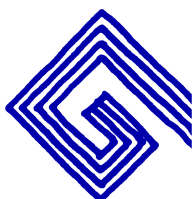




Strengthening the System of National Protected Areas Project, Namibia

Subcontract No. 3: Conservation Needs Assessment

**Revised Report
March 2005**



The Environment and Development Group
41 Walton Crescent, Oxford OX1 2JQ, UK
Tel: +44 (0)1865 318180; Fax: +44 (0)1865 318188
Email: admin@edg.org.uk Web: www.edg.org.uk

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**Chris Brown
Susan Canney
Rowan Martin
Peter Tarr**

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Abbreviations and Acronyms

BCLME	Benguela Current Large Marine Ecosystem Project
CBNRM	Community-Based Natural Resource Management
CITES	Convention on International Trade in Endangered Species (of Wild Fauna and Flora)
DEA	Directorate of Environmental Affairs
DPW	Directorate of Parks and Wildlife Management
DSS	Directorate of Scientific Services
EEI	Etosha Ecological Institute
EIA	Environmental Impact Assessment
EIS	Environmental Information Services
EMP	Environmental Management Plan
FIRM	Frum for Integrated Resource Management
GEF	Global Environmental Facility
GIS	Geographic Information System
GRN	Government of the Republic of Namibia
ICEMA	Integrated Community-based Ecosystem Management Project
IRDNC	Integrated Rural Development and Nature Conservation
KFW	Kreditanstalt für Wiederaufbau– German development bank
LIFE	Living in a Finite Environment
MBESC	Ministry of Basic Education, Sport and Culture
MET	Ministry of Environment and Tourism
MME	Ministry of Mines and Energy
NACOMA	Namib Coast Biodiversity Conservation and Management Project
NACSO	Namibia Association of CBNRM Support Organizations
NDP	National Development Plan
NGO	Non-Governmental Organization
NNF	Namibia Nature Foundation
NRIS	Natural Resource Information Service (Ministry of Lands, Resettlement and Rehabilitation)
NRSC	National Remote Sensing Centre
PA	Protected Area
PAN	Protected Area Network
PESILUP	Promoting Environmental Sustainability through Improved Land Use Planning Project
SADC	Southern African Development Community
SCP	Skeleton Coast Park
TFCA	Trans-Frontier Conservation Area
TNNDI	Three-Nations Namib Desert Initiative
UN	United Nations
UNAM	University of Namibia
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WHS	World Heritage Site
WWF	World Wildlife Fund (US)

Executive Summary

Introduction

This is the third of three background reports prepared on behalf of the Strengthening the System of National Protected Areas Project, "A Conservation Needs Assessment." The report consists of a status assessment of existing protected areas (PAs) identifying priority threats and problems. It also includes the identification of ways to realign the PA network for optimal conservation success within the Namibian context. Finally, it includes the execution of a needs assessment concerning land and species not represented in protected areas as guided by priorities for habitat protection. Related specific outputs include an assessment of the data management requirements, an evaluation of the potential for proclamation of World Heritage Sites in order to complement PAs, and an audit of current control procedures concerning prospecting and mining in PAs.

The report sets out, in Section 3, the frame conditions necessary for the Ministry of Environment and Tourism to effectively expand, manage and develop the park network of Namibia in order to adequately protect the biodiversity and landscapes of the country. These conditions were used to articulate the long-term vision for conservation in Namibia summarised in Section 4. This vision was used to guide the subsequent area-based management requirements and thematic analyses contained in Sections 5 to 8.

Frame conditions

Within modern biodiversity conservation theory and practice, the frame conditions necessary for the Ministry of Environment and Tourism to adequately protect the biodiversity and landscapes of the country require a fundamental paradigm shift. Recommendations include:

1. Establish staffing structures that have clear lines of responsibility and authority based on two clear themes: area-based management and thematic priorities.
2. Devolve authority and responsibility to relevant staff.
3. Keep management and development plans simple, goal- and action-oriented and linked to feed-back "adaptive management" loops.
4. Focus capacity-building on managerial and leadership skills.
5. Outsource all non-core functions and empower partners to help implement Ministry goals and objectives.
6. Promote compatible, biodiversity friendly land-uses adjacent to parks and in priority areas.
7. View parks as engines for local and national development.
8. Form integrated land management partnerships and linkages to enhance biodiversity and economic opportunities and landscape approaches to conservation.

A Long-term Conservation Vision for Namibia

The long-term conservation vision developed within this document aims to devise a system of integrating land and natural resource management that transforms the current protected areas patchwork into a protected areas network. Ideally, it will create incentives for all Namibians—MET, conservancies, private landowners and tourism operators—to work together toward a common goal. Three key ingredients are suggested for achieving this vision:

1. The creation of “Integrated Regions” whereby protected areas are grouped into regions based on an ecological rationale.
2. The development of ‘smart partnerships.’
3. The integration of tourism and protected area management.

MET could reconsider its current structure to focus operations in three distinct ‘Integrated Regions’ to facilitate co-ordination and to ensure that conservation objectives are being met with maximal efficiency.

The three proposed Integrated Regions are:

- North-West
- North-East
- Central-South

Through the creation of Joint Management and Development committees that include important stakeholders, MET will be in a particularly strong position to encourage partnerships that undertake pro-conservation land use practices. Vision 2030 calls for a strategic approach to tourism planning. It links tourism and wildlife management for the mutual benefit of conservation and revenue generation at the national and local levels. In addition, this integrated approach can facilitate linkages to other GEF-financed projects in similar and related sectors.

The section includes a discussion of the relative importance of different taxa in terms of biodiversity and of the current biodiversity knowledge gap.

Management and Development in Selected Protected Areas

This section is structured to position the interventions of the upcoming MET/GEF Protected Areas Project within the longer-term vision. It will do so by addressing each of the focus PAs within the context of the Integrated Regions. The nature and assets of each integrated region are described, challenges and opportunities are highlighted and potential actions are proposed. The protected areas that are the focus of the first phase of the MET/GEF project are then described in terms of their conservation importance, their management and development issues and recommendations for addressing those issues. Recommendations include linkages and cooperative management practices, both between land users and land managers, and between the three Integrated Regions.

Data Management Systems

The adequacy of data and information management systems in use by the MET is examined with respect to the vision guiding the MET-UNDP-GEF Strengthening the System of National Protected Areas Project. This section documents MET’s currently available data related to wildlife and biodiversity conservation, where it is computerized, and how it is used. Each Directorate is described with highlighting opportunities and challenges in the context of the new vision for wildlife and biodiversity conservation. This is followed by recommendations for activities to be undertaken during the first phase of the project.

Data collection is patchy with respect to biodiversity conservation as historically it has been focused on monitoring to maximize populations in parks and to regulate off-take. Much of the information reported at park level is not used as effectively as it might be. Several computerised systems are being developed independently to deal with specific issues, and a strategic approach is needed to ensure they work together and deliver the information required. CBNRM has implemented a computerized system and DSS is looking into how it

can implement a similar system.

Recommendations include a system of monitoring for adaptive management. This system will include a process by which knowledge is gathered through priority-setting, action, monitoring, and modification of activities. For maximal effect, information should be produced in a form that can be easily accessed by primary users within the MET, and by other parts of government such as mining, agriculture, and planning. Ideally this will raise the profile of these issues within different sectors' decision-making processes. In addition, an assessment of data/information requirements that demonstrates how information can be used, and an integrated GIS-based data management system is needed.

Audit of the Control Procedures on Prospecting and Mining in Protected Areas

There appears to be some justification for concerns expressed by MET, tour operators and environmentalists that prospecting and mining in protected areas is causing adverse impacts. The original Terms of Reference focussed on the Policy for Prospecting and Mining in Parks and National Monuments, but the consultants reviewed all policies and laws relating to prospecting and mining.

This section provided an overview of the key policies and laws, an examination of the current system of managing this sector's activities in PAs, recommendations for the MET/GEF project, and specific comments on the Policy for Prospecting and Mining in Parks.

For the most part, the various policies and laws regarding prospecting and mining in Namibia are adequate, relatively consistent and mutually supportive. The main deficiency is that the Environmental Management Bill has not yet been passed, though many clauses in the Minerals Act already require EIAs, EMPs etc. At least one inconsistency remains: the balance of power between MET and MME regarding the authorisation of prospecting and mining in parks. While this inconsistency is largely dealt with at the policy level, it is recommended that MET and MME seek to harmonise their legislation on this key point.

Institutional structures for administering applications for prospecting and mining in Namibia are largely in place and functional, but staff levels and experience are inadequate to enable proper post-implementation monitoring.

The issues raised in this assessment do not require any external funding to be addressed. Government could align its policy and legislative environment relatively easily, and the imminent release of both the amended Mining Bill and the Environmental Management Bill provide the ideal opportunity.

World Heritage Sites

Under the auspices of the Ministry of Basic Education, Sport and Culture, the National Heritage Act was passed in 2004, thus paving the way for process of registering WHSs.

As required by the Convention and under the authority of the Act, the MBESC has established a National Committee on the Implementation of the Convention. This Ministry is hopeful that other key ministries, especially MET, will become more active on the various committees that have been set up. They view MET as a key partner in the process of registering sites and in their subsequent management.

Namibia has already submitted a list of potential sites to the World Heritage Committee;; work has commenced on the registration of Twyfelfontein as Namibia's first WHS. The advantages of having a WHS include increased support for conservation, marketing, awareness and education, national pride and capacity building.

A costed action plan is provided along with a number of appendices providing further details on some of the sections in the main report.

1. Introduction

This report addresses Subcontract 3 of the Strengthening the System of National Protected Areas Project, namely “A Conservation Needs Assessment.” It includes a status assessment of existing protected areas (PAs) that identifies priority threats and problems; the identification of ways to realign the PA network for optimal conservation success within the Namibian context; and a needs assessment concerning land and species not represented in protected areas in terms of priorities for habitat protection. Related, more specific outputs include: an assessment of the data management requirements, an evaluation of the potential to proclaim World Heritage Sites to complement PAs, and an audit of current control procedures concerning prospecting and mining in PAs.

