAGEMENT OUTPUTS	OUTCOMES
◆ Threats ◆ Biological importance ◆ Socio-economic importance ◆ Vulnerability ◆ PA policies ◆ Policy environment	◆ PA objectives ◆ Legal security ◆ Site design and planning ◆ PA system design	◆ Staff ◆ Communication and Information ◆ Infrastructure ◆ Finances	◆ Management Planning ◆ Management Practices ◆ Research, monitoring & evaluation	◆ Threat prevention ◆ Site restoration ◆ Wildlife management ◆ Community outreach ◆ Visitor management ◆ Infrastructure outputs ◆ Monitoring ◆ Training ◆ Research	◆ Pressure

IMPLEMENTING RAPPAM IN NEPAL

SELECTION OF PROTECTED AREAS

The methodology was first introduced to the senior management of DNPWC in 2002. In 2003 WWF and DNPWC agreed to test and adapt the methodology on the four protected areas within the Terai Arc Landscape (TAL) programme, prior to nation-wide implementation. Therefore, in April 2003 the questionnaire and guidance notes were translated into Nepalese and on May 15th 2003 a small one-day workshop was convened in Nepalgunj. At this workshop DNPWC personnel and representatives of civil society represented each protected area namely Royal Bardia National Park (RBNP), Royal Sukla Phanta Wildlife Reserve (RSWR), Royal Chitwan National Park (RCNP) and Parsa Wildlife Reserve (PWR). A questionnaire was administered to each protected area group. Responses were recorded following detailed question-by-question explanation and discussion. The responses were collected, entered into a database and analysed by a consultant.

As per the decision of DNPWC, the first phase of the program concentrated on assessing the management effectiveness of the five protected areas in the Terai Arc. The remaining terai protected area, Koshi Tappu Wildlife Reserve, was assessed on March 9th, 2004. The previous workshop had recommended that the broader the stakeholder participation, the more effective and less biased the results would be. Based on this recommendation the workshop in KTWR was attended by all of the Park's Chief Wardens, representatives from partner organisations, buffer zone council chairpersons, DDC members, and other user committee members.

DNPWC suggested that it would be good if we could also assess the mountain protected areas.

Upon funding availability, the remaining 11 protected areas of the Mountain regions were assessed in two separate phases. In June 22nd the first Mountain protected areas workshop was held in Kathmandu for 8 protected areas and participated by Sagarmatha National Protected Areas (SNP), Kanchenjunga Conservation Area (KCA), Makalu Barun National Protected Areas (MNP), Langtang National Protected Areas (LNP), Shivpuri National Protected Areas (SHNP), Annapurna Conservation Area, Manaslu Conservation Area and Dhorpatan Hunting Reserve were done. The final workshop was held in Nepalgunj in July 26th 2004 for the remaining protected areas of western and far western mountain Protected Areas namely Shey Phoksumdo National Protected Areas (SPNP), RARA National Protected Areas (RNP) and Khaptad National Protected Areas (KNP). Protected Areas wardens, DDC representatives, community members, DNPWC representatives and Stakeholders working in that area participated during the workshop. This report has been prepared based on the analysis of 5 Terai parks and 11 mountain protected areas.

REVIEW OF EXISTING DATA

Prior to implementation of the questionnaire, the analyst gathered biological and management information from NBS, DNPWC, JICA study reports and WWF NP's annual report. The table below shows the brief information of all the protected areas, IUCN categories and biological importance.

Protected areas were initially established in Nepal for the protection of wildlife, especially endangered wildlife. However, the objectives have since been broadened to include the preservation of natural, historic, scenic, and cultural values. According to the latest estimates, 26,695km^2, 18.66% of the total area of Nepal, is now declared protected.

The National Parks and Wildlife Conservation (NPWC) Act of 1973 provides the legal basis for the management of PAs. The Act subsequently amended four times, in 1974, 1982, 1989 and 1994, recognises the six categories of PAs in Nepal in Figure 3:

NATIONAL PARK

The NPWC Act defines a national park as an area set-aside for the conservation and management of the natural environment, including the ecological, biological and geomorphologic associations of aesthetic importance. To develop the area for eco-tourism is the second objective, provided that this is compatible with sustainable conservation.

Figure 3: Facts and Figures of Protected Areas of Nepal

SN	DESCRIPTION	IUCN CAT.	AREA (SQ.KM)	YEAR DECLARED
1	Royal Bardia	II	968	1976/88
1.1	Buffer Zone		328	1997
2	Royal Chitwan		932	1973
2.1	Buffer Zone		750	1996
3	Khaptad		225	1984
4	RARA		106	1976
5	Shey Phoksumdo		3555	1984
5.1	Buffer Zone		449	1999
6	Lantang		1710	1976
6.1	Buffer Zone		420	1997
7	Sagarmatha		1148	1976
7.1	Buffer Zone		275	2002
8	Makalu Barun		1500	1991
8.1	Buffer Zone		830	1998
9	Shivpuri		144	2002
10	Royal Suklaphata	IV	305	1976
10.1	Buffer Zone		243	2004
11	Parsa		499	1984
11.1	Buffer Zone		298	2004
12	Koshi Tappu		175	1976
12.1	Buffer Zone		173	
13	Annapurna Conservation Area	VI	7629	1985
14	Manaslu Conservation Area		1663	1998
15	Kanchenjunga Conservation Area		2035	1997
16	Royal Dhorpatan	VI	1325	1987

STRICT NATURE RESERVE

This is an area of unusual ecological or other significance, set aside for the purpose of scientific study. The inaccessible lower Barun Valley, fed by the Saldima River, a glacier-fed tributary of the Arun River, is the most pristine area in the Makalu-Barun National Park, and thus has been designated as a Strict Nature Reserve, the first in Nepal.

WILDLIFE RESERVE

A Wildlife Reserve is an area established for the conservation and management of plants and wildlife and their habitat.

HUNTING RESERVE

This is an area set aside for the conservation and management of wildlife to provide opportunities for legal recreational hunting.

CONSERVATION AREA

This type of protected area is managed according to an integrated plan for the conservation of the natural environment and the sustainable use of the natural resources contained within it.

BUFFER ZONE

A buffer zone is a designated area surrounding a national park or a reserve within which the use of forest products by local people is regulated to ensure sustainability.

DATA COLLECTION

Data collection was done through series of interactive workshops based on the set questionnaire. The first workshop in the Terai was participated by all the four park wardens, buffer zone council chairpersons and stakeholders working in the area.

The second set of assessment concentrated in the remaining 11 Mountain protected areas. Among these 11 protected areas in the first workshop that was held in Kathmandu was participated by 8 mountain protected areas from the east, central and west Nepal. The remaining assessment of the 3 protected areas of the far west was conducted in Nepalgunj. After explaining the assessment methodologies, identification of major pressures and threats was conducted. The pressures and threats that came up during the workshop are mentioned below. Each Protected Area was asked to analyze at ten major pressure and threats in their area having a score ranging from 1 to 64. The score is derived by multiplying three scores (extent, impact and permanence) and therefore is not a linear scale. A score of 1-3 can be considered *Mild*, 2-9 *Moderate*, 12-24 *High* and 27-64 *Severe* degrees of pressure and threats.

After completing the pressures and threats, the groups were asked to fill out the given questionnaire. The participants were given out the translated questionnaire as well as the English version of the methodology to help clarify questions if so required. Responses were scored as follows: 'YES'=5, 'MOSTYLY YES'=3, 'MOSTLY NO'=1 and 'NO'=0. According to the analysis, out of 90 questions and given choices, most of the answers were 'mostly yes', followed by 'mostly no', 'yes' and 'finally no'. It means 50-90% the objectives of protected areas are met having good plans, enough resources and staffing and strong management. The detail analysis of the questionnaire is dealt in Chapter 4- Results and Analysis. The data has been analysed in the format provided in excel sheet and is linked with the analysed document. That is, the data can be retrieved from the document itself.

Figure 4: List of pressures and threats in the Protected Areas

SN	PRESSURE AND THREAT SOURCE	PRESSURE/THREAT DESCRIPTION
1	Conservation awareness	Includes conservation education, communication,
2	Cross border issues	Includes local and regional illegal trades
3	Crop damage	It refers to damages caused by the marauding wildlife in private lands
4	Current security situation	Refers to insurgency in the country
5	Dam Building	Includes dams for recreation, hydro-electricity generation, irrigation
6	Fishing	It is the over harvesting of fish using big nets in bigger rivers and lakes
7	Forest fire	Refers to uncontrolled burning and accidental burning of forest areas
8	Grazing	Includes over grazing of forest either in national forest or community forest. Especially in mountain parks where the government allows grazing the situation is getting bad
9	Hunting	Includes illegal and legal hunting practices that threatened protected area resources, poaching for illegal trade and hunting for subsistence purposes
10	Illegal settlements	Includes encroachment in forested areas

SN	PRESSURE AND THREAT SOURCE	PRESSURE/THREAT DESCRIPTION
11	Illegal harvest of Timber	Includes legal and illegal harvest of timber in excess
12	Invasion of alien species	Includes plants species purposefully or inadvertently introduced in the wild (lantana camera-bush, weeds, etc)
13	Landslides	Refers to the causes of deforestation and heavy monsoon in most of the hilly areas
14	NTFP collection	Includes the collection of NTFP or medicinal plants for food, medicines, building materials or trade or subsistence
15	Over cutting of Fuel Wood	Includes the collection of fuel wood by over harvesting forest products (instead of lopping branches cut trees from below)
16	Retaliatory killing	Includes revenge killing of wildlife coming out from protected areas
17	Shifting cultivation or slash and burn	Includes clearing of forest areas for cultivation practiced mostly in hill areas due to less productivity
18	Socio-economic condition	Includes less opportunity for employment and high poverty especially due to current political instability
19	Stone and sand collection	Includes the collection of stone and sand within the PA and buffer zones
20	Tourism and recreation	It refers to over population of tourism flow and pollution created through

LIMITATIONS

- Participation:- Invitation was sent to all the Protected Area chiefs and stakeholders working in the area. But not all of the protected area wardens and conservation area directors participated in the meeting, and only few stakeholders and partner organisations were present. Therefore, in some of the cases the perception of the community or the partner organisations may not be addressed especially when prioritising pressures and threats. For example crop damage has not been reported by many Protected Areas, because the events of damage recorded in the Protected Areas were minimal. These records would have been verified had there been more community participation.
- Use as a baseline- The information gathered through the assessment can be used as a baseline information to know what factors are influencing in the management of the PAs. The assessment does compare differences of the Protected Areas but here the objective is to know how Protected Areas are being managed and where the gaps are. Therefore, this information in future can be used by policy makers and managers as a baseline to increase the efficiency for managing the PAs in a better way and tackle the constraints.
- Trans-boundary issues- Protected Areas in the lower and upper belts are connected either to India or Tibet. Therefore, trans-boundary coordination plays a vital role in managing the protected areas of Nepal. During the assessment trans-boundary linkages were poorly discussed. Only some illegal trade issues across boundaries were raised. That is why the assessment covers very little on the trans-border issues and their impact on conservation within Nepal.
- Time constraint- As per the methodology, the participants should have been given ample of time to response and analyze the outcome of the questionnaires. But due to the time limitation, only the set questionnaires were filled out and how analyses take place was discussed briefly. If the analyses were done by themselves, than the participants could also have opportunity to review and adapt the outcome.
- Understanding of the questionnaire- The questionnaires were translated from English to Nepali for the convenience of the participants. The translation could have its limitation for not finding the exact meaning in Nepali that made confused what to answer. To resolve the problem, the participants were also given out the English version of the questionnaire to tally with the Nepali one in order to get a common understanding. The understanding level also differed because some of the participants were not educated and felt it was difficult to respond to some of the questions.

After the workshops were completed a preliminary analysis of the data was undertaken. The analysis report was presented during the 21st Warden's Conference to update the assessment findings and was discussed among the senior management of the wildlife department to further take it up into planning and actions.

RESULTS AND ANALYSIS

PRESSURES AND THREATS

The workshop participants generated a list of pressures and threats faced by the protected areas. The assessment focused on determining the degree and magnitude of each of these. Several studies (JICA, NBS, TAL Strategic Plan) have shown collection of firewood and fodder, grazing, crop-raiding by wild animals, rhino & tiger poaching, environmental pressure from tourism, factory effluent pollution. fishing using explosives and poison, hunting, deforestation. hydropower plant construction, refuse and garbage, collection of medicinal plants, fires in the chir pine forest, excessive tourism pressures, human encroachment, slash-and-burn agriculture and waste disposal as main problems or pressures in the PAs.

During the workshop the participants also identified 20 major pressures and threats, which were almost similar to the previous studies. The participants were asked to assess at least 10 major pressures and threats in their area that were there in the past five years and would be threats in the coming five years. The degree of pressures and threats were analysed based on their extent, impact, permanence and probability.

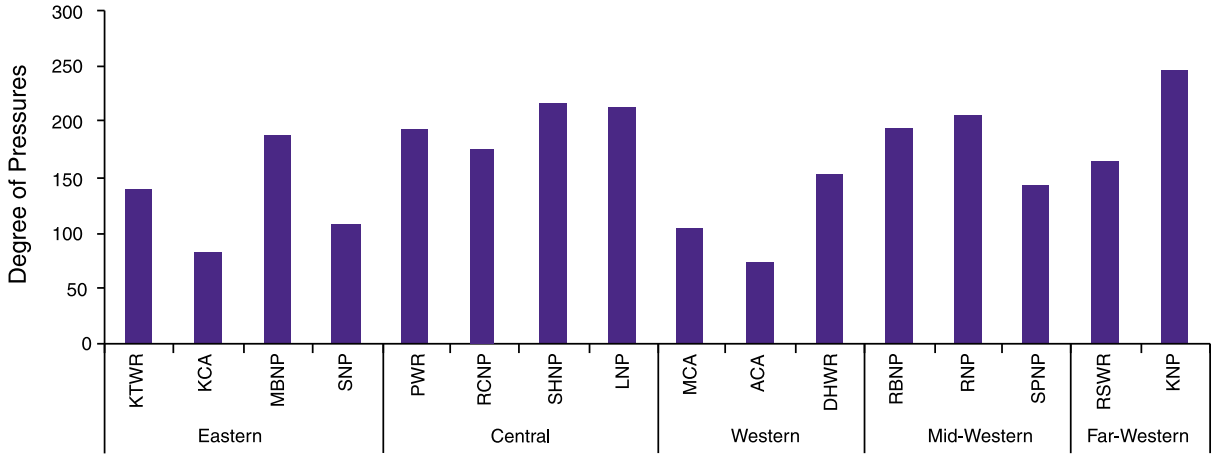
Hunting was identified as a pressure by 14 out of 16 Protected Areas. But participants perceived grazing as the main severe pressure within those years and said it has been growing. Among the parks in the Terai, RBNP has the highest pressure from resource collection, grazing and other illegal interventions (poaching). Especially due to the current situation, security personnel have not been able to carry out regular patrolling inside the park. Pressure in RSWR especially from human intervention has been reduced, because in 2002 illegal settlers inside the RSWR extension were removed, but there is high pressure from grazing in this area.

Figure 5 show that among all the parks KNP has the highest pressure from resource collection, grazing and other illegal interventions (poaching). In case of the mountains, High Mountain Regulations 1979, allows people to continue to graze their domestic animals on park rangeland. However, no provision has been made for handing over parcels of parkland to be managed by the community (Sharma 1999). Despite this, communities can organise harvests and grazing plans so long as they are consistent with the park's objectives. They can also control or even stop "outsiders" from entering the park or reserve to harvest resources, and thus help reduce the pressure on the natural resources of the area.

But the growing population of livestock and haphazard grazing has become a major problem in the area and now it seems to be a challenge to control grazing. If we look at individual protected areas, we see for example that the highest pressure from tourism is found in Shivpuri National Park and over cutting of fuel wood is the main pressure in Langtang National Park.

NTFP collection, particularly harvesting medicinal plants as a pressure has been identified by 9 different protected areas and is comparatively low in the Terai. For 3-4 years now collection of medicinal plants like Yarshagumba has been rising in most of the parks and has a high economic value. The

Figure 5: Degree of Pressure Faced by the PAs



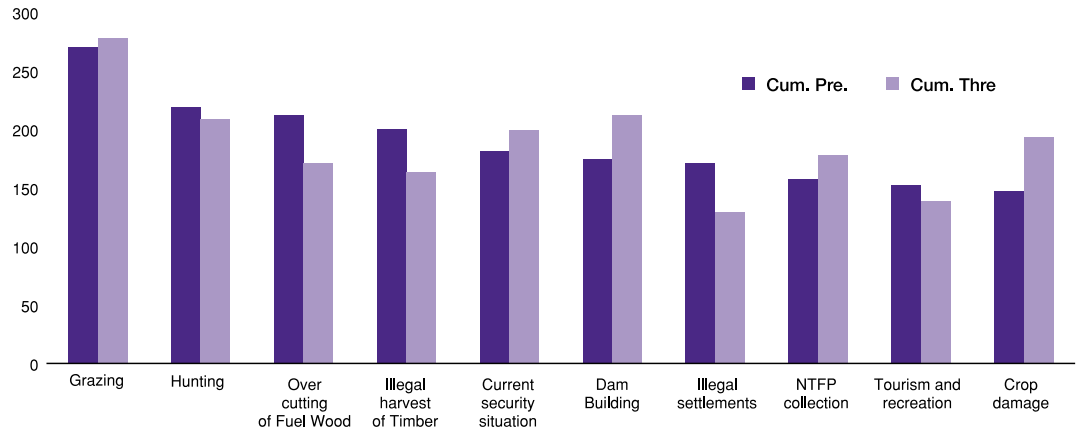
reason for this is that there are few alternative economic opportunities. Tourism is the main source of income in SNP and MCA, therefore collecting NTFPs may not be their priority. Looking at the figure below it shows that overall pressures are higher in the government managed protected areas than in the areas managed through community conservation or supported by other projects.

Figure 7 below shows the cumulative pressures and threats of mountain and terai protected areas. Grazing, hunting, dam building and NTFP collection seems to be the major pressures and likely to be the principal threats in the long run in most of the protected areas. But it also shows that pressures becoming threats will be higher in LNP and KNP if the security situation does not get

Figure 6: Principal Pressures Faced by the Protected Areas of Nepal:

	CUMULATIVE PRESSURE	OCCURANCE OF PRESSURE	KTWR	KCA	MBNP	SNP	PWR	RCNP	SHNP	LNP	MCA	ACA	DHWR	RBNP	RNP	SPNP	RSWR	KNP
Conservation awareness	114	8	✓		✓				✓	✓			✓		✓	✓	-	✓
Cross border issues	25	4			✓						✓	✓				✓		
Crop damage	147	7	✓				✓	✓						✓		✓		✓
Current security situation	181	10			✓		✓		✓	✓	✓	✓	✓			✓	✓	✓
Dam Building	175	9				✓	✓	✓	✓	✓		✓		✓		✓	✓	
Fishing	68	5					✓	✓						✓	✓		✓	
Forest fire	56	5				✓			✓						✓	✓		✓
Grazing	270	13	✓		✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓
Hunting	219	14		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Illegal settlements	171	12	✓	✓	✓		✓	✓				✓	✓	✓	✓	✓	✓	✓
Illegal harvest of Timber	200	13	✓	✓		✓	✓	✓					✓	✓	✓	✓	✓	✓
Invasion of alien species	72	5	✓	✓										✓			✓	
Landslides	71	3							✓						✓			✓
NTFP collection	157	9		✓	✓				✓			✓	✓		✓	✓		✓
Over cutting of Fuel Wood	212	10	✓	✓		✓	✓	✓			✓	✓	✓		✓			
Retaliatory killing	60	6		✓	✓				✓		✓	✓	✓					
Shifting cultivation or slash and burn	58	4		✓	✓						✓					✓		✓
Socio-economic condition	119	7	✓	✓	✓	✓			✓							✓		✓
Stone and sand collection	93	6		✓		✓	✓	✓				✓		✓				
Tourism and recreation	152	8		✓		✓		✓	✓	✓	✓	✓			✓			

Figure 7: Cumulative Pressures and Threats



better. Similarly the current unstable political situation may have increased threats in all the national parks. Over harvesting or cutting of fuel wood as a problem now and in the future is severe in terai parks and some in the mountain, because they do not have alternate energy programs to minimise the dependency on forest products. Some of the pressures and threats are localised like forest fire, landslides, fishing, dam building, crop damage, tourism and recreation, illegal settlements, shifting cultivation or slash and burn and socio-economic conditions.

Figure 8 assesses grazing as a pressure and threat in most of the parks except KCA, MCA and ACA or the conservation areas. The severe grazing pressure, which is likely to continue into the future, is particularly apparent in LNP and KNP. Grazing in the mountain region not only considers livestock but also wild animals. Wild animals use the same areas to graze, particularly during the night. Compared to the mountain parks, grazing in RCNP and RBNP do not seem to be a threat.

Figure 8: Assessing Grazing as Pressure and Threat

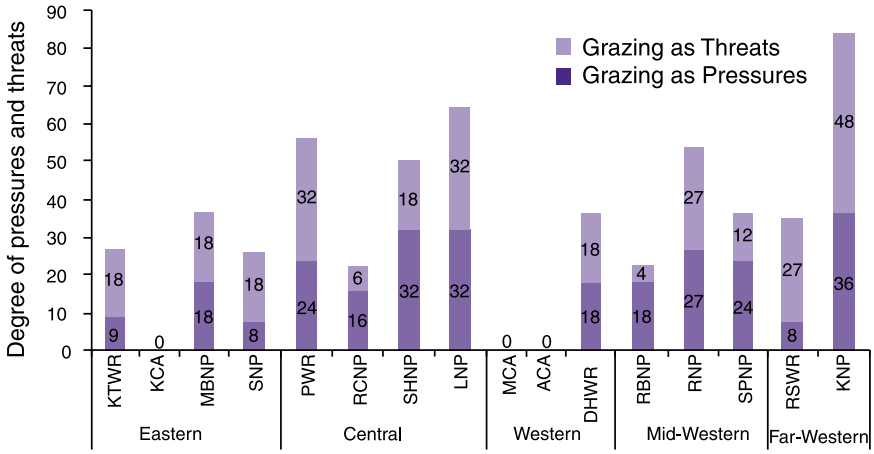


Figure 9 shows the relation of pressures and threats. On average most of the pressures have increased slightly and are likely to increase again in the future. Most of the parks mentioned that dam building, fishing, grazing, illegal settlement, illegal invasion of alien species, NTFP collection, over cutting of fuel wood, retaliatory killing, stone and sand collection, and tourism and recreation have increased slightly within those 5 years and rest of the pressures have remained constant. Whereas only 6 protected areas perceived the threats such as dam building, fishing, grazing, hunting, illegal harvest of timber, illegal invasion of alien species, landslides and over cutting of fuel wood are likely to increase slightly and the rest to remain constant.