2. Methodology

This assessment was carried out over the period October – December 2004. It involved four consultants (Peter Tarr, Rowan Martin, Dr. Chris Brown, and Dr. Susan Canney) who each addressed specific tasks outlined in the Terms of Reference.

The approach was based on the premise that effective conservation requires the correct structure and framework in which to operate, in order to ensure that investment in personnel, staff, equipment and infrastructure delivers the desired results in the most sustainable and efficient way.

For this reason the first step was to set-out the frame conditions (see Section 3) necessary for the Ministry of Environment and Tourism (MET) to effectively expand, manage and develop the park network of Namibia, and to adequately protect the biodiversity and landscapes of the country. These were used to articulate the long-term vision for conservation in Namibia summarised in Section 4 which was used to guide the subsequent area-based management requirements and thematic analyses contained in Sections 5 to 8.

3. Frame Conditions in the Ministry of Environment and Tourism

Regional and Park management and development plans, staffed posts, infrastructure, equipment and budgets – this is what it takes to manage protected areas and to conserve biodiversity. Right? **Wrong!**

There are higher order conditions that need to be in place and functioning efficiently for institutions to work effectively, particularly institutions responsible for the well-being of something as dynamic, unpredictable and complex as ecosystems, biodiversity, protected areas and their interface with social, economic and political systems.

The frame conditions necessary for the Ministry of Environment and Tourism to effectively expand, manage and develop the park network of Namibia, and to adequately protect the biodiversity and landscapes of the country, within modern biodiversity conservation theory and practice, require a fundamental paradigm shift.

No longer are fenced off, isolated parks, largely inaccessible to the people of the country and surrounded by hostile neighbours acceptable to the voters and taxpayers. No longer are

poor park management, unilateral decision-making and remote conservation policies and approaches acceptable to conservation stakeholders. No longer are run-down tourism facilities, limited and inefficient tourism services, weak awareness and educational programmes, and hostile attitudes to research tolerated by the national and international community. And no longer are the untapped economic opportunities of protected areas and indigenous biodiversity, as a result of poor policies and centralist bureaucratic command-and-control structures, acceptable to national leaders, investors and everyone interested in national development. These are all aspects that the Ministry of Environment & Tourism has identified and has started addressing in various ways. The challenge is to move faster and more decisively. Small steps do not address these problems; large bounds are needed to move firmly away from past practices and to new approaches. A team approach is necessary, the whole Ministry, with its partners, working as one.

The following “new ways of thinking” help set the scene for the more specific recommendations that follow:

- Address the most important issues, which specifically advance the mandate of the Ministry and its key objectives. Don’t get sidetracked by other agendas.
- Look for multiple benefits – for biodiversity conservation, for economic growth, for social strengthening, for education and research, for partnership and for cost-effectiveness and efficiency.
- Link short-term actions to medium-term targets and long-term visions – always work towards the end objectives, but in clear and manageable steps.
- Create integrated approaches and genuine partnerships. Environmental issues and challenges, linked to socio-political and economic realities, are too complex to be resolved and managed by any one group acting alone.
- Move from developing and implementing fixed plans, which are increasingly out of date, to operating an adaptive, dynamic process that continuously evolves and improves. The anchor points should be the common philosophies and principles that are established, accepted and shared – not plans.
- Move from a view that it is the state or government alone that is responsible for biodiversity conservation and related land management to one that sees responsibility of society as a whole. This means a full partnership, where the state helps create an effective enabling environment.
- Move from centralized and controlled decision-making to sharing responsibility, authority, decision-making, information, opportunities and concerted actions.
- Move from a focus on outputs to a focus on outcomes that actually represent achieved goals and visions.

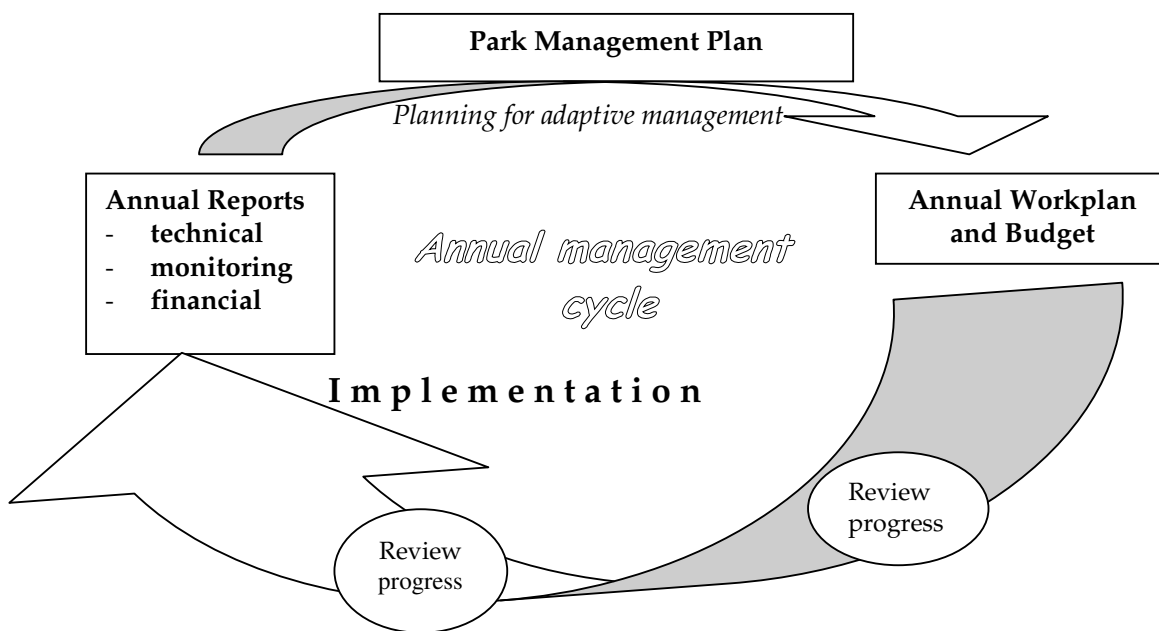
Specific recommendations for creating a conducive and effective operational environment include the following:

1. Establish staffing structures that have clear lines of responsibility and authority. These lines should have two clear themes:
 - a) Area-based management – covering parks and neighbouring lands in an integrated landscape approach.
 - b) Thematic priorities – covering taxonomic groups and specific subjects (e.g. social ecology, rare and endangered species, wetlands, birds, surveys & census, research, etc).
2. Devolve authority and responsibility to relevant staff. Through the supervisory chain of command, ensure that staff fully accept and exercise their authority and responsibility and, in turn, devolve these down the line. It is absolutely critical that this aspect be

thoroughly implemented. It is also critical that staff understand that they are accountable primarily to their institution's mission, mandate and objectives, not to their supervisor. The supervisor is there to ensure that the relevant accountability is implemented.

3. Keep management and development plans simple, goal- and action-oriented and linked to feed-back "adaptive management" loops. Link plans to annual work plans, budgets and reporting.

Figure 3.1: Annual management cycle



4. Focus capacity building on managerial and leadership skills. In developing countries these are the skills in shortest supply, and this applies to Namibia.
5. Outsource all non-core functions and empower partners to help implement Ministry goals and objectives. It is the Ministry's mandate to ensure that biodiversity is protected and parks are managed effectively. This should be done in the most efficient and cost-effective way. It is usually easier to monitor others and demand improved efficiency, than to monitor and reprimand yourself. Finding new ways of effective implementation through partnership and outsourcing could contribute significantly to enhanced management and service efficiency.
6. Use the huge incentive potential that parks and the value of indigenous biodiversity contain to promote compatible land-uses adjacent to parks and in priority areas, and to promote land-use practices that are biodiversity friendly.
7. View parks as engines for local and national development, and explore biodiversity-compatible ways of unleashing their potential, in partnership with neighbours, investors and others. Wherever possible, harness these partnerships to assist with park management, maintenance and development services.
8. Form integrated land management partnerships and linkages to enhance biodiversity and economic opportunities and landscape approaches to conservation. Look at the potential of using existing and newly acquired land within the PAN to create linkages between other forms of conservation-based land management, such as conservancies, private nature reserves, concession areas, etc. Small blocks of land may create linkages

and thus larger units, which could be enhanced through co-management, introduction of high value species, and other innovative approaches to biodiversity conservation.

In most cases of systemic conservation failure it is the operational environment, or “frame conditions” under which people are working, that are the root of the problem. There are often just a handful of root causes, but these have multiple manifestations. It is vitally important that the institutional root causes are properly addressed, that a conducive, supportive and devolved operational environment is created and nurtured, and that the principles and philosophies underlying this working environment are institutionalized. If these aspects are not addressed, then planning at the park and local levels, realigning staff structures, creating new infrastructure, acquiring additional vehicle and attracting new and additional funding will not make any difference in achieving the outcomes of improved biodiversity conservation and park management.

4. A Long-term Conservation Vision for Namibia: Transforming a Patchwork into a Network

Through its firmly established national protected areas, conservancies and other conservation areas, the Republic of Namibia is committed to the long-term conservation of biodiversity, aiming to maximize the socio-economic benefits to the Namibian people by focusing on Namibia’s assets and comparative advantages. These include:

- its natural diversity of wildlife, landscapes, heritage and wide open spaces, many of which are unique in the world
- its enormous potential to offer the world a model case of dynamic and innovative PA management practices for conservation and economic development
- its diversity of human resources and potential for mutually beneficial partnerships

The long-term conservation vision towards which this document is orientated aims to devise a system of integrated land and natural resource management that transforms the current protected areas patchwork into a protected areas network. It also aims to create incentives for all Namibians; with MET, conservancies, private landowners and tourism operators to work together for a common goal.

As such, it builds on the vision set out in a 1997 speech made His Excellency the President of the Republic of Namibia, Dr Sam Nujoma, which introduced the New Conservation Plan and included plans to ‘expand’ Etosha National Park; see the release of game from game parks to restock depleted areas; and to bring about greater economic diversification by allowing people on communal lands to take ownership of the wildlife in their areas.

4.1 The Existing Conservation Areas

The conservation estate in Namibia currently consists of:

- The state-controlled protected area network comprising 21 parks and reserves (representing 13.8% of the total land area);
- Communal conservancies;
- Privately owned reserves and game farms.