The participants believe that overall the threats will be minimised compared to pressures. But for the pressures to be curbed, they need to be tackled locally in most of the cases. Therefore, DNPWC should prepare plans with the community to outline solutions and take appropriate action. The different perceived principle threats (figure 10)- current situation, dam building, fishing, grazing, poaching, illegal settlements, invasion of alien species, landslides, over cutting of fuel wood and illegal timber harvest need to be explored in greater detail to assess the potential impact on biodiversity and potential solutions or measures to mitigate the threats.

Some of the basic origins of the threats to Nepal's biodiversity can be summarised as follows:

- Low levels of public awareness and participation;

Figure 9: Relation of Pressure and Threats

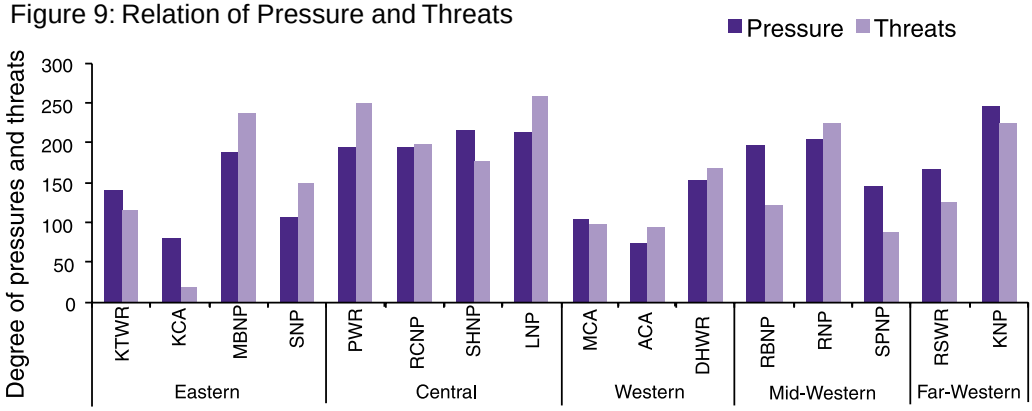
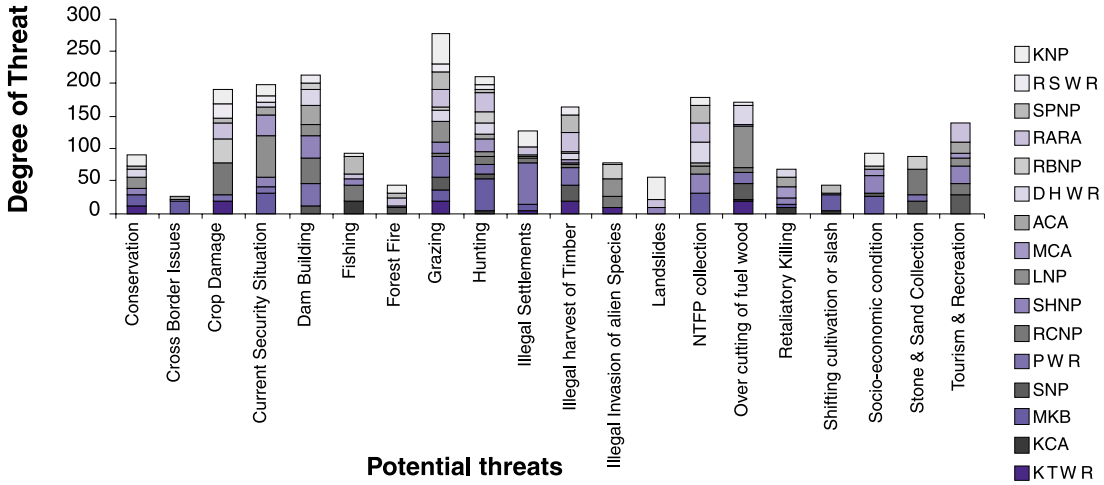


Figure 10: Principle Threats



- High population pressures and prevailing poverty;
- Weak institutional, administrative, planning and management capacity;
- Lack of integrated land and water use planning;
- Inadequate data and information management; and
- Inadequate policies and strategies for biodiversity conservation.

These and other fundamental problems that may be identified through a broad-based analysis hold the key to successful biodiversity conservation in Nepal. Until these fundamental problems and root causes are addressed, success is not likely to be sustainable and the threats will reappear (HMGN/MFSC, 2002).

CONSERVATION PRIORITIES

BIOLOGICAL, SOCIO-ECONOMIC IMPORTANCE AND VULNERABILITY

Nepal's location in the centre of the Himalayan range places the country in the transitional zone between the eastern and western Himalayas. Nepal's rich biodiversity is a reflection of this unique geographic position as well as its altitudinal and climatic variations. It incorporates Palaearctic and Indo-Malayan bio geographical regions and major floristic provinces of Asia, creating a unique and rich diversity of life. Although comprising only 0.09% of global land area, Nepal possesses a disproportionately large diversity of flora and fauna at genetic, species and ecosystem levels. This diversity is found in the dense tropical monsoon forests of the Terai, the deciduous and coniferous forests of the subtropical and temperate regions, and the sub-alpine and alpine pastures and snow-covered peaks of the Himalayan mountain range.

The biological resources of the Terai and Siwalik are mostly dominated by Sal trees (Shorea robusta), tropical deciduous riverine forest and tropical evergreen forest. These ecosystems are of international importance both in terms of the number of globally threatened wildlife and floral species found in them as well as their diversity. Unfortunately, the Terai is also heavily populated, resulting in high pressure on the forest and agricultural resources.

The Mid-hills have the greatest diversity of ecosystems (52) and species in Nepal. This is due to the great variety of terrain types and the occurrence of subtropical to temperate climatic zones comprising a rich flora and fauna. Nearly 32% of Nepal's forests occur in the Mid-hills.

The Mountains are the meeting place of the Palaearctic region to the north and the Indo-Malayan region to the south. There are 38 major ecosystems in the Mountains, and while they are relatively less diverse in flora and fauna compared to the Mid-hills and lowlands because of harsh environmental conditions, they are nevertheless characterised by a large number of endemic species.

Forests play a vital role in maintaining ecological balance as well as economic development in Nepal. Pristine forests are a major attraction for tourists. The forest environment is a major source of energy, animal fodder and timber, and forest catchments areas are the main sources of water used in hydroelectric power generation, irrigation and domestic consumption. Rural people depend on many non-timber forest products (NTFPs) for their subsistence living.

Rangelands in Nepal comprise grassland, pasture, scrubland and forest, and are estimated to cover

about 1.75 million hectares, or nearly 12% of Nepal's land area. Nepal's rangelands are rich in biodiversity, ranging from subtropical savannahs, temperate grasslands, alpine meadows, and the cold, arid steppes north of the Himalayan range.

About 21% (3.2 million hectares) of the total land area of Nepal is cultivated, the principal crops being rice, maize, wheat, millet and potatoes. Crops such as rice, rice bean, eggplant, buckwheat, soybean, foxtail millet, citrus fruits and mango have high genetic diversity relative to other food crops. Many crop species in Nepal owe their variability to the presence of about 120 wild relatives of the commonly cultivated food plants.

There are many different types of wetlands in Nepal, ranging from perennially flowing rivers to seasonal streams, lowland oxbow lakes, high altitude glacial lakes, swamps, marshes, paddy fields, reservoirs, and ponds. These wetlands are biologically diverse and are known to support more than 20,000 waterfowl.

The Himalayan mountain system is unique in the world. Several biologists have reported plants and animals above 5,000m. About 420 phanerogamic species have been recorded above 5,000m on both sides of the Himalayan range in the Everest region (Miehe 1989). Mosses and lichens are found up to 6,300m, cushions of flowering Stellaria decumbens in Makalu occur up to 6,135m, and Ephedra species up to 5,200m. An important feature of the mountain biodiversity of Nepal is the number of different levels of biological organisation above the species level - genera, families, phyla, habitats, and ecosystems - indicating high levels of beta diversity.

Based on the questionnaire responses, each protected area received a numerical index for biological importance, socio-economic importance and vulnerability. This type of comparison can provide information on the importance of each protected areas. Figure 11 show that most of the protected areas of the mountain region have socio-economic importance more than the biological importance. In the case of terai, the biological importance is higher except in RBNP. The perception of the participants may have differed in case of RBNP. Some of the mountain protected areas like ACA, KCA, MBNP, SNP, MCA and LNP are the hot spots for tourism and most of the local people depend on the source of tourism for their livelihood. The local community here also depends on the natural resources to fulfil their basic needs such as timber, fuel wood, selling medicinal plants etc.

Compared to the Terai protected areas, the mountain protected areas have less mega fauna. But these areas are known for red panda, snow leopard, musk deer, blue sheep and various bird species. Socio-economically important plants and animals are more in the eastern mountain regions and mid-western terai parks and are equally important.

The most vulnerable park currently is DHR, because this park has been affected by the insurgency since the beginning, head quarters have been moved to the district level. Little research of this area has been carried out to know the current situation and the affects on it.

Figure 11: Biological and socio-economic importance

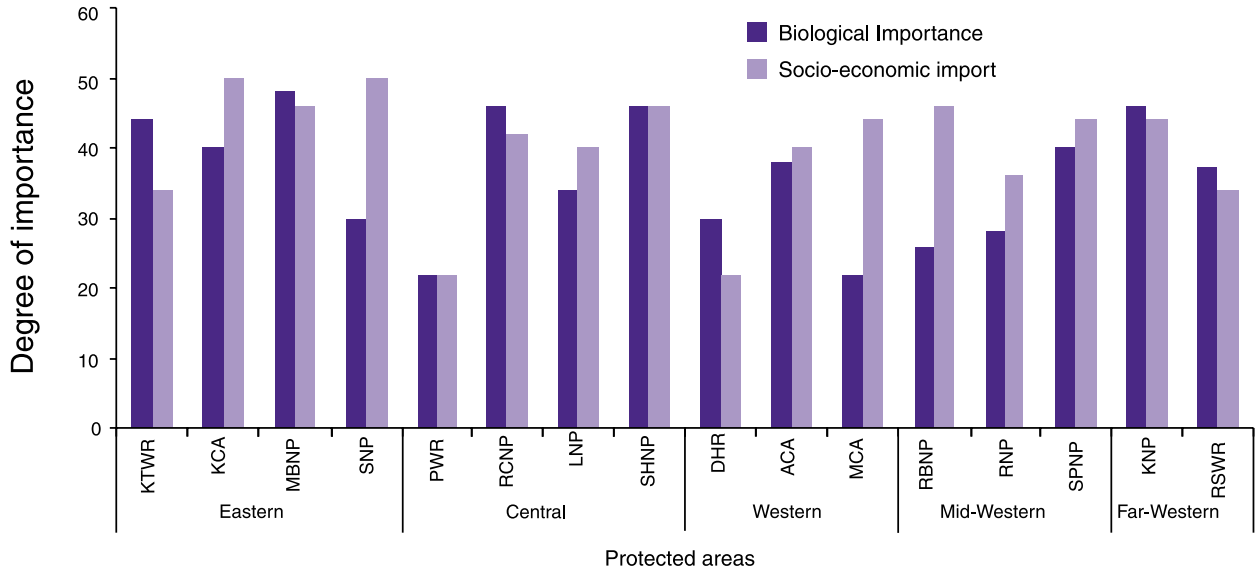
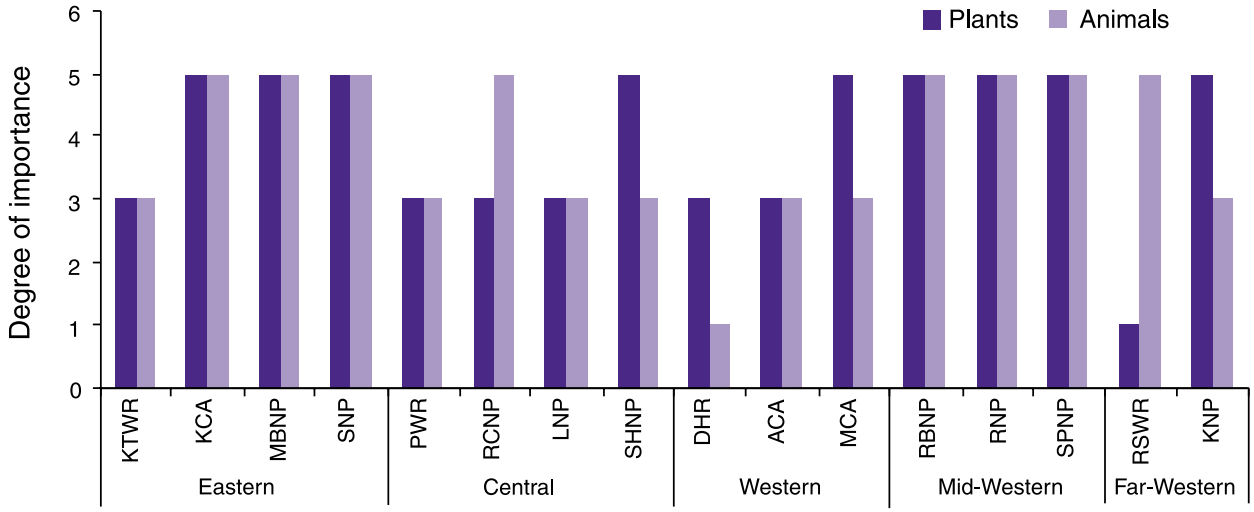


Figure 12: Socio-economic Importance of Plant and Animal Species



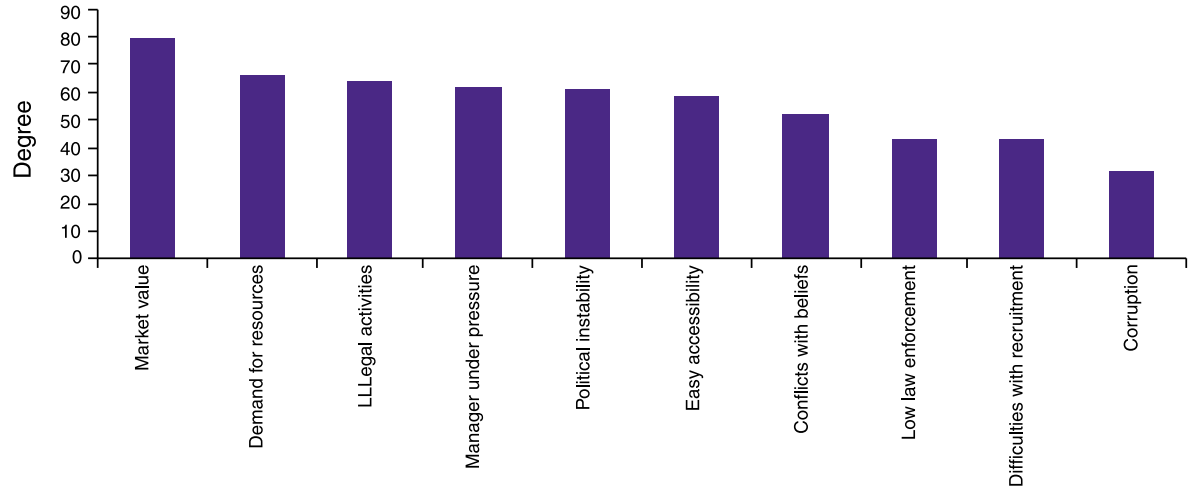
VULNERABILITY CONTEXT

Vulnerability here refers to:

- difficulty of monitoring illegal activities in protected areas
- low law enforcement
- bribery and corruption
- civil and political instability
- conflict between cultural practices, beliefs and traditional uses and protected area objectives
- high market value of protected area resources
- easy accessibility of the area for illegal activities
- strong demand for protected area resources
- protected area under threat to unduly exploit protected area resources
- difficulties in recruiting and retaining employees

Ranking these ten vulnerability indicators shows that the main problem is the market value of PA resources outside protected areas in neighbouring countries that has encouraged the local community to collect plant and animal products illegally. The current situation has put additional pressure on the PA manager. Limited patrolling in the restricted areas has increased illegal activities and uncontrolled resource use. Therefore, it is a challenge not only to the managers but also to the policy makers to address these vulnerable issues and plan accordingly.

Figure 13: Vulnerability of All PAs



CHAPTER IV

PROTECTED AREAS MANAGEMENT EFFECTIVENESS ASSESSMENT

This analysis covers four aspects of PA management effectiveness: planning, inputs, processes, and outputs. Planning includes PA objectives, legal security, and PA design. Inputs include staff, communication inputs, infrastructure, and finances. Processes include management planning, management practices, and research, monitoring and evaluation. Outputs are the concrete results which ensue.

This analysis can be conducted for an individual PA, as well as for the entire PA system. An analysis of management effectiveness for a single site can identify specific strengths and weaknesses within that PA, while a comparative analysis of the system (by determining average scores for each question) can identify systemic strengths and weaknesses. PA administrators and policy makers can use this information to adjust PA policies, allocate funds, and develop technical support programmes.

MANAGEMENT EFFECTIVENESS

PLANNING ELEMENTS

The planning component outlines where the project wants to be and what activities are appropriate to address PA legislation and policies, designing of PA and how a good management plan can help to achieve the targets. After analysing the threats and pressures, effective planning must be done in order to manage the PAs effectively. Therefore, following analysis was done for all the protected areas to look at the planning elements strength and weaknesses.

OBJECTIVES

- The PA objectives provide for the protection and maintenance of biological diversity- The majority of the parks said that "yes" they all have clear objectives for protecting and maintaining biodiversity. Initially, ShNP was a watershed managed area by conserving the forest in the concept of wildlife reserve. After the national park formation the objective has been changed but still needs to be understood by all the stakeholders.
- Specific biodiversity-related objectives are clearly stated in the management plan- More than twelve protected areas have management plans mentioning biodiversity conservation focused objectives specifying the community involvement in conservation. The biodiversity objectives are not only mentioned in the PA management plans but are clearly stated in the buffer zone and community conservation plans. It is still a challenge for RSWR, SNP, LNP, ShNP, DHWR and KNP to make management plans or review them to achieve the objectives. LNP has been using the management plan prepared in 1970's made by Durham University Himalayan Expedition team. Under the PCP-UNDP initiation, most of the parks have prepared a strategic document with log frames.
- Management policies and plans are consistent with the PA objectives- Those PAs having management plans mentioned that policies were largely consistent with PA objectives.
- PA employees and administrators understand the PA objectives and policies- On average most of the protected area managers and staff understand the PA objectives. The lower ranked staffs such as game scouts and elephant herders, need awareness raising on the PA for better management and their full participation.
- Local communities support the overall objectives of the PA- Conservation areas like Annapurna, Manaslu and Kanchenjunga started the PA with an objective of integrating conservation and development programmes together. Likewise, most of the PAs have buffer zones or proposed buffer zones to encourage people's participation. Though there are numbers of activities incorporated through the buffer zone and community development activities, the assessment needs to be carried out to know the percentage of participation or level of understanding on overall PA objectives. Within the national parks, KTWR, DHR and RNP seem to lack community support to conduct conservation activities.

The overall picture shows that management plans seem to be weak in most of the parks and if they have one, they are not properly implemented. Unless the support of local communities is gained conservation will remain difficult. Therefore, one of the objectives of DNPWC would be to raise awareness among all level of stakeholders for biodiversity conservation and ensure broad support for the PA system.

Legal Security: The second component of planning element as shown in the figure is legal security. Details of each component are addressed below.

- The PA has long term, legally binding protection- With respect to the questions on legal status and security; the majority of the PAs have long term binding protection. But due to the current political situation regular patrolling in most of the areas is restricted. Ecosystems and genetic resources are protected in-situ within the protected areas system of Nepal. DNPWC's mandate is to administrate and manage the PAs. The Constitution of Nepal, 1990, declares 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 country [Article 26(4)]." Beside this several Acts, regulation and guidelines has been developed for long term conservation of the biodiversity and they are as follows:

Aquatic Animals Protection Act, 1961: This Act provides legislative protection of the habitats of aquatic species. However, no agency has been designated to administer and enforce the Act.

National Parks and Wildlife Conservation (NPWC) Act, 1973: The NPWC Act has been a key instrument in protecting biodiversity within the protected areas system.

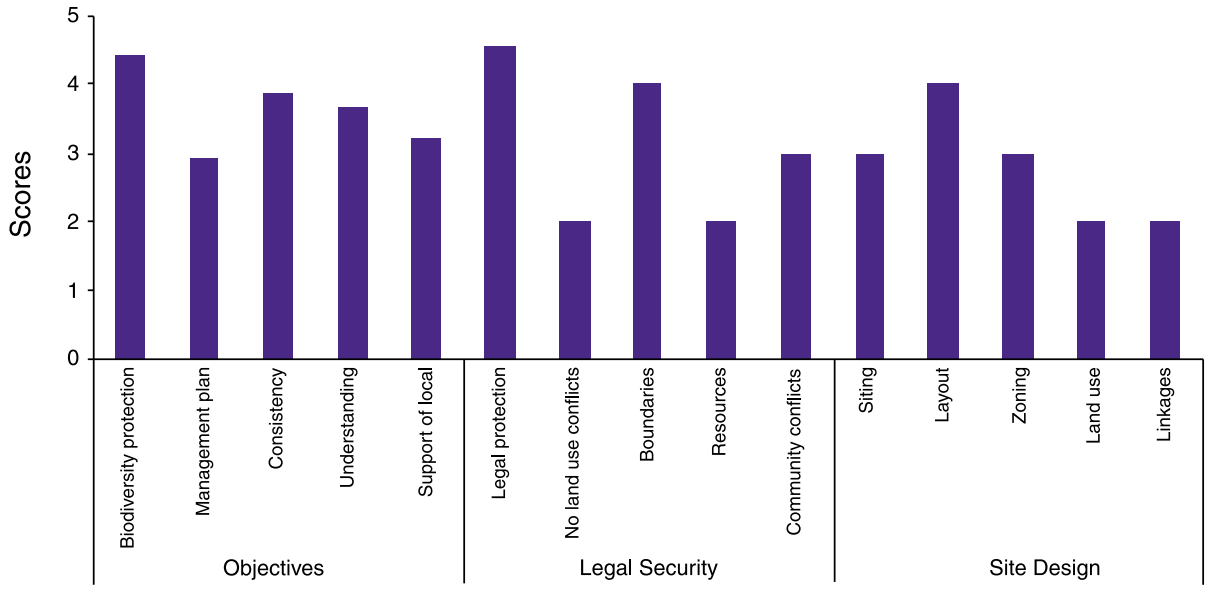
Himalayan National Park Regulations, 1979: These Regulations have made special provisions for people living within national parks to collect natural resources for their daily requirements, such as firewood, leaf litter, small pieces of timber and fodder.