4.1.1 National protected area network

The national protected area network (state-controlled) is not only a cornerstone of the nation's effort to conserve biodiversity (an essential requirement for peoples' livelihood) but it also has the potential to become an engine for regional and national economic development. It generates direct income through park tourism and effectively underpins a large proportion of the economic values generated by tourism outside parks. It has also acted as an important source for wildlife stocks outside parks, through both natural and managed dispersal. Without the national protected area system, much economic activity associated with the tourism industry as a whole simply would not exist.

4.1.2 Communal conservancies

Communal conservancies are areas of land on which communities have limited rights to manage and benefit from the utilization of its wildlife resources. The main objective is to provide incentives to promote greater sustainable use through co-operation and improved management. The proximity of state protected areas as well as the high value of biodiversity in many conservancies offer rural people in these regions considerable potential for financial and economic gain; this proximity also makes ecotourism and conservancy management attractive as land use options. Conservancy management complements and does not necessarily exclude traditional farming, with members practising normal farming activities in combination with wildlife use on a sustainable basis. They can therefore, diversify livelihoods, expand a resource base as a means for coping with drought, increase household incomes, and highlight them as having a key role in contributing to the poverty reduction and income distribution targets of the NDP2.

At the moment the parks and reserves function as islands, however lands owned by communal conservancies have potential to link parks and reserves into a true network of protected areas, (Figure 4.1) as most aim to enhance habitat for game species.

4.1.3 Privately owned reserves

Privately owned reserves and game farms play an important role in Namibia's tourism and conservation. Some farms pool their resources to improve conservation outcomes, joining adjacent land units to form larger conservation areas. Privately owned reserves, conservancies and game farms are potentially less permanent categories of conservation land but could also contribute.

4.2 The Big Picture

Namibia has the potential to become a world leader in conservation by providing a working model of integrated conservation and economic development in action. Many of the essential ingredients are already in place but require guidance according to a holistic vision that enables their co-ordination and effective functioning.

Figure 4.1 shows how existing protected areas link together, while Figures 4.2 and 4.3 show how these linkages cover large proportions of important natural ecological units. This is a unique situation in the world, and offers the potential for rationalizing management to facilitate the delivery of greater conservation and economic benefits (e.g. larger animal populations, reduced problem animal conflict, protection of unique species and habitats, diversification of rural livelihoods, additional tourism potential). Namibia is also unique in that its conservation challenges (e.g. the management of tourist impacts) are tractable given a new vision that takes a holistic view and plans accordingly.

Vision 2030 calls for an 'extended and well-managed protected areas network to include biodiversity 'hotspots' and trans-boundary areas'. To achieve this requires a holistic approach to Namibia's conservation strategy by grouping priority areas into integrated regions that show consistency in terms of habitats, ecological processes, wildlife movements, and future compatible land use opportunities. This has several advantages:

1. It safeguards ecological processes -- a major objective of the NDP2 and Vision 2030 -- by incorporating river basins and migration routes. Thus for example, it can address the problem of boundary fences preventing animals moving East-West along migration routes, and relieve the issue of problem animals by providing more space for these animals to roam (see for example Figure 4.2).
2. It can also address the issue of representation and the need to extend protection to the many important habitats and species (particularly endemics) that currently occur outside parks¹. Including communal conservancies within the protected area network provides a better coverage of vegetation types and important habitats by 'filling the gaps' (see Figure 4.3).
3. Management approaches within these regions will be roughly consistent, and will encourage coordinated land development planning.
4. It provides the potential for the marketing of new tourism opportunities by enabling visitors to cross boundaries and sample a variety of wildlife, landscape and cultural experiences.

¹ It does not adequately cover 16 out of the 28 terrestrial vegetation types, while six types of savanna have less than 2% representation - Mountain savanna, Thornbrush savanna, Highland savanna, Dwarf Shrub savanna, camelthorn Savanna, and Mixed Tree and Shrub savanna - and several have been dramatically transformed by agricultural monocultures. Ephemeral rivers are also heavily underrepresented despite their importance for agriculture and wildlife.

Figure 4.1 Namibia's protected area network showing the potential for linkages

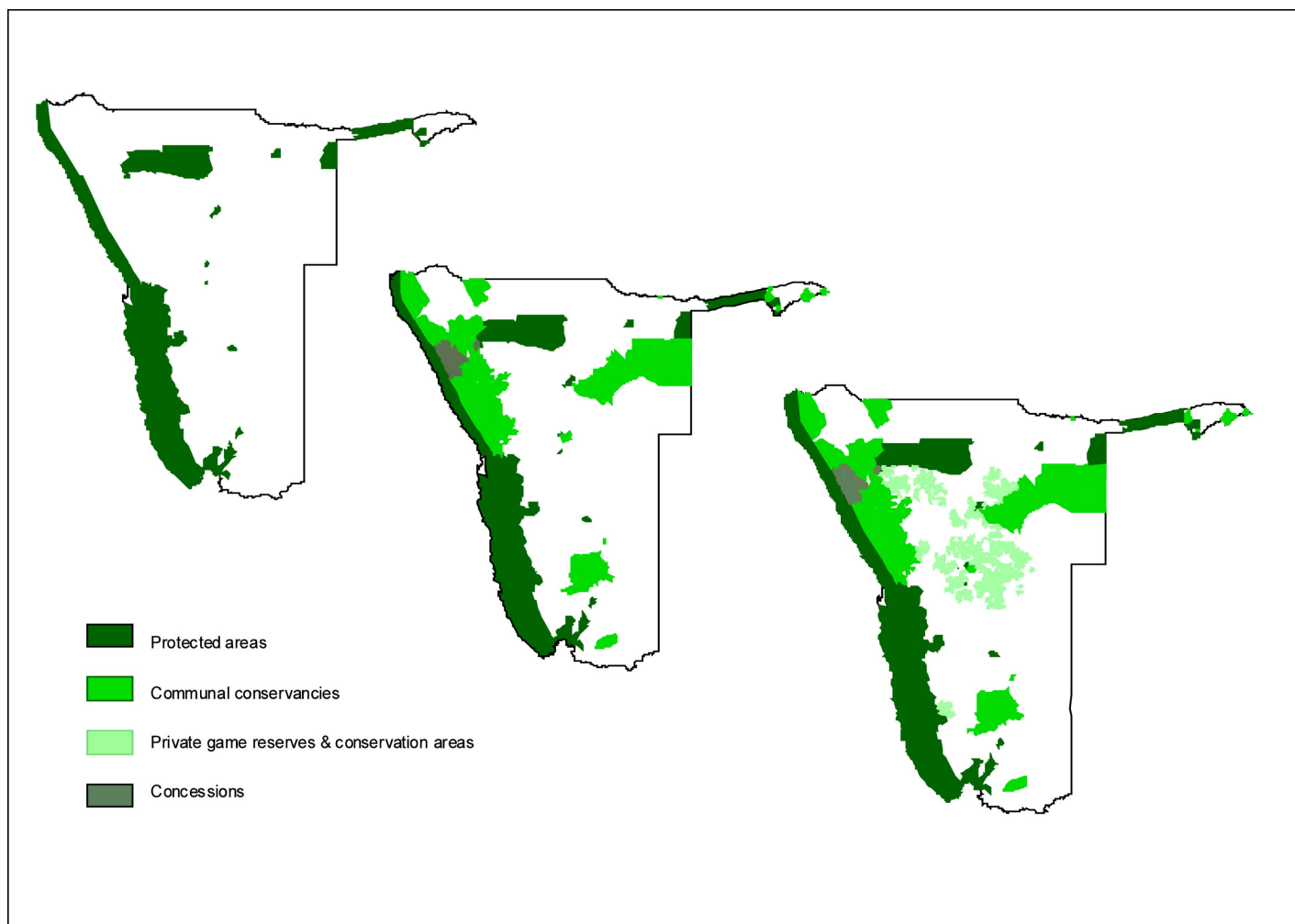


Figure 4.2 Protected area network in relation to elephant distribution and catchments