Buffer Zone Management Regulations, 1996, and Buffer Zone Management Guidelines, 1999: The NPWC Act was amended to incorporate provisions for conservation areas and buffer zones. Subsequently, the Buffer Zone Management Regulations and Guidelines were approved to design programmes compatible with national park management and to facilitate public participation in the conservation, design and management of buffer zones.

INTERNATIONAL CONVENTIONS AND OTHER OBLIGATIONS

The World Heritage Convention: In 1972, the Convention for the Protection of the World's Cultural and Natural Heritage recognised that the physical deterioration or disappearance of any cultural or natural heritage site constitutes a harmful impoverishment to the heritage of all nations, and that therefore cultural and natural heritages need to be preserved as part of world heritage. Nepal has been successful in fulfilling its obligations towards the World Heritage Convention, primarily through the implementation of the NPWC Act under which the Royal Chitwan National Park and Sagarmatha National Park were established. Nepal has also proposed that Shey Phoksundo National Park be listed as a world heritage site based on its unique cultural and natural characteristics. The National Conservation Strategy recognised the need to reverse damage and destruction of cultural heritage, as well as encroachment on heritage sites, religious forests and sacred grounds.

Figure 14: Planning Elements:- Objectives, Legal Security and Site Design



Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES): Nepal became party to CITES in 1975.

Ramsar Convention: The Convention on Wetlands of International Importance especially as Waterfowl Habitat, known as the Ramsar Convention, was signed in 1971 and came into force in 1975. His Majesty's Government of Nepal ratified the Ramsar Convention in 1987, and designated Koshi Tappu Wildlife Reserve (KTWR) for inclusion in the Ramsar site. KTWR is an important habitat for Nepal's last surviving population of wild water buffalo (Bubalus bubalis arnee). Altogather there are four Ramsar sites with KTWR. They are Ghodaghodi TAL, Kailali, Bees Hazari TAL, RCNP and Jagdishpur Resvoir, Kapilbastu. The sites were declared in August 2003.

Convention on Biological Diversity (CBD): Nepal signed the Convention on Biological Diversity (CBD) on 12 June 1992 during the UN Conference on Environmental and Development in Rio de Janeiro on 15 September 1993. Nepal became the party to the Convention from 21 February 1994. Based on CBD the Ministry of Forest and Soil Conservation (MFSC) has formed a National Biodiversity Steering Committee chaired by the Secretary of MFSC and its Environmental Division to act as a focal point for CBD. CBD program elements 1-4 are followed by Nepal and many has been adopted into NBS 2002.

- There are no unsettled disputes regarding land tenure or use rights- KTWR and KCA did not have any unsettled disputes, but the ones who mentioned this as a problem also had minimal disputes with neighbouring communities and had clear demarcation of the boundaries.
- Boundary demarcation is adequate to meet the PA objectives- The majority of the PAs have adequate boundary demarcation and also consider zoning for various management aspects. The PAs are designed thinking of core, multiple use (community forests and grazing) and buffer zones.
- Staff and financial resources are adequate to conduct critical law enforcement activities- The majority of the PAs identify problems with law enforcement in controlling poaching, illegal harvesting of timber, NTFP collection and grazing. The main cause of inadequate law enforcement is the current political situation and inadequate staff. Trans-boundary issues also play a key role to enforce law and the PAs found this to be a problem.
- Conflicts with the local community are resolved fairly and effectively- Implementation of Buffer Zone Management Regulations is a natural outcome of previous policy and planning initiatives. The National Conservation Strategy (HMGN/IUCN 1988) emphasised the need for sustainable land use and natural resources. It specifically pointed out that forests outside protected areas must also be protected from deforestation, that people should be made self-reliant in timber, fuel wood, fodder and other forest products, and that local communities should be given the responsibility of managing forests according to geographical conditions and social needs.

People conflict has been an issue for a long time and to address this, the buffer zone concept was started by amending the NPWC Act. However, problems of crop and livestock damage by wildlife create conflicts between the park authorities and local communities. Resource use within the PA is allowed by the government in the mountain areas as long as it does not have an impact on managing the area in a sustainable way and is consistent with conservation objectives. This has caused the conflict between the park and people. KTWR, ShNP and KNP still need to play a significant role to resolve the park people conflict.

One of the strengths of DNPWC is having a strong legal authority to conduct conservation programs. Both the government and community are participating equally in the conservation to minimize the illegal activities within the Protected Areas either by forming anti-poaching units or through community based anti-poaching units.

Site Design and Planning: The third component of planning is site designing and this also has an effect on park management.

- The siting of the PA is consistent with the PA objectives- Most of the protected areas have been established based on biodiversity conservation and to preserve habitat. But at the time there was no accurate field data available. Now new PAs are created based on feasibility studies and field data. KCA mentioned that siting of the PA may not be consistent with the PA objectives, because the area itself is very large and has more settlements. There is cultural diversity in this area and could be the factor of having this as a PA.

Nepal has been successful in fulfilling its obligations towards the World Heritage Convention, primarily through the implementation of the NPWC Act under which the Royal Chitwan National Park in Terai and Sagarmatha National Park were established. Nepal has also proposed that Shey Phoksundo National Park be listed as a World Heritage site based on its unique cultural and natural characteristics. The National Conservation Strategy recognised the need to reverse damage and destruction of cultural heritage, as well as encroachment on heritage sites, religious forests and sacred grounds.

- The layout and configuration of the PA optimizes the conservation of biodiversity- Most of the parks identified that the layout and configuration of the PA has been done for biodiversity conservation and includes large patches of undisturbed areas and covers the various ecosystems of terai and the mountain areas.
- The PA zoning system is adequate to achieve the PA objectives- The majority of PAs have zoning systems, with core zones for specific scientific studies, tourism areas, buffer zones and resource use zones. The zoning systems are relatively good on paper however are not clearly defined on the ground.
- The land use in the surrounding area enables effective PA management- Compare to terai national parks, the mountain PAs have villages inside the park. Though they are inside the park, for better land use and effective park management some areas are delineated as buffer zones. Terai PAs has better access than the mountains, enabling effective PA management not only by itself but encouraging community participation.
- The PA is linked to another area of conserved or protected land- Very few mountain parks have links to other protected areas except for KTWR. DHWR and KNP. Whereas most of the other parks such as KCA, MBNP and SNP are connected to a wider protected land in northern Tibet and have connections within the country to the west and east. PAs like SNP, MBNP and KCA are connected via biological corridors with each other and there is a new concept to link them as a sacred Himalayan landscape.

The overall layout, siting and having zones for management has been improved in almost all the parks. The low land region has the Terai Arc Landscape as the pilot landscape level program encompassing four national parks within Nepal and eight in India. WWF Nepal with ICIMOD and TMI are working in a Sacred Himalayan Landscape in the eastern sector to work in landscape level across India, Bhutan and Nepal borders.

INPUT ELEMENTS-

Most of the projects want to know where they are now and where they want to be in future. But knowing the context and planning is not sufficient to say that the PA is effectively managed. Thus, in this section inputs are assessed. The PAs are not financially or technically strong and they need additional support to carry out the management work especially during this unstable political situation. This section mainly discusses input elements like staffing and their level of skills, communication for data and information sharing, infrastructure and finance.

STAFFING

- The level of staffing is sufficient to effectively manage the area- Inadequate staffing is one of the few weaknesses of the PA system managed under the government. There are still limitations on management capacity with insufficient staff, weak research infrastructure, lack of logistical support, inadequate financial resources and lack of incentives. Although it oversees the management of 18.66% of Nepal's land area, the DNPWC annual report 2003 mentions that there are 41 gazetted officers and 950 non gazetted officers and that they still require more of both. The earlier reports mention having only 22 technicians at headquarters and less than 1,000 nation-wide. With no logistical support or incentives, staff attendance in remote protected areas is poor. Furthermore, field-based staff is the least trained and the most inadequately funded among HMGN personnel. Conservation areas managed by other partners with the government have not faced the problem of low staffing. All respondents felt that there are insufficient numbers of personnel to effectively manage the area. The impact of low staffing is apparent in carrying out effective law enforcement, regular patrolling, monitoring, etc.
- Staff members have adequate skills to conduct critical management activities- The general consensus is that park staff do indeed have the skills to conduct regular monitoring, identify flora and fauna and support in the management of the PA. They do not however have adequate knowledge in GIS, mapping, surveying skills and

how to deal with local communities living in the buffer zones. Staff has inadequate knowledge in implementing integrated and conservation development activities within the local communities.

- Training and development opportunities are appropriate to the needs of the staff- In most of the PAs the training and development opportunities were lacking and needs were also not prioritised. But there are opportunities provided for job rotations, taking staff out for exchange visits, and there has also been good human resource development. Though these trainings are provided how effective these programs have been still needs to be assessed.
- Staff performance and progress on targets are periodically reviewed- All the government staff and even the project staff have an annual review or periodic assessment. Two of the parks mentioned that performance and progress reviews are weak compared to other parks, because due to the current situation the staff are disbursed and monitoring not possible.
- Staff employment conditions are sufficient to retain high-quality staff- On an average the PA mentioned that the conditions are not good enough to retain high quality staff within the government organisations. All the staff are entitled to annual leave but the low government salary renders morale low.

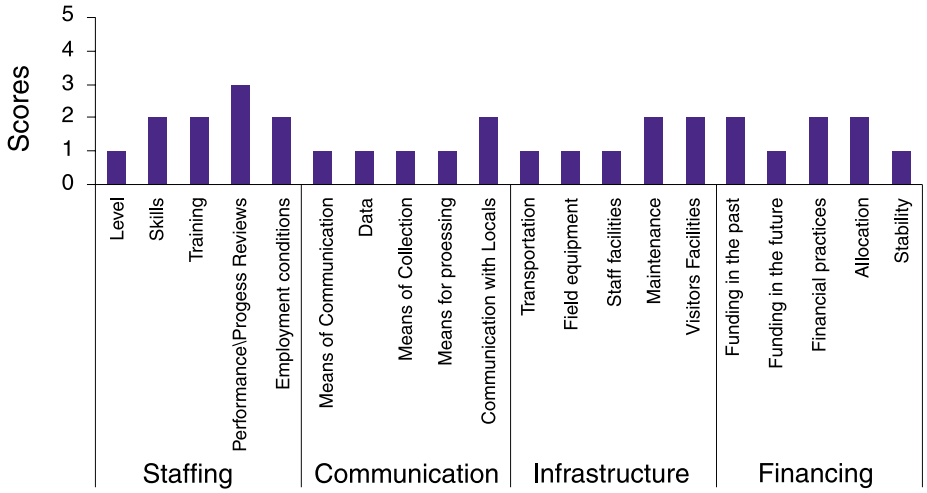
COMMUNICATION AND INFORMATION

- There are adequate means of communication between field and office staff- Communication and information is vital for PA management. Most of the PAs are located in remote areas and the communication is very weak, especially telephones. Therefore all these parks were equipped with radio sets (VHF sets) but this did not last long because they were either stolen by the insurgents or destroyed by fire. The figure shows that most of the parks lack communication between the central office and the field staff.
- Existing ecological and socio-economic data are adequate for management planning- Most of the parks felt that there isn't adequate ecological and socio-economic data for management planning. There has not been sufficient research carried out to know what changes have occurred after park management has intervened. DNPWC is trying to update the data base in the centralised GIS support unit. The protected fauna list of the NPWC Act, 1973, which includes 27 species of mammals, nine species of birds, and three species of reptiles, has not been revised since 1973 in terms of population status, distribution, etc. The list also needs to be updated for inclusion of other species and various studies on birds (Inskip, Baral, Suwal) has been conducted and needs updating.
- There are adequate means of collecting new data- On average; the PAs did not have sufficient data collection equipment, field gear, surveying equipment, cameras and tape recorders. There are old data available in the parks which need to be updated.
- There are adequate systems for processing and analysing data- Most of the parks mentioned that there is a lack of data processing and analysing data in the field. Staff are not trained to handle the data and use the information for adaptive management of the PA. For data analysis ACA and MCA has its GIS lab in Pokhara, where they can send the crude data base. Most of the parks also don't have web access and other communication facilities.
- There is effective communication with local communities- Integrated conservation and development processes and the buffer zone concept has been an effective tool to address people's needs. This has in some ways had a positive impact on communication between local authorities and the community. The indigenous knowledge of mountain peoples in forest management and traditional practices of ethno-ecological relationships would contribute to biodiversity resource management in mountain ecosystems. Amongst several mountain ethnic groups, information about plants and animals is passed from one generation to the next through oral folklore and is often kept secret. Sometimes it is very difficult to extract information from these people, even with some form of payment (Rao 1991; Shengji 1996). There is an urgent need to identify and document indigenous knowledge through proper research approaches; ethno-biology has a great potential for contributing to Himalayan biodiversity conservation (Shengji 1996).