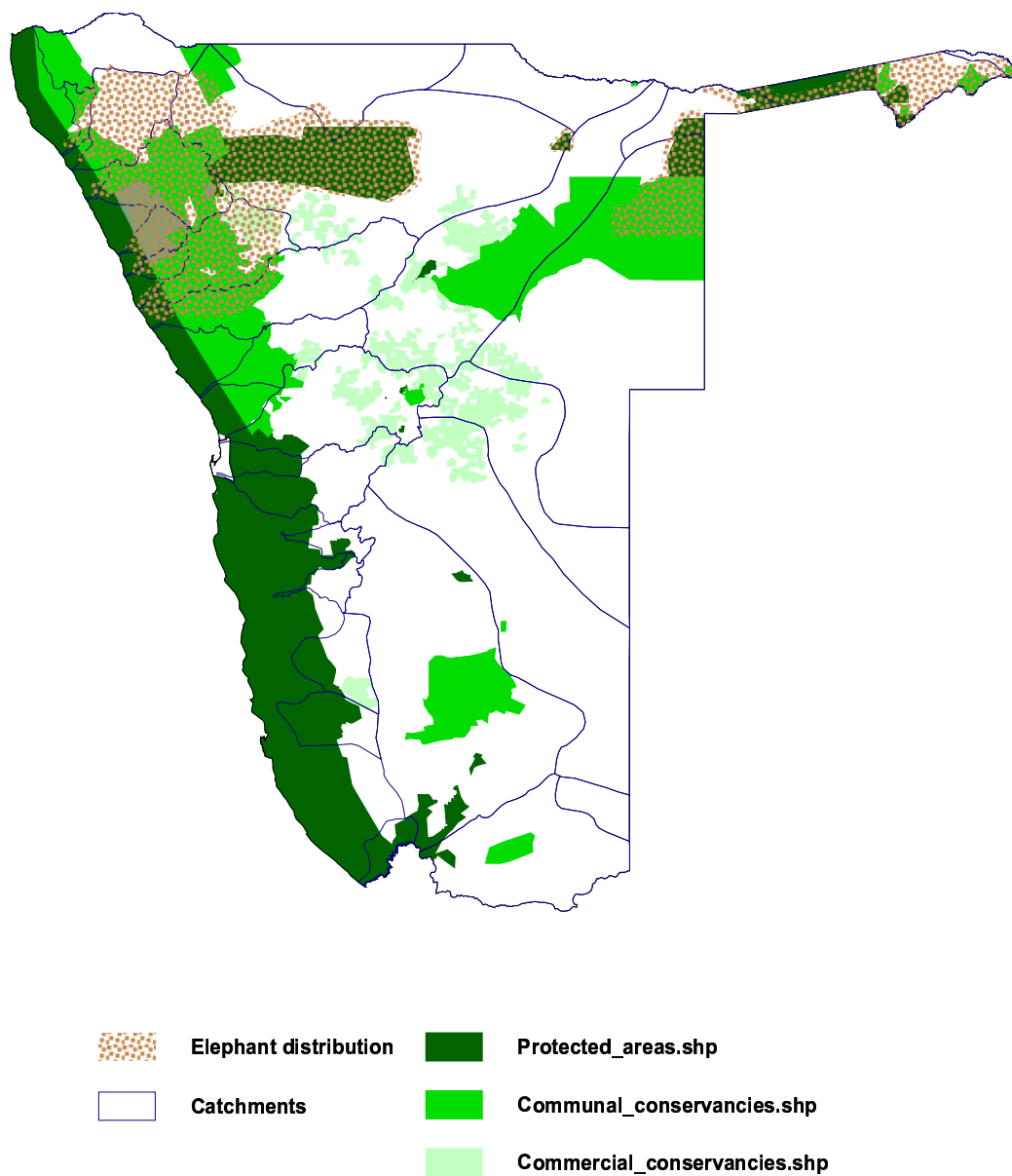
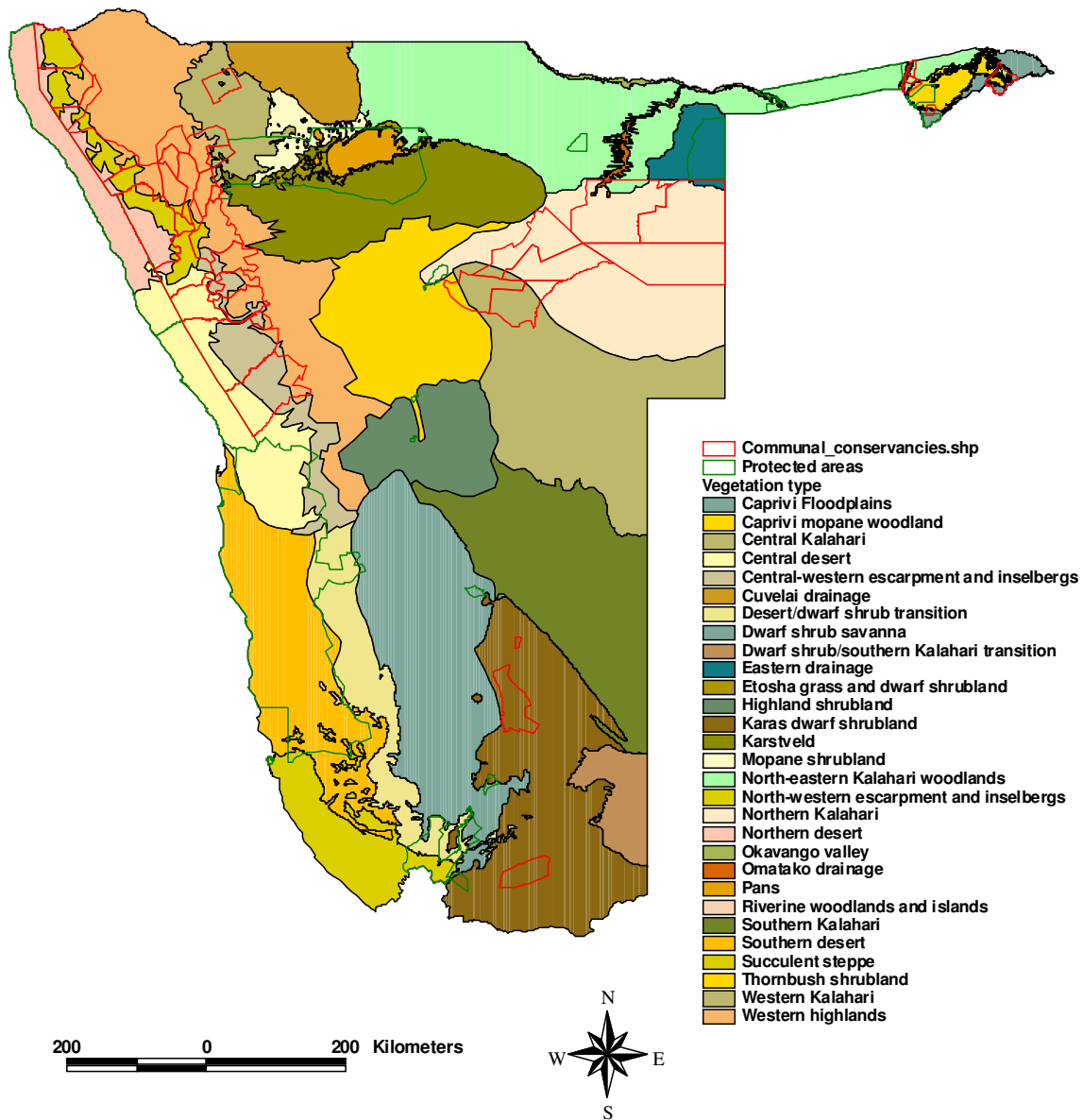


Figure 4.3: Protected Areas in relation to the 28 vegetation types in Namibia showing the potential for communal conservancies to 'fill the gaps'



4.3 Achieving the Big Picture

Three key ingredients are suggested for achieving this vision:

- “Integrated Regions” whereby protected areas are grouped into regions based on an ecological rationale
- Developing ‘smart partnerships’
- Integrating tourism and protected area management

4.3.1 Three integrated regions

MET could reconsider its current structure to focus operations in three distinct ‘Integrated Regions.’ This would facilitate co-ordination and ensure conservation objectives are being met with maximal efficiency. The three suggested integrated regions are (shown in Figure 4.4):

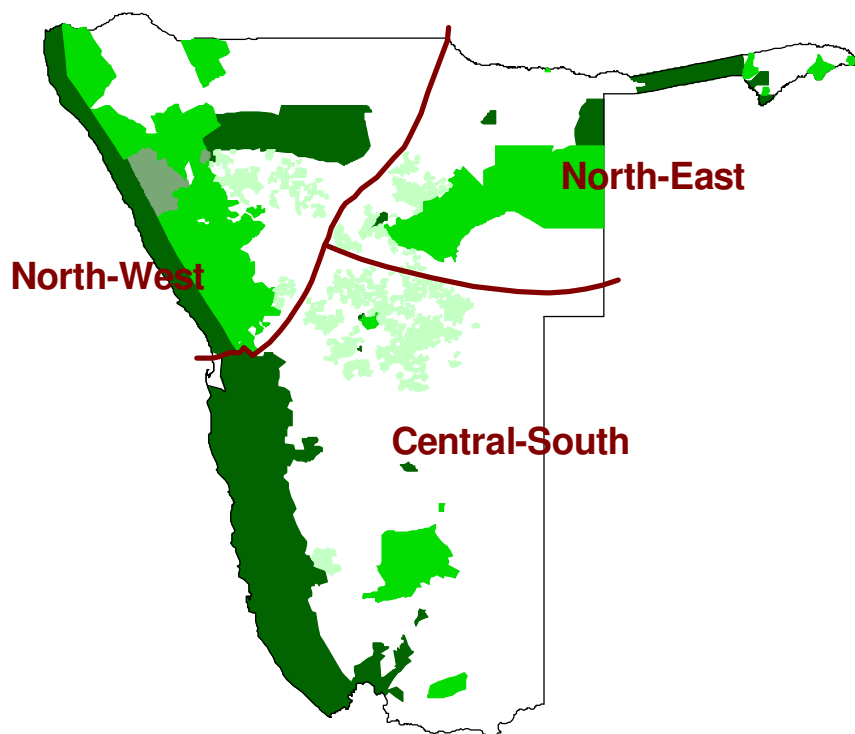
- North-West
- North-East
- Central-South

4.3.2 Integration through mutually beneficial partnerships

Whilst the resources from within are limited, MET is in a particularly strong position in that there are a number of local, national and international partners who are willing to assist it to achieve its mission. These include communities on communal land adjacent to parks, private landowners, tourism operators, NGOs, academic institutions and retired people who are passionate about Namibia’s natural heritage. Namibia’s membership in international fora and agreements (e.g. UN conventions) provide many additional opportunities. The key is to encourage partnerships that jointly undertake to adopt pro-conservation land use. Many potential local partners already own or live on the land that supports important habitats or wildlife species, and are already committed to pro-conservation land use practices.

Joint Management and Development committees, consisting of representatives of MET, conservancies, farmers, NGOs and other key GRN agencies, provide a means through which such partnerships can impact Management Plans that integrate natural resource management, tourism management and infrastructure development and maintenance. Such an approach has the additional benefit of promoting the participation of local community groups and ensuring that tangible benefits accrue from the protected areas system through tourism and other activities consistent with Vision 2030’s call for the wildlife and tourism to be underpinned by strong partnerships between government and the private sector.

Figure 4.4: Proposed Integrated Regions



4.3.3 Integrating tourism and park management

Vision 2030 calls for a strategic approach to tourism planning so that Namibia, as a tourist destination, can offer a high quality experience, with high economic value to the country and low negative impacts on the environment and society. This requires linking tourism and the management of wildlife to help ensure that tourism impacts are kept within acceptable limits, as degradation is more likely to occur when places and parks are seen and managed in isolation from each other. Inside the parks, tourism operators could assist MET with management functions, thus establishing links between tourism and the management of wildlife. At the same time, the linkages proposed in this vision would allow both tourists and wildlife to move more freely, and provide more opportunities for a diverse tourism experience.

4.3.4 Relevance to other GEF-financed projects in Namibia

The advantages of this approach are that it facilitates linkages to other GEF projects such as the Namib Coast Biodiversity Conservation and Management Project (NACOMA) that aims to put in place a planning and management framework for coastal zone management, conservation and sustainable use of Namibia's coastal biodiversity. Other relevant projects include the Integrated Community-based Ecosystem Management Project (ICEMA) that aims to ensure that community-based integrated ecosystem management practices are supported by the National CBNRM framework and used by targeted conservancies and the Promoting Environmental Sustainability through Improved Land Use Planning Project (PESILUP).

4.3.5 Relevance to report structure

This report is structured in such a way as to position the interventions of the MET/GEF Strengthening the System of National Protected Areas Project within the longer-term vision, by addressing each of the PAs that are the focus of the project within the context of the integrated regions. The nature and assets of each integrated region are first described, challenges and opportunities are highlighted, and potential actions are described. The protected areas that are the focus of the first phase of the MET/GEF project are then described in terms of their conservation importance, their management and development issues, and recommendations for activities to tackle those issues. The thematic chapters are also presented in the light of the long-term conservation vision.

4.4 Biodiversity in Namibia: the relative importance of different taxa and knowledge gaps

4.4.1 Large mammals and other taxa

Large mammals constitute an important aspect of Africa's comparative and competitive advantage, in terms of their economic value, their contribution to the productive use of and their intrinsic interest and cultural values. Many of these values are particularly significant in semi-arid and arid environments, particularly those linked to dramatic landscapes inhabited by people of diverse cultures. The large mammals also play important ecological roles in terms of ecosystems functioning, and are highly visible indicators of ecosystem health. Thus these species have received particular attention in the report, in conjunction with the vegetation types, on the principle that if (a) sufficient land is protected within each habitat type and reasonably well managed, and (b) the larger indigenous mammals, including the predators, are present in appropriate numbers and in good condition, then it follows that other taxa and parts of the ecosystem are probably adequately protected and in reasonable health. This approach of using proxy-indicators is appropriate in large systems, and when human capacity and financial resources are limited. It is also useful where there is limited available information on many taxa (see Table 4.1 below).

Table 4.1: Information available on different taxa of biodiversity in Namibia

Taxa	Number species*	Number endemic	% endemic
Viruses	Unknown	Unknown	-
Monerans	Unknown	Unknown	-
Protists	Unknown	Unknown	-
Fungi	190++	Unknown	-
Lichens	140+	Unknown	-
Plants	4,400	690	17
Rotifers	200+	Unknown	-
Poriferans	Unknown	Unknown	-
Cnidarians	Unknown	Unknown	-
Platyhelminths	Unknown	Unknown	-
Ectoproctans	Unknown	Unknown	-
Nematodes	Unknown	1	-
Annelids	30++	4	-
Molluscs	104	9	9
Arachnids	1,415++	164++	12

Crustraceans	145+	39+	27
Myriapods	45	13	29
Insects	6,500++	1,550++	24
Fish (freshwater)	115	5	4
Frogs	50	6	13
Reptiles	250	59	24
Birds	675	15	2
Mammals	200	14	7
* Figures from Barnard 1998, and represent absolute minimum figures as ongoing work continues to find new species. Some taxa are virtually unstudied and even species which have received some attention, e.g. insects, have probably over 80% of the expected number of species undescribed.			

The section below compliments the large mammal focus by giving an overview of the status of the better known taxa in Namibia, and the broad areas of threat.

Namibia contains parts of three floristic regions, the Zambezian region (essentially the woodland system in Namibia), the Kalahari-Highveld transition zone (coinciding with the savanna biome) and the Karoo-Namib region (the arid and hyper-arid deserts). The last includes two centres particularly rich in plant diversity and endemism, being the Kaoko escarpment in the north-west and the Succulent Karoo in the south-west. The Succulent Karoo covers some 3% of Namibia, receives both summer and winter rainfall, and holds about a third of all Namibia's vascular plants. Plants, like most other taxa, exhibit a zone of endemism down the western Namib-Karoo and dry savanna interface, with highlands, escarpments, inselbergs and areas receiving winter rainfall being particularly rich.

Only some 1% of Namibia is cultivated. Clearing of land for homesteads and crop fields does not pose an immediate threat to plants. However, the large concentration of people and livestock and, increasingly, elephants, along the riparian belts and wetlands of northern Namibia, is placing riparian forests, woodlands and floodplains under considerable pressure. Wide scale overgrazing, deforestation and poor rangelands management is an important issue as it leads to local biodiversity loss, bush encroachment, annual replacing perennial vegetation, soil erosion, reduced water recharge of soils and aquifers and a general loss in productivity and increase in vulnerability of the land. Illegal collection and trade in some species, particularly rare and endemic succulents, is of concern particularly in the Succulent Karoo.

Similar patterns of endemism occur in terrestrial insects as in plants and vertebrates, with the central and western regions having the highest diversity of endemics. The main conservation problems include habitat destruction and degradation and habitat fragmentation. Loss of riverine and aquatic vegetation is of particular concern for insects in Namibia. Trade in insects is a significant threat, particularly for some of the larger beetles.

The Zambezi-Okavango system has some 82 fish species in Namibia, the Cunene 74 species, the Cuvelai basin 49 and the Lower Orange and Fish River system 15. In addition, there are eight species of fish in the Karst caves. Three species are national endemics and 16 species are of conservation concern. Four factors are considered to pose a threat to freshwater fish in Namibia, overexploitation, translocation from one basin to another and thus the introduction of fish alien to the system, the hydrological regulation of rivers and the loss of riparian vegetation.

Frogs and toads are generally dependent on water. It is not surprising that their greatest

diversity coincides with the wetland systems in the north and north-east of Namibia. What may be more surprising is that there are a number of arid-adapted species that occur throughout Namibia, with the exception of the driest sand sea. Pressure on wetlands and wetland degradation is considered to be the overriding threat to amphibians in Namibia. Strip-mining of coastal diamond-rich areas is a threat to one species. Some eight species occur only marginally in protected areas. Amphibians have also been shown to be highly sensitive to toxins and chemicals, and are an important indicator of ecosystem health.

Namibia has a particularly rich reptile fauna, representing almost 60% of southern Africa's reptile diversity. The two main threats to reptiles are considered to be unsustainable exploitation and habitat degradation, covering woodlands (deforestation), rangelands (desertification of savannas) and wetlands. About 10% of reptile species do not occur in protected areas. Of particular importance are the escarpment zone in north-west Namibia and the perennial rivers.

The most diverse areas for Namibia's birds are in the central and north-eastern regions, while the endemic species occur mainly in the western central and north-west. Wetland birds and those occurring in riparian belts represent the greatest number of threatened species. Coastal birds are also under pressure, mainly as a result of over-fishing near breeding sites. Scavenging birds of prey have been severely reduced by poisons used by farmers against mammalian predators.

The charismatic megafauna of Namibia constitutes an important and valuable component of the country's economy. Patterns of diversity and endemism are very similar to those of plants and birds. Pressure on mammals come from habitat change, including wetland degradation and deforestation, over-exploitation – particularly before rights over wildlife were devolved to local landowners and managers, and illegal hunting and trade in a few high-value species, now brought under control for the past two decades. Some 20% of mammals are considered to be inadequately protected in the current PA system, particularly those occurring in riparian belts, along the Zambezi system, the escarpment zone and the marine and coastal areas, where marine protected areas are urgently required.

A summary of threats to different taxa are set out in Table 4.2 below.

Table 4.2: Threats to different taxa of biodiversity in Namibia

Threats	Plants	Insects	Fish	Amphibians	Reptiles	Birds	Mammals
Rangeland degradation (overgrazing, bush encroachment, etc.)	**	*		*	*	*	*
Deforestation	**	*			*	**	**
Pressure on wetlands and riparian belts	***	***	**	***	**	***	***
Illegal collection and trade	***	**			**	*	**
Over-exploitation			**		**	*	**
Alien species	*		***				
Hydrological regulation (e.g. dams)			**				
Strip mining	*			*	*		
Poisoning / predator control						***	**
Reduction in food						***	

through over-fishing							
Pollution / pesticides		*	**	**		*	

4.4.2 Knowledge gaps in target PAs

There are extensive knowledge gaps regarding Namibia's biodiversity, and these are well articulated in *Biological Diversity in Namibia* edited by Barnard (1998). This report takes the view that extensive biodiversity surveys are not Namibia's highest priority at this stage. Enough is known to establish which habitats or areas need protection, and the priority now is to get on with full-scale implementation and development to ensure that they are protected. Knowledge comes from doing, monitoring and adapting.

As a result the MET/GEF project should focus on habitats rather than species. With respect to the priorities of this project, the relevant gaps in relation target protected areas are discussed in sections 5.1.3.1, 5.2.3.1, and 5.3.4.

5. Management and Development in Selected Protected Areas, according to Integrated Region

5.1 North-West Zone

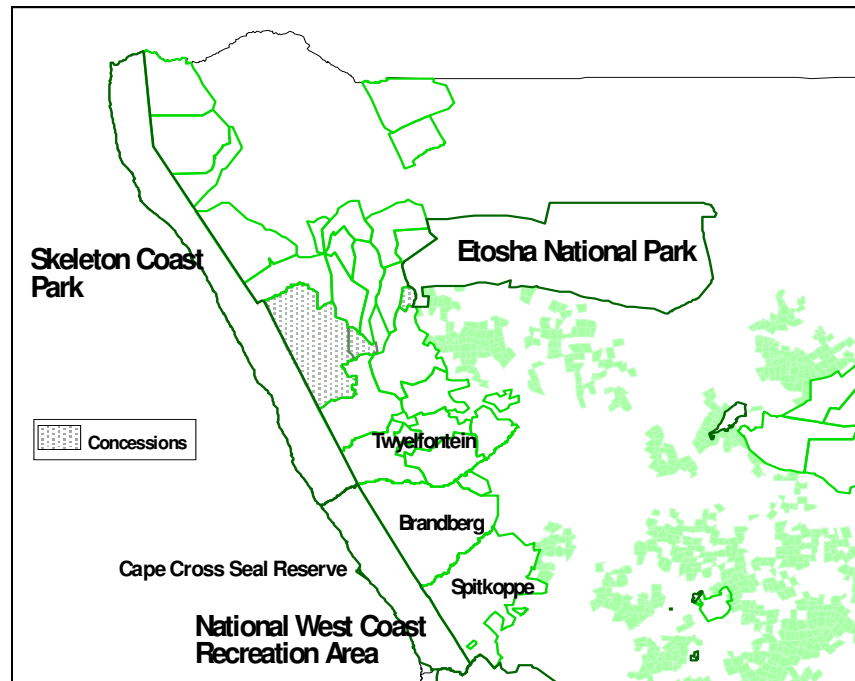
5.1.1 Introduction

This zone encompasses the Kunene, Omusati, Oshana, Onhangwena and Oshikoto regions, and a portion of the Erongo Region (Figure 5.1). From a conservation and parks point of view, the relatively highly populated areas in the Cuvelai drainage area hold little potential for new initiatives, though the less inhabited grassland areas just north of Etosha are more promising.