INFRASTRUCTURE

- Transportation infrastructure is adequate to perform critical management activities:- Transportation facilities in most of the mountain PAs are limited either by air or road up to the

Figure 15: Input Elements- Staffing, Communication, Infrastructure and Finance



district headquarters. Therefore, unlike the lowland PAs inadequate transportation facilities makes it very difficult to carry out critical management activities, particularly regular patrolling and monitoring.

- Field equipment is adequate to perform critical management activities:- Everywhere in the mountain PAs staff has to walk for longer distances even to reach their own office sites. Therefore, it is essential to have adequate field equipment like camping (backpacks, bedrolls, tents, etc) and monitoring equipment to perform critical management activities. But as per figure 19 only two PAs seems to be fully equipped and rest is lacking.
- Staff facilities are adequate to perform critical management activities:- Most of the PAs will have their main and site offices in the field to perform critical management activities. But due to security reasons, the armed securities from various site offices were pulled out and most of the offices were burnt down. Therefore, field offices at the moment are merged either to the district headquarters, or the park head quarters. Regarding training, staff training for all levels is conducted through out the year.
- Maintenance and care of equipment is adequate to ensure long-term use:- Most of the parks are managed in coordination with other partners like UNDP, KMTNC, WWF and others. As per the need of the park, equipment support is also provided to these parks but may not be adequate. Government staff is trained to maintain and use the equipment, but if they get transferred long-term maintenance may be difficult.
- Visitor facilities are appropriate to the level of visitor use:- Almost all the mountain parks have visitor facilities owned and managed by the local communities. Especially in the tourist areas like ACA, MCA, KCA, SNP, etc. There are donkeys trails or yak trails which are also used by the local communities and trekkers.

FINANCE

- Funding in the past 5 years has been adequate to conduct critical management activities:- With regards to budget or funding, the government budget is divided into two categories. That is normal budget and development budget, but 80% of the development budget (for infrastructure or any other constructions) has been cut off due to the budget being channelled into the security budget. Therefore, most of the PAs mentioned that only limited budgets have been available these past 5 years, which naturally is inadequate to conduct critical management activities. But in general, discounting the current political issues, the budget allocated is normally adequate to conduct critical management activities.
- Funding for the next 5 years is adequate to conduct critical management activities:- Adequate funding for the next 2- 3 years may be available through donor communities. But if the security situation gets worse, the funding will continue to be channelled elsewhere and in any case no work will be able to be undertaken. As for state funds, they are estimated to be inadequate for the next five years.

- Financial management practices enable efficient and effective PA management:- Quarterly and annual financial reporting is carried out in all the PAs. The entire PA system has to go through a government audit as well and regarding timely transfers of funds, the process takes a longer time. Annual budgets are prepared during the annual work plan preparation and are discussed during the regional planning period.
- The allocation of expenditure is appropriate to PA priorities and objectives:- The participants mentioned that actual expenditures are not in accordance with the protected area objectives and are not justified by the threats, pressures and management constraints of the PA. Therefore, the workshop analysis will help the policy makers and implementers in future to re-do the planning according to the pressures, threats and management constraints to fulfil the objectives as well as take into consideration PA priorities.
- The long-term financial outlook for the PA is stable:- The majority of the participants said that there isn't a stable long-term financial outlook for PAs in the country. Especially if the current political situation goes on and donor commitments dwindle, strategies will have to be rethought for managing PAs.

The overall analysis of input elements shows that, there is few trained staff and that there is a need for more support in training the mid-level and junior staff. The overall communication of data collection, the means and resources are very weak throughout the system. Transportation facilities exist in the Terai but lacking in the mountain areas. As in the case of staff and office quarters it seems to be insufficient in all the parks. Funding scarcity is high after the unstable security in the country and has restricted management practices. Funding is sufficient in case of conservation areas, where KMTNC, WWF and UNDP support programs are launched.

MANAGEMENT PROCESS ELEMENTS

Processes or Practices of management consist of management planning; management decision-making; and research, evaluation and monitoring and it shows the efficiency of PAs management capability. The section deals on how do we go about it if the planning and inputs are in place. It assess in what way the management is conducted to make the PA efficient in their work. It also deals with the suitable management processes for effective management of PAs.

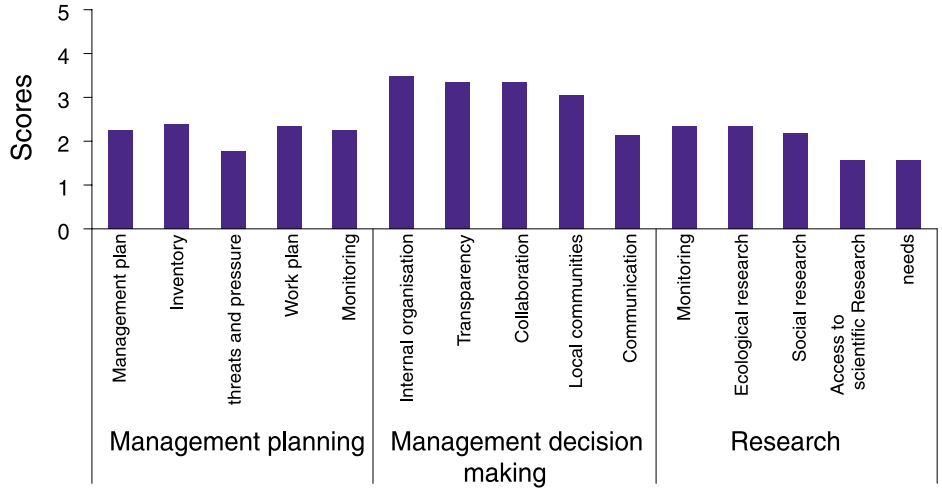
MANAGEMENT PLANNING

- There is a comprehensive, relatively recent written management plan:- In response to questions on management planning, most of them said 'mainly no'. It means they do have the management plans either in the draft form submitted to the government for approval or that their plans are in preparation. If they don't have the plans, they have a biophysical description of area, clearly defined goals and objectives linked to biodiversity conservation or cultural conservation. Action plans are also outlined (rules and regulation) as per the government mandate. If the area has delineated its buffer zones, than each buffer zone (Buffer Zone Rules and Regulation, 1996) get its allocated 30-50% fund after the management plan has been approved.
- There is a comprehensive inventory of natural and cultural resources:- In response to this question, most of the participants said that the inventory of natural and cultural resources are done. In most of the PAs research has been conducted for key species like snow leopard, musk deer and red panda. Even for the plant species there are various studies and inventories done. GIS maps have been produced to show the land use of different protected areas.
- There is an analysis of, and strategy for addressing, PA threats and pressures:- Besides Dhorpatan hunting reserve, all of the other PAs have analysed the threats and pressures to prioritise their importance and to implement activities.
- A detailed work plan identifies specific targets for achieving management objectives:- Annual work plans are developed by all the parks. There is no defined work plans for ShNP, DHR and KNP. However, even for the budgets to be released all the PAs should develop work plans, therefore, the response from these 3 parks seems to be vague or show that these parks did not fully understand the question.
- The results of research and monitoring are routinely incorporated into planning:- Regular monitoring, research and other planning are conducted in most of the PAs. But the park lacks access to scientific research and needs for research is not identified properly. The concept of biodiversity monitoring of each park for management is lacking in all the PAs.

MANAGEMENT DECISION MAKING

- There is clear internal organization:- Almost all aspects of management practices were considered to be positive. Respondents felt that there is clear internal organisation with a defined

Figure 16: Process Elements- Management Planning, Decision Making and Research



structure with clear communication channels and processes.

- Management decision making is transparent:- On average all the respondents said 'mostly yes' in having transparent management decision making.
- PA staff regularly collaborate with partners, local communities and other organizations:- Regular collaboration between PA personnel, partners and communities and participation in decision making has been effective since the initiation of buffer zone. It means conservation is done with the full participation of people, local NGOs, and partner organisations.
- Local communities participate in decisions that affect them:- If it is a conservation area like ACA, MCA, and KCA, it is completely managed by the people and supporting organisations. In the mountain PAs most of the communities reside inside the park and there are separate rules and regulations for the conservation areas and national parks having buffer zones to share the benefits and provide access to natural resource use. There are buffer zone management committees to make decisions on behalf of all the buffer users and conservation area committees. Recently the government has also given a Letter of Intent to KCA conservation area committee to manage the area by themselves with the support of the government.
- There is effective communication between all levels of PA staff and administration:- The participants responded 'mostly yes' to the questionnaire. There used to be effective communication and adequate flow of information among all level of staff prior to the political instability. Now the field visits are restricted and due to strikes and closures travelling for monitoring activities or conducting critical management is limited.

RESEARCH, MONITORING AND EVALUATION

- The impact of legal and illegal uses of the PA are accurately monitored and recorded:- In response to the questions most of the participants said there are monitoring activities going on to measure the impact of legal and illegal uses of the PA. The parks have developed a monitoring format and MIS has been developed by Department of National Parks and Wildlife Conservation for better record keeping and adaptive management. Research and monitoring of tiger, rhino, elephant, red panda, musk deer, snow leopard and blue sheep has been carried out in some of the parks.
- Research on key ecological issues is consistent with the needs of the PA:- Several endangered species including rhinoceros, tiger, swamp deer, red panda, musk deer, and gharial have been studied and their status determined. However, the factors that threaten the existence of plants and animals still require extensive research. There is an urgent need to systematically study the biology of threatened plants and animals, identify factors threatening the species with extinction, and develop approaches to manage PAs more efficiently. Different parts of Nepal, including protected areas, are suffering from invasion by alien species such as Eupatorium adenophorum, E. odoratum, Lantana camera, and Mikania micrantha (NSB, 2002). Research

on these species' eradication is needed in almost all the parks especially in the Terai parks.