This north-west zone includes areas such as Brandberg, Twyfelfontein and Spiskoppe – all important from a biological, archaeological, cultural and tourism point of view. It also includes a number of very important ephemeral rivers such as the Ugab, Huab, Uniab, Hoanib, Hoarusib and Khumib, and doubles the extent of protection of the Kunene River in the north. In the long term, species such as elephant and rhino could occupy their former ranges, black-faced impala could be re-introduced in their former stronghold area, and numbers of common game (e.g. springbok, oryx, zebra, ostrich, and giraffe) will grow so that sustainable off takes will be possible. The facilitation of greater freedom of movement of wildlife will not only result in increased numbers, but it will also enhance genetic viability. The existence of "safe corridors" might also reduce the incidence of human/livestock conflicts, as animals will not be hemmed in as much by fences and other barriers.

The most important areas for conservation in this zone are the Etosha and Skeleton Coast parks, the conservancies in western Kunene and areas such as Brandberg and Twyfelfontein. This chapter will thus focus on the mentioned high-value conservation areas.

Figure 5.1: The North-West management zone



It is proposed that this zone be headed by a Director (see report for sub-contract 2) and that there are the following two divisions:

- Etosha Division – Etosha National Park, commercial farms along the Etosha boundary and the northern communal areas.
- North West Coastal Division – Skeleton Coast Park, West Coast Recreation Area, Cape Cross Seal Reserve and all the western conservancies.

5.1.2 Comparative advantage – the assets of the zone

North-western Namibia is characterised by outstanding landscapes, vast open spaces, unusual biodiversity and rich cultural attractions. Its combination of arid and semi arid ecosystems, desert dwelling wildlife and indigenous people make it a destination of choice for foreign tourists and Namibians alike.

In many ways, the north-west epitomises Namibia – it is a remote area where travellers can experience a wilderness that has not yet been transformed by development or where strict controls limit one's freedom – in short, it has an extraordinary sense of place. Moreover, the north west contains two of Namibia's best known parks – Etosha and Skeleton Coast Park, the country's most successful communal area conservancies and areas that are destined to be listed as World Heritage Sites. Because of its climate, elevation and substrates, the north-western escarpment and desert is home to many of Namibia's endemic species. The occurrence of free ranging herds of wildlife in the arid west, and the world's only expanding population of black rhino outside of a park, adds greatly to the attraction value of this area. Etosha is regarded as one of Africa's great wildlife sanctuaries - its system of waterholes attracts vast numbers of game and viewing experiences are plentiful and intimate.

The key to the uniqueness of this zone is its diversity of habitats, landscapes and attractions

– the vastness of Etosha’s saline pan and rich wildlife, the ruggedness of Kunene, remarkable rock art and the remoteness of the Skeleton Coast. There can be few places in the world that offer such diversity – to both conservationists and tourists. Consequently, the area is well known locally and internationally and marketing it as a destination is relatively easy.

Barnard (ed. 1998) reports that Africa’s arid southwest, roughly centered on Namibia, is a major zone of evolution for a number of groups of animals and plants, and that the western area is consequently rich in endemic species. Namibia’s Biodiversity Country Study shows that most of the country’s endemic plants, invertebrates, amphibians, reptiles, mammals and birds are found in a zone running along, and to the west of, the Namib escarpment. In addition to the smaller plants and animals that occur in the variety of habitats in this area, it is perhaps best known for the unique desert dwelling elephant, rhino and giraffe that roam the desert, as well as plains animals.

It is fortunate that most of this zone is protected in some way, either through parks, conservancies or tourism concessions. Although the area is predominantly arid and hyper-arid, stock farming (mostly cattle and goats) is widespread, though stock numbers are generally low. Stocking densities are relatively high in the Cuvelai area, but drop rapidly towards the west. Mendelsohn *et al.* (2002) describe the area as “high risk” for farming because of low rainfall and high rainfall variability, low plant production and poor soils – they point out that there is no potential for increasing stock numbers in most of this area. Perhaps the greatest comparative advantage of this zone is the fact that it pioneered CBNRM in Namibia and the culture of conservation is now broad based and engrained in a cross section of its peoples. NGOs, MET, the Private Sector and local communities have forged conservation partnerships that are more advanced than most other parts and the results (increased wildlife and improved benefits) are arguably better than anywhere else in the country. The foundations for expanding and strengthening these partnerships are strong, thus presenting the MET/GEF project with an excellent opportunity for future interventions.

5.1.3 Challenges and opportunities

The key challenge in this zone is enabling the continued growth of wildlife numbers but at the same time reducing conflicts between humans and wildlife. “Problem animals,” mostly lions and elephants, regularly breach Etosha’s fence and kill livestock and damage property on commercial farms south and east of the park, and in communities to the north. In Kunene, elephants and predators also cause conflicts with stock farmers and communities. The increased incidence of these conflicts is a direct consequence of increasing wildlife and their need for additional habitat and resources (e.g. water).

Addressing this problem requires innovative solutions. The key is to provide incentives for those who suffer the consequences of wildlife to benefit more from wildlife than they do at the moment. This chapter argues for partnerships to be established between Etosha and its neighbours so that pro-conservation land use is practiced on the commercial farms and so that the farmers obtain benefits, both consumptive and non-consumptive. The MET/GEF project could study existing examples from elsewhere (e.g. Kruger National Park) and run a consensus building process with Etosha’s neighbours. Fortunately, many of the parks neighbours have already started farming with game and some have established very successful tourism operations on their land. This presents an opportunity for the project.

In the Kunene region, the same principles should apply. In this case, most of the wildlife-

rich areas are already conservancies. However, the benefits accruing to conservancies from wildlife could be enhanced and the ability of conservancies to strengthen their control over their areas (e.g. tourism access) needs to be strengthened. The project might support other CBNRM initiatives in addressing these issues. A key opportunity in this regard is the fact that some experience has already been gained in developing mechanisms to reduce human/wildlife conflicts in this region.

The greatest opportunity is linking Etosha, the Kunene conservancies and the Skeleton Coast as a swathe of conservation land that enables more extensive east-west movements of wildlife. In addition, the north-south linkage of the "greater northern Namib" with Iona National Park in Angola and the Namib Naukluft Park and Sperrgebiet in central and western Namibia is a distinct possibility.

5.1.3.1 Habitats and species not represented in, or adequately protected by Protected Areas

Barnard (ed. 1998) points out that centres of endemism for plants and vertebrates fall mainly outside state protected areas, as few parks were established with biodiversity indices in mind. Moreover, she points out that Namib Desert endemics are not necessarily restricted to Namibia – they occur also in southern Angola. However, inadequate conservation efforts in Angola mean that the Namibian near-endemics occurring there may be essentially unprotected. Namibia's Biodiversity Country Study states that the most significant gaps in habitat protection are Namibia's two top priority areas for endemism: the northern Namib (kaoko) escarpment, along with nearby inselbergs and granite domes of the Kunene and Erongo Regions, and the Sperrgebiet.

Table 5.1 shows that Salt Pans, Etosha grass and Dwarf Shrubland, the Central and Northern Desert vegetation types, Mopane Shrubland and Karstveld are very well represented in State Protected Areas. However, the endemic-rich Central and North-western Escarpment and the Inselbergs fall completely outside of the park network. This alarming omission is somewhat mitigated by the fact that communal area conservancies include, within their boundaries, 96% and 75% respectively of the Central Western and North Western Escarpment Transition & Inselbergs. They also include significant components of the Western Highland and Western Kalahari vegetation types. Nowhere else in Namibia is the potential role of conservancies so starkly illustrated as it is in the north west.

Because of high population densities in the Cuvelai drainage area, this vegetation type is poorly protected; existing and emerging conservancies are therefore important in this regard. The under-protection of the north - eastern Kalahari Woodlands is not a major concern given the fact that this vegetation type is well protected in the north-east zone.

Table 5.1: The percentage of vegetation types within the North-West zone occurring within different land use categories

Biome	Vegetation type	Percentage of vegetation types within different land uses					
		State Protected Areas	Concession Areas	Forest Reserves & Community Forests	Communal Conservancies	Commercial Conservancies	Total
Namib	Central Desert	59.8	0.1	0.0	39.3	0.0	99.1
	Northern Desert	66.3	15.2	0.0	17.8	0.0	99.3
Nama Karoo	Central-Western Escarpment Transition & Inselbergs	0.0	0.0	0.0	96.0	0.0	96.0
	Etosha grass & Dwarf Shrubland	83.3	0.0	0.0	0.0	0.0	83.3
	North-western Escarpment & Inselbergs	0.0	21.3	0.0	75.0	0.0	96.3
Salt Pans	Pans (e.g. Etosha)	96.9	0.0	0.2	0.0	0.0	97.1
Acacia Tree-and-Shrub Savanna	Cuvelai Drainage	0.4	0.0	2.1	4.5	0.0	7.0
	Karstveld	24.7	0.0	0.0	0.5	14.7	39.9
	Mopane Shrubland	47.0	0.0	5.5	0.0	0.1	52.6
	Thornbush Shrubland	0.0	0.0	0.0	0.0	5.2	5.2
	Western Highlands	0.6	1.1	0.0	38.5	4.2	44.4
	Western Kalahari	21.0	0.0	12.4	27.0	0.1	60.4
Broadleaved Tree-and-Shrub Savanna	North-eastern Kalahari Woodlands	3.0	0.0	2.9	0.0	0.0	5.9

There are extensive knowledge gaps regarding Namibia's biodiversity (Barnard ed. 1998). Whilst Etosha and Skeleton Coast have hosted a large number of researchers over the past five decades, the remote north-western areas are relatively unknown from a scientific point of view. A recent discovery of a new insect genus in the Brandberg area shows that much still needs to be done before we fully understand the composition of Namibia's biodiversity.