In some ways most of the research on key ecological issues has been conducted in Manaslu and Khaptad national park areas. Habitat management of the mountain PAs still seems to be weak. For example, the impact to biodiversity is still not known for issues like grazing management where both livestock and wild animals graze together.

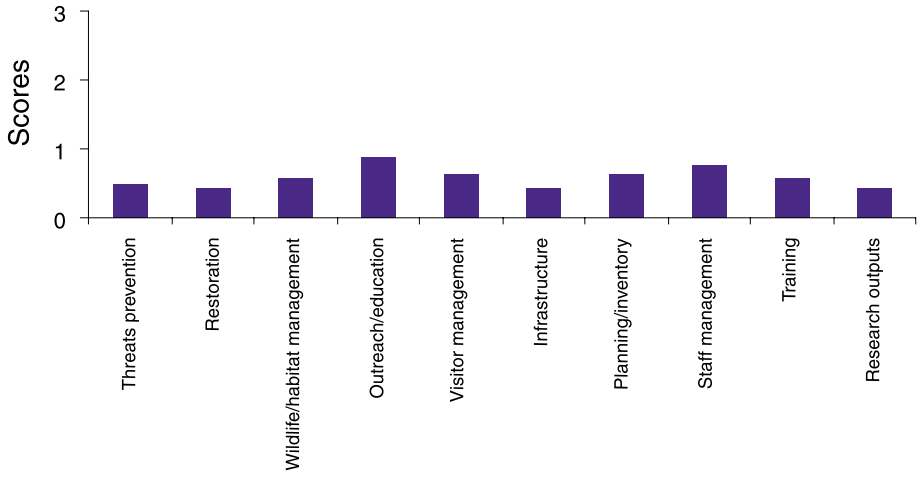
- Research on key social issues is consistent with the needs of the PA:- Social issues have been looked into to know the cultural practices for conserving natural resources (like Nawa Singi in Sagarmatha National Park). NTFP use as medicine and subsistence use has been researched in Shey Phoksumdo National Park and other mountain areas. In collaboration with partner organizations, NTFP cultivation and conservation has been initiated in SPNP. Social issues are addressed less in the terai parks.
- PA staff members have regular access to recent scientific research and advice:- PA staff members do not have regular access to recent scientific research and advice. But to some extent the staffs gets the opportunity to participate in workshops and training to be updated on recent progress. The staffs even get to participate in small team research and they are trained to build institutional capacity.
- Critical research and monitoring needs are identified and prioritized:- Very few PAs have identified critical research and monitoring needs. The government does not have the budget to conduct such an activity. Therefore, partner organizations are supporting them to do it in order to meet the PA objectives. At present, the policies and strategies of the Department of Soil Conservation and Watershed Management do not explicitly address mountain biodiversity conservation. The challenges of poverty, isolation, and environmental sensitivity are mutually reinforcing in mountain areas, and an integrated approach is necessary to overcome them. The level of understanding of the relationship between socio-economic and biodiversity processes in mountain areas is still very limited. There are large gaps in understanding sustainable agriculture, development of non-agricultural opportunities, the unique aspects of space and micro-environmental variation and their implications for biodiversity.

The figure above shows that overall, management plans may not exist per se but some sort of planning is done to carry out the work. If there are management plans then it is a challenge to implement the plans effectively and so this needs to be evaluated. Compared to management planning, internal organisation and transparency is strong among most of the PAs. People's participation is also becoming stronger in most parks. A need for research is felt by all the PAs, but what sort and how to carry it out is still unclear.

OUTPUTS

The outputs are summarised as levels of achievements if all management aspects are considered over the past 2 years. In brief, the outputs have not been adequately consistent with the threats and pressures, PA objectives and annual work plan within the last 2 years. For a more thorough analysis, an impact

Figure 17: Outputs



assessment is necessary to know if we have been able to address the threats and pressure, and have successfully met the PA objectives. We will only get unbiased answers from the questionnaire if the department conducts regular field visits and evaluations of impacts. The outputs here refer to the effectiveness of the PA management, analysing the results of management processes.

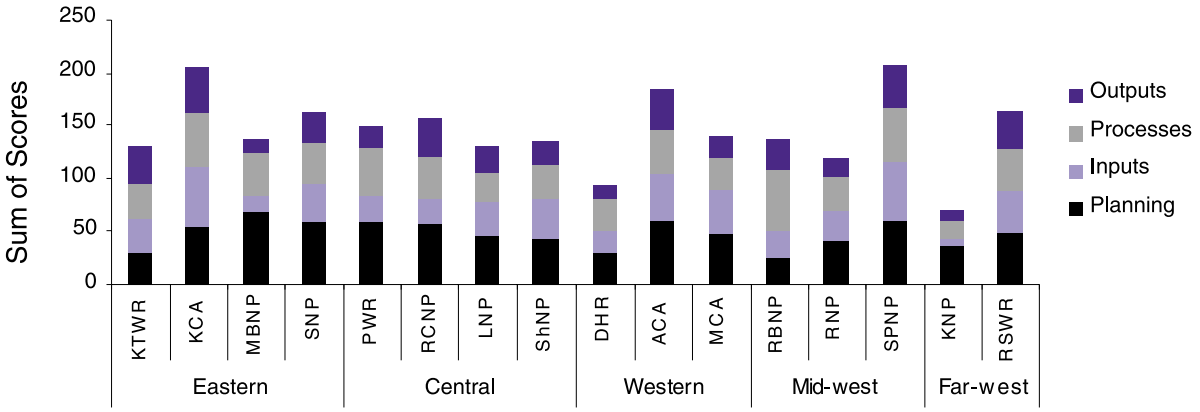
Overall, outputs fall way below average. Even with long-standing funding the parks are unable to address the prevailing threats, restore or manage habitat, share information on large scale and research and inventory is weak. Few Terai PAs like RCNP, RSWR, RBNP and PWR are doing habitat management in small scale like grassland and waterhole management. As for the mountains only KCA seems to be conducting most of the activities to restore the area and manage its habitat. It would be a challenge to DNPWC to assess why effective management is not happening despite its investment and support from partner organisations.

OVERALL MANAGEMENT EFFECTIVENESS:

The overall management effectiveness reflects the sum of the scores from questions relating to protected area planning, inputs and processes and outputs. The analysis reflects whether PAs have really achieved the goal with their appropriate planning and management processes. From a strategic management perspective it is important to understand the relationships between the three main variables- planning, inputs and practices. The planning process and preparation of management plans are emphasized by the department. Therefore, there are very good plans prepared but the plans themselves are not enough to improve management. Once the planning is done then it is essential to have sufficient inputs (finance, staff, housing, communication, etc) and various levels of participation with communities.

The figure above shows the relationship between good planning and areas where the government has tried its best to provide the support. But due to unwanted circumstances and changing practices, the outputs are limited.

Figure 18: Outcome: Overall Management Effectiveness



CHAPTER V

NEXT STEPS AND RECOMMENDATIONS

The recommendations are based on the findings from the workshop:

RECOMMENDATIONS

ASSESSMENT OF BIOLOGICAL ASSETS

The Mid-hills have the greatest ecosystem diversity in Nepal, but what is left of relatively undisturbed areas is seriously threatened by human activities and is insufficiently represented in the protected area system. Conversely, there are fewer gaps in the protected areas system in the high mountain range, from Kanchenjunga to the east to Tinker in the west. Between the Kanchenjunga CA and the Langtang NP, existing gaps are narrow.

CONSERVATION APPROACH IN LAND-SCAPE LEVEL

The area between Kanchenjunga CA and Makalu Barun NP has been identified as potential landscape for a rhododendron reserve, covering the areas around the Milke Danda and Jaljale Himal. The gap between Makalu Barun/Sagarmatha NP and Langtang NP should be protected for its significant Gauri Shanker range.

MANAGEMENT OBJECTIVES

RAPPAM is a broad-level assessment. Site specific measures cannot be developed based on such generalised information. Hence, more detailed assessments should be conducted to define site-specific measures. Most of the parks have management plans and some of them need to be reviewed and implemented.

Design policies that can strengthen protected area management based on their vulnerabilities, conservation priorities and management capacities Review planning elements with existing programs and budget priorities according to the degree of threat and the conservation priority of each PA.

Identify weaknesses in implementation of management plans and develop crucial programs to strengthen those areas. Identify critical knowledge and data gaps, and develop a focused applied and scientific research program to fill the gaps.

Share the findings of this assessment among all the park staff and come up with recommendations to support in the management plan implementation if they have and use these as guidelines if they are preparing one. Identify areas with high management capacity and share lessons learnt.

Estimate the minimum inputs (staff, equipment, infrastructure, funds) required to undertake critical management activities (those that prevent irreplaceable or unacceptable losses to natural resources) for all priority protected areas. This should go hand-in-hand with consideration of the employment conditions necessary to retain high-quality personnel.

It can be used as site-level adaptive management guidance by protected area managers. Recommendations here have focused on key changes necessary to strategically improve protected area management effectives.

RESEARCH, MONITORING AND EVALUATION

At present research, evaluation and monitoring is considered the weakest element of the management process. This is a crucial weakness given that assessment/evaluation is at the heart of the management cycle (figure 1). Given the financial constraints faced by the Department, management should identify and prioritise critical research requirements (some of these have been identified below) as research and monitoring would allow them to better prioritise their efforts and resources. The current situation may have caused restricted movement within and between parks, but a strategy needs to be developed to tackle the circumstances.

ADDRESSING PRESSURES AND THREATS

The principal pressures and threats need to be addressed. This requires a three stage process: diagnosis, formulation or prescription for pressure/ threat reduction and implementation of the prescription on the ground.

CHANGING THE MODE OF PA MANAGEMENT

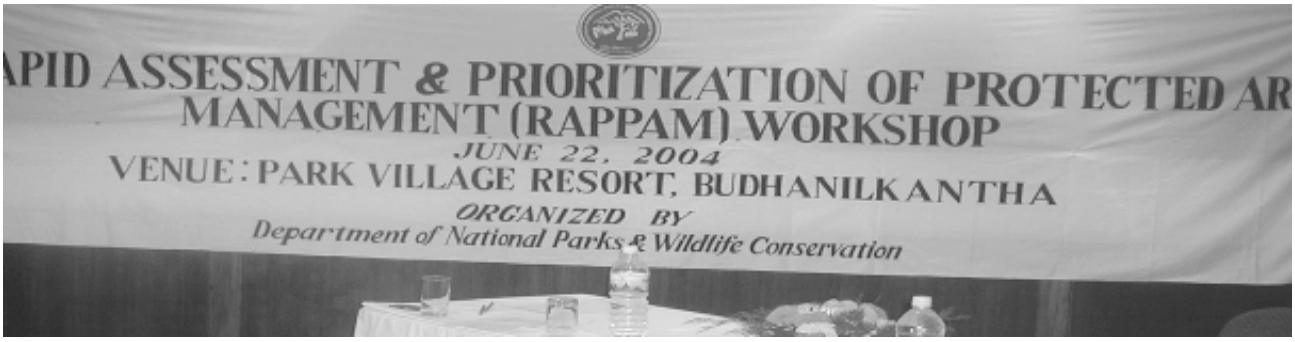
The current political situation and the on-going financial crunch faced by the Government of Nepal provides DNPWC with a window of opportunity to explore alternative biodiversity protection regimes that are less financially onerous to the Government, reduces donor dependence, enhances fund mobilisation and improves stakeholder participation. Alternative management models could include: privatisation of protected areas, conversion of DNPWC into a Government parasitical with a Trust Fund, hand-over to NGOs or community based groups, greater reliance on the concessionaire model.