Despite the importance of understanding the present state of biodiversity in order for it to be afforded the appropriate levels of protection, extensive surveys are not Namibia's highest priority at this stage. Enough is known to designate which habitats or areas need protection, and the priority now is to ensure that they are protected. The MET/GEF project should focus on habitats rather than species.

5.1.4 Recommendations: creating linkages and cooperative management practices between land users and land managers

Linking the Namib with Etosha is the main priority, as it will enable greater east-west movement of many wildlife species. Movement occurs mainly along the linear oases of the westward flowing rivers. Whilst the rivers are regarded as special biological highways, the strong east-west rainfall gradient results in general east-west movements of wildlife throughout this area.

Creating this linkage requires an agreement between MET and land holders (in this case conservancies and tourism concessionaires) to follow management practices that will improve conservation of important habitats and their associated wildlife. In broad terms, this consolidation would include almost the entire North West Escarpment and Inselberg vegetation type, approximately 15% of the Western Highlands, more than 50% of the Central Western Escarpment and Inselbergs, the remaining Northern Desert (i.e. the portion to the east of the Skeleton Coast Park) and a significant portion of the Central Desert (inland of the West Coast Recreation Area).

Across the border in Angola lies Iona National Park, which has similar habitat to north-western Namibia. There is great potential for an active cross-border conservation programme in this area, especially as its habitat is suitable for elephant, which are able to criss-cross the river and which occurred in the area in the recent past. Other key species that would benefit from such a programme are fresh water and marine turtles, crocodiles, fish and bird species. The Kunene River Mouth, which forms the border, could be declared a Ramsar site whose management might follow the same model as that of the Orange River mouth, where Namibia and South Africa are joint custodians.

The main conservation areas are discussed below.

5.1.5 Etosha National Park

5.1.5.1 Background

Etosha National Park was first proclaimed in 1907, but the boundary was changed and proclamation amended four times in 1947, 1956, 1963 and 1975. After the amendments the current size of the park is 22, 270 km². Saline pans cover about 23 per cent of the park's total area, with the renowned Etosha Pan covering about 4,590 km² of this.

5.1.5.2 Conservation importance

Etosha is Namibia's flagship park and the cornerstone of Namibia's fast growing tourism industry. Its huge size means that wildlife can roam around relatively freely, though traditional migration routes for some species (e.g. wildebeest) have been cut off by fences with concomitant reductions in their population size over the past few decades. Moreover, lion and elephant regularly leave the park, causing conflicts with humans.

The park has a rich animal diversity, which includes 114 mammal species, 340 bird species, 110 reptile species and 16 amphibian species.

Smaller mammals such as rodents and bats represent about three-quarters of the mammal species recorded in the park. Rare and endangered species found in the park include roan, black rhinoceros, white rhinoceros and elephant. The park also has rich populations of predators and bird life.

The vegetation of Etosha National Park is mostly saline desert with a dwarf savannah fringe. The tree layer in some parts is composed of deciduous mopane bushes (*Colophospermum mopane*) which change into a mixed bushveld of mainly acacias (*Acacia* spp.). A striking feature in Etosha National Park is the forest of moringa trees (*Moringa ovalifolia*), also called the Fairy-tale forest. Grasses such as *Sporobolus* spp., *Eragrostis* spp., *Panicum lanipes* and *Monelytrum luederitzianum* dominate the grass layer.

5.1.5.3 Management issues

Etosha National Park has a master plan that was prepared in January 1985. This master plan was reviewed between November 1987 and January 1989 and again in October 1996. A five year integrated development, management and research plan was drafted for Etosha National Park in 1993.

The management of Etosha has been highly variable over the past nearly 100 years. In recent decades, there has been a regular turnover of park wardens, and each seems to have introduced a slightly different management approach. Similarly, there does not appear to have been a consistent strategy regarding research and monitoring. Fortunately, most of the wardens have shown relatively good management instincts up until now and for decades the park succeeded in attracting many talented and dedicated rangers. However, inadequate strategic leadership and an excessively top-down management approach have resulted in frustration at local level. Staff turnover has been high – a park of this importance should be staffed with well qualified and experienced personnel.

Because of the park's huge size, there are those who argue that management need not be intensive anyway, and that maintenance and strategic monitoring is mostly what is required. At a minimum, staff must ensure that water is provided for animals, tourists must be controlled, key indicators must be monitored and there must be regular contact with all the parks neighbours. The monitoring of key indicators is tricky – it must be based on "need to know" rather than "nice to have" information. The role of the Etosha Ecological Institute is central in this regard. The vision for the future should include developing a strategy for transforming this once vibrant institute into a centre of excellence in terms of wildlife and environmental research. MET could identify a dozen or more priority research studies and visiting scientists would compete with each other for the opportunity to work from this

base. In much the same model as the Gobabeb Training and Research Centre, the EEI could also have an “outreach” programme where UNAM graduates could be mentored by experienced scientists from abroad, thus building local capacity. More discussion is required on this.

Given the disproportionate efforts and resources expended to prevent wildlife from leaving the park, or chasing them back once they have breached the fence, it seems worth considering the option of entering into agreements with park neighbours as a key conservation strategy for the future. To the north, the park could work more closely with communities who wish to adopt pro-conservation land use along the parks boundaries. Commercial farmers along the southern and eastern boundary could similarly provide the necessary buffer that eases pressure on Etosha’s boundaries and on MET’s budget. Many of these farmers are in any case now more involved with wildlife than stock farming and a number have also diversified into tourism. Along the western boundary, conservancies are either already established or are emerging and it seems highly possible to create a linkage between Etosha and the Skeleton Coast Park using these conservancies (and tourism concessions) as the bridge.

In the context of adjacent land use, Etosha seems to be much better placed than many parks in Africa. Because of this, there is excellent potential for implementing a parks-and-neighbours strategy and this needs to be the main focus of the MET/GEF project.

5.1.5.4 Development issues

Etosha faces relatively few pressures from outside development and MET is more or less in control of what happens in the park. The main development pressure is from tourism, though only a small proportion of the park has been developed for tourism. The current facilities at Okaukuejo, Halali and Namutoni cater for a range of income groups, though there are still major challenges in terms of the quality of infrastructure and service. The upper end of the market is serviced mostly by lodges outside the park (e.g. Mokuti, Ongava), but these rely largely on the park for their product. By encouraging wildlife movements between the park and these farms, they might rely less on the park for tourism opportunities, and thus have a lower impact on park infrastructure.

As is the case now, Etosha can accommodate relatively high volume tourism in the future because of the extensive road network and the many waterholes that attract high game numbers. The floodlit waterholes at Okaukuejo and Halali add enormous value to tourist experiences. There is potential for at least three new concessions inside the park – these could be granted to a consortium of landowners along the boundaries who transform their stock farms to wildlife. These concessions should allow the establishment of three small, up-market lodges in relatively remote parts of the park (west, central and east). In addition to an exclusive area (which does not conflict with the current open-access tourist areas), these operators could use the existing tourism network on a non-exclusive basis. This development, which was assessed by MET in 2000, will require no capital investment from GRN, but will result in substantial annual income through concession fees.

Tourism in Etosha could be further diversified through offering walking trails, night drives, and by establishing viewing hides at some of the waterholes. The basic strategy is to give visitors an opportunity to view wildlife without having to be confined to a vehicle. This will have the added benefit of reducing the deterioration of roads and limiting dust.

5.1.5.5 Future focus for the project in the context of Etosha

The MET/GEF project could address the following key activities over the next 5 years:

Key Activity 1

Creating the necessary decentralized MET structure in the zone.

Key Activity 2

A feasibility assessment of linking Etosha with SCP and Owambo. This must focus on the following sub-components:

- c) Partnership agreements between MET and the conservancies
- d) Management arrangements
- e) Infrastructure needs (fences, water points, cut lines)
- f) Wildlife re-introductions
- g) Veterinary concerns
- h) Law enforcement modalities
- i) Cost sharing arrangements
- j) The use of honorary nature conservators
- k) Tourism management (access control)

It is perhaps worth describing here the nature of and rationale for “Honorary Nature Conservators.” Section 79 of Ordinance 4 of 1975 makes provision for the appointment of honorary nature conservators, while section 81.4 defines their duties and powers. The idea of Honorary Nature Conservators is carried over into the draft Parks and Wildlife Management Bill, which in Article 88 empowers the Minister to “designate in writing any person who is not an officer, either by name or *ex officio*, as an honorary conservation officer for the purpose of this Act.” However, the Bill does not define their duties and powers, as this will be addressed in subsequent regulations.

Essentially, the benefits to MET of appointing Honorary Nature Conservators is that they are additional “eyes and ears” on the ground. They are people who regularly travel around the countryside, both in parks, on private land and even in urban areas. They are willing to keep a lookout for transgressions of the law and to take the time to inspect vehicles or premises where evidence of such contraventions may be found. Moreover, they are expected to record interesting phenomena in the field (e.g. game concentrations, occurrence of rare species, etc.) and to report these to the relevant MET office. Even if the honorary conservators are not pro-active in carrying out their duties, their mere presence in an area is of value to MET.

In the past, the Honorary Conservators were selected on the basis of:

- Commitment to conservation
- Knowledge about conservation and Namibian laws
- Personal integrity (persons of standing in society, who are reliable and who can be trusted as a key partner to MET)
- Presence in the field (Honorary Conservators are typically people who spend a considerable amount of time in the field, either travelling on their own, as a tour guide/operator, as a researcher or some other profession that requires outdoor activity)
- Ability to communicate (the Honorary Conservators must submit written reports to MET, but they must also be able to handle potentially difficult situations with people who have transgressed the law and who are thus confrontational. They must also have

the ability to converse equally well with a minister and a junior ranger)

MET now has an opportunity to improve the profile of its Honorary Nature Conservators, who were mostly white in the past. With the emergence of conservancies and the appointment of community game guards (many of whom are better trained and more motivated than MET rangers), it should now be possible to appoint key conservancy staff as Honorary Nature Conservators. This not only expands "MET" presence in a given area, but it also sends a strong message of partnership to the conservancies. This message would help to cement the relationship between MET and communities.

Key Activity 3

Park neighbour programmes between Etosha and commercial farmers to the south and east. This must focus on:

- a) Partnership agreements between MET and the farmers
- b) Management arrangements
- c) Infrastructure needs (fences, water points)
- d) Law enforcement modalities
- e) Cost sharing arrangements
- f) Problem animal management

Key Activity 4

Revitalization of the Etosha Ecological Institute.

5.1.6 Skeleton Coast Park

5.1.6.1 Introduction

The Skeleton Coast Park is situated along the Northern Namibian coast from the Kunene River in the north to the Ugab River in the south. This 16,390 km² protected area was proclaimed in 1971 and was then amended to the current size in 1973.

5.1.6.2 Conservation importance

In spite of its hyper-aridity and the fact that it was not originally proclaimed for conservation purposes, the Skeleton Coast has become world famous for its natural beauty, wilderness appeal and extraordinary wildlife. The riparian woodland and the many springs linked to the westward flowing rivers provide food, water and shelter for a variety of animals in an otherwise arid, windswept environment. Large mammals in the park include elephant, giraffe, springbok, oryx, zebra and brown hyena. The coast supports small colonies of Cape fur seal and lions occasionally visit the area.

About 247 species of birds have been recorded in the park, including the near-endemic Damara Tern which breeds on the gravel plains adjacent to the coast. The park also boasts a wide variety of smaller creatures, especially reptiles and insects. These animals show special adaptations that enable them to survive in the harsh and arid environment and are therefore of great interest to scientists.

The Northern Namib and the Central Namib are the two major vegetation types represented in the Skeleton Coast Park, though the latter is only found in the extreme southern part of the park between the Huab River in the north and the Ugab River in the south. It mostly

consists of sparsely distributed shrubs of which the most common species are dollarbush (*Zygophyllum stapfii*), brakspekbos (*Z. simplex*) and ganna (*Salsola* spp.). Other important plants include the welwitschia (*Welwitschia mirabilis*) and lichen fields. Hummock dunes can also be seen in the Uniab Delta where *Salsola nollothensis* and *Zygophyllum clavatum* are dominant.

As noted earlier, the westward flowing rivers, known as linear oases, provide key habitat that enables much of the east-west movements of wildlife. These rivers pass through the many conservancies that lie to the east of the park, and ultimately “connect” the park to Etosha.

5.1.6.3 Management issues

There is a master plan for the Skeleton Coast Park, of which the final draft was prepared in September 1992 and ratified by the Minister of Environment and Tourism in January 1994. A development plan was prepared as a first draft for the Skeleton Coast Park in May 1999, and this was then presented as a revised and updated master plan for the park.

The park is unfenced, has no artificial waterholes and there is no programme of pro-actively managing either habitats or wildlife. This hands-off approach is probably the correct strategy given the fact that there is really no need for any active intervention. The push – pull factors for wildlife in this area are human pressure and rainfall respectively. Thus, the key strategy should be working with neighbours to reduce human pressures on wildlife and to facilitate east-west movements. It is clear that the strategy for SCP and Etosha are very similar, and that both need to establish the east-west corridor in order to improve the conservation of both parks, and of course the land in-between.

Although wildlife management per se requires minimal effort in this park, a major effort is required to safeguard the park against the invasive activities related to prospecting, mining and tourism (see below).

5.1.6.4 Development issues

This park has minimal infrastructure for tourism – a fishing lodge at Terrace Bay and seasonal camping facilities at Torra Bay. Both of these facilities require major upgrading and the combination could be an attractive package for outsourcing to the private sector. Wilderness trails are offered on an irregular basis in the lower Ugab River and an up market lodge and concession area exists in the northern section of the park.

MET officials in the park have proposed some interesting new ideas for tourism, including guided day tours to Mowe Bay where the museum, a ship-wreck, an oasis and the general landscape warrant a day’s excursion. A guided route in the Uniab area and excursions into the dunes are other possibilities. It seems a good idea to consider these options as there is a need to diversify tourism in this park and to reduce pressure on the coastline (evidenced by litter and off-road driving) and on inshore fish stocks.

The biggest headache in the park is prospecting and mining. Current legislation allows the State to authorize prospecting and exploitation of minerals on any land, irrespective of its ownership and status. This is cause for concern for parks such as SCP, which have very fragile landscapes and where the opportunity costs of prospecting and mining are very high. The park has a long history of prospecting and mining for diamonds, agates, quartz and

amethyst, and many of the operations are not properly rehabilitated once the projects cease. Indeed, many do not cease at all, as mining companies “temporarily halt” operations but then disappear. The consequence is thousands of hectares of scarred landscape, which is both visually unacceptable and also detrimental to plant and animal life.

5.1.6.5 Future focus for the project in the context of Skeleton Coast Park

The MET/GEF project could address the following key activities over the next 5 years:

Key activity 1

Creating the necessary decentralized MET structure in the zone.

Key activity 2

Linking SCP with Etosha. This must focus on the following sub-components:

- a) Partnership agreements between MET and the conservancies
- b) Management arrangements
- c) Infrastructure needs (fences, water points, cut lines)
- d) Wildlife re-introductions
- e) Veterinary concerns
- f) Law enforcement modalities
- g) Cost sharing arrangements
- h) The use of honorary nature conservators
- i) Tourism management (access control)

Key activity 3

Impact management of tourism especially angling. This could build on previous efforts to educate anglers about the sensitivity of the environment and their responsibilities as users of the park. The use of honorary nature conservators is strongly urged, since MET staff do not have the resources to be on patrol all the time.

Key activity 4

Impact management of prospecting and mining – this is the area where MET requires the most support in the SCP. In theory, all the prospecting and mining licenses are subject to adherence to an outcomes-based “environmental contract”, which stipulates the conditions of operation. The current system relies on self reporting with some spot checks by MET staff – MME officials (notably the Mining Commissioner) hardly ever visit the operations on the ground. MET could significantly improve their influence over these operations if they insist on external (third party) monitoring, say twice per annum, to check on whether safeguards are being implemented. This would ensure professional monitoring whilst freeing MET staff to see to other duties (e.g. maintaining partnerships with neighbours, patrols, monitoring wildlife). The costs of this low-intensity monitoring, which would be relatively low, should be covered by the prospecting and mining companies who would combine their resources to provide the necessary resources.

Cape Cross Seal Reserve and the West Coast Recreation Area are not part of the Terms of Reference for sub-contract 3, and are thus not dealt with in this report.

5.1.7 Kunene Conservancies

5.1.7.1 Introduction

North western Namibia supports 19 conservancies that cover a combined area of 52,806 km² (Table 1). This is 37% larger than Etosha and SCP combined – surely underlying the importance of creating linkages between these areas.

Table 5.2: List of conservancies in north-western Namibia

	Conservancy Name	Size km ²
1	Torra	3522
2	#Khoadi //Hôas	3366
3	Uibasen-Twyfelfontein	286
4	Doro !Nawas	4073
5	Puros	3568
6	Tsiseb	8083
7	Ehi-Rovipuka	1975
8	Marienfluss	3034
9	Sorris Sorris	2290
10	Omatendeka	1619
11	Otjimboyo	448
12	//Huab	1817
13	Orupembe	3565
14	Sanitatas	1446
15	Anabeb	1570
16	Sesfontein	2591
17	Okangundumba	1131
18	Ozondundu	745
19	#Gaingu	7677

Source: NACSO 2004

5.1.7.2 Conservation importance

Concentrations of endemic species are greatest in the dry west and north-western regions of Namibia – mostly outside the State-owned parks. For this reason, the existence and effective management of the conservancies in the arid Kunene and Erongo regions are critical to the conservation of Namibia's biodiversity.

The expansion of areas under conservation management is one benefit of communal conservancies – especially since this land falls outside of parks. Fortunately, many conservancies are located alongside the parks, thus enlarging conservation management areas to create more connectivity, more open systems and broader corridors. As noted earlier, the connections between these areas allow animals to move more freely and extensively.

Elephant movements (Figure 5.2) provide the best example of how the linkages now provide extended ranges for wide-ranging species. In the absence of conservancies, the extent of elephant movements (and thus availability of foraging areas and water sources) would have been more restricted, and any animals moving outside the parks would also run a greater

Several conservancies are now using an approach known as FIRM (Forum for Integrated Resource Management). The system was piloted in Khoadi- / /Hôas conservancy where the committee and local farmers union jointly and regularly bring together service providers, line ministry representatives and other stakeholders to coordinate the delivery of services and support.

A key challenge facing the conservancies in north-western Namibia is that of controlling visitor access. The North-west Tourism Master plan underlines the importance of maintaining the remoteness and wilderness character of this region, but uncontrolled tourism is taking its toll. People still camp wherever they like, and certain areas (e.g. the Hoanib River) are rapidly losing sense of place. This makes tourism planning very difficult as it is not possible to control the number of visitors to the area or to enforce basic regulations that will ensure "low impact" tourism.

5.1.7.4 Proposed strategies for improving management

Despite this success of conservancies to date, NACSO (2004) list the following important challenges that lie ahead for conservancies and the agencies that support them. These include:

1. Devolve further rights and responsibilities over wildlife and other natural resources – particularly rangelands – to appropriate local community organisations, as this would significantly improve both economic and conservation opportunities and values.
2. Significantly reduce regulatory constraints and procedures in the wildlife sector, since this undermines both the economic and conservation objectives of conservancies.
3. Systems and skills for stronger local management of natural resources are needed. For example, monitoring efforts have become more streamlined and rigorous, but now need to move to a stage where local people themselves analyse monitoring data to guide local decision-making. Although, the MET has grown increasingly confident in the ability of conservancies to monitor hunting activities and have, in most cases, fully devolved this responsibility to conservancies, there is a need for conservancies to play more of a truly regulatory role.
4. Most wildlife