VALIDATION AND AUTHENTICITY OF THE TOOL

Questions were raised based on the validating and authenticity of the analysis. That is, it was recommended to triangulate the analysis with other field studies. The assessment tried to go through literature but did not give enough sources of extent, impact, trend and permanence. It is suggested however that RAPPAM does provide the broad trends and highlight the main problems across the PA system, which can be the basis of future planning.

FOLLOW UP ACTIONS

- The RAPPAM methodology provides broad-level comparisons among protected areas regarding its management and acts as a baseline for almost all the protected areas. Therefore, sent the analysis to all the parks for their follow up and incorporated their inputs.
- The findings will be presented to all the Regional Directors and used during the regional planning. Trans-boundary issues needs to be looked at to identify the pressures and threats. Establishing new PAs adjoining existing ones in neighbouring countries is needed. Large total contiguous PAs, whether as separate protected areas grouped together (e.g. Chitwan and Parsa) or in different countries, is crucial to maintaining healthy populations of large mammal species.
- Strengthen coordination mechanisms among the implementers and partners
- Consolidate the findings in a database to track progress on the management of established PAs.
- Training and follow up the park staff in using RAPPAM and maintain the database.



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LIST OF ACRONYMS

APU	Anti Poaching Unit
BCM	Beneficiary Contact Monitoring
BCP	Bardia Conservation Project
BICP	Bardia Integrated Conservation Project
BZ	Buffer Zone
BZDC	Buffer Zone Development Council
BZDP	Buffer Zone Development Project
CBO	Community Based Organization
DAG	Disadvantaged Groups
DG	Director General
DNPWC	Department of National Park and Wildlife Conservation
F. Y.	Fiscal Year
FE	Formal Evaluation
GIS	Geographical Information System
HMG	His Majesty's Government
IGA	Income Generating Activities
KMTNC	King Mahendra Trust for Nature Conservation
KTWR	Koshi Tappu Wildlife Reserve
LMC	Lodge Management Committee
Logframe	Logical Framework
M&E	Monitoring and Evaluation
MFSC	Ministry of Forest and Soil Conservation
MIS	Management Information System
NGO	Non-governmental Organization
OE	Ongoing Evaluation
PCB	Project Coordination Board
PEC	Project Executive Committee
PPP	Park and People Programme
PRA	Participatory Rural Appraisal
PWR	Parsa Wildlife Reserve
RBNP	Royal Bardia National Park
RCNP	Royal Chitwan National Park
RSWR	Royal Suklaphanta Wildlife Reserve
RNA	Royal Nepalese Army
RRA	Rapid Rural Appraisal
TOR	Terms of Reference
UC	Users Committee
UG	Users Group
UNDP	United Nations Development Program
VDC	Village Development Committee
WE	Women in Environment
WWF	World Wide Fund for Nature

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The analysis of RAPPAM is based on the substantial efforts of DNPWC and assistance from various Protected Areas managers, community people and organisations who generously shared their knowledge and expertise. The document provides the information on PA management system in Nepal and the culmination of hard work by a broad range of government sectors, non-government organisations, and individual stakeholders. WWF Nepal Program would like to express sincere thanks to all those who contributed to this effort.

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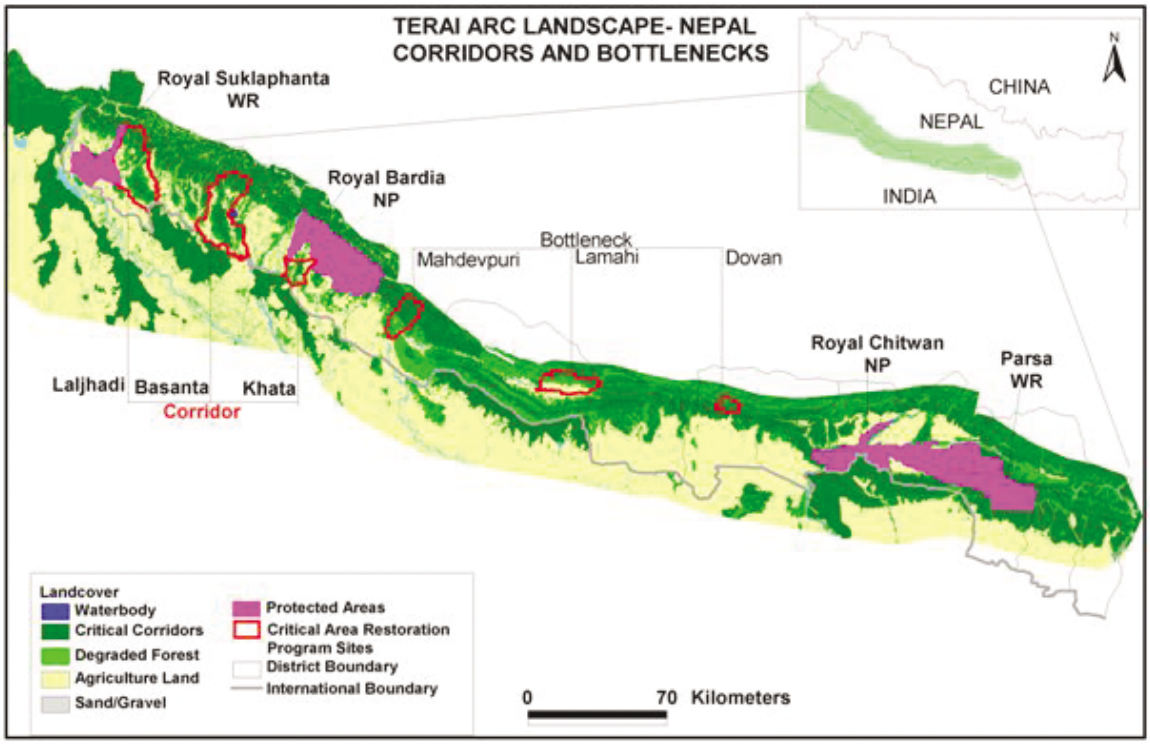
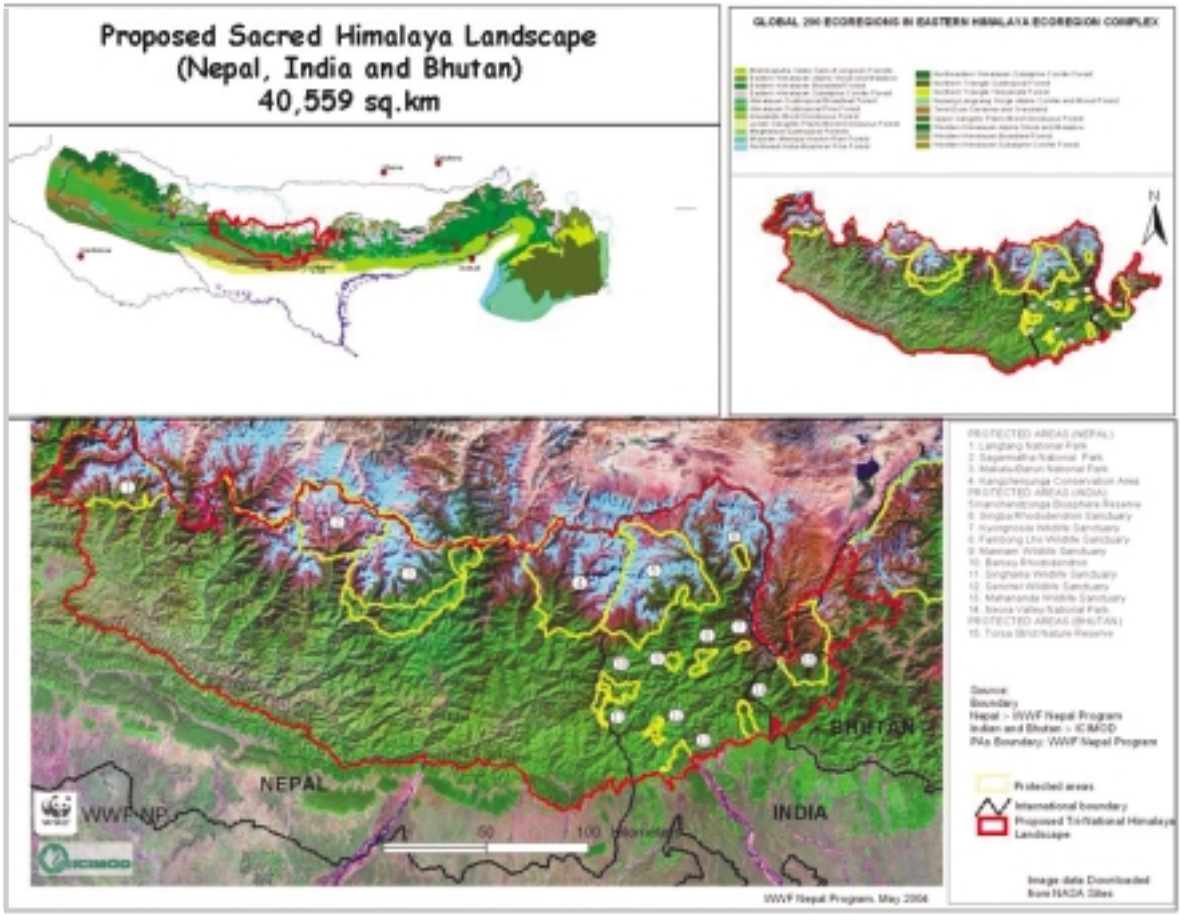
The assessment has been carried out through several rounds of consultations workshops among representatives from Government, partner organisation, community members and WWF Nepal Programs staff and consultant. For the production of the first report of Terai Protected Areas, WWF Nepal Program acknowledges Mr. Devendra Rana and Mr. Bharat Pokharel for their contributions and for its essential co-ordinating role and Ms. Sushila C. Nepali to complete the assessment of all PAs of Nepal and do the final analysis.

Last but not least, we extend our grateful thanks to the Protected Areas Initiative, WWF International, Gland for financial support and Ms. Liza Higgins and Dr. Sarala Khaling for their regular suggestion and inputs to carry out the assessment and without them this document would not have been possible.


TERAI ARC LANDSCAPE- NEPAL
CORRIDORS AND BOTTLENECKS
Royal Suklaphanta WR
Royal Bardia NP
Bottleneck
Mahdevpuri
Lamahi
Dovan
Royal Chitwan NP
Parsa WR
Laljhadi
Basanta
Khata
Corridor
CHINA
NEPAL
INDIA
N
Landcover
Waterbody
Critical Corridors
Degraded Forest
Agriculture Land
Sand/Gravel
Protected Areas
Critical Area Restoration Program Sites
District Boundary
International Boundary
0
70 Kilometers


Proposed Sacred Himalaya Landscape
(Nepal, India and Bhutan)
40,559 sq.km
GLOBAL 200 ECOREGIONS IN EASTERN HIMALAYA ECOREGION COMPLEX
N
BHUTAN
NEPAL
INDIA
WWF-NP
ICIMOD
WWF Nepal Program, May 2006
Source:
Boundary
Nepal :- WWF Nepal Program
Indian and Bhutan :- ICIMOD
PAs Boundary: WWF Nepal Program
Protected areas
International boundary
Proposed Tri-National Himalaya Landscape
Image data Downloaded from NASA Sites

Nepal

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WWF's Mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature by:
· Conserving the world's biological diversity;
· Ensuring that the use of renewable natural resources is sustainable; and Reducing pollution and wasteful consumption

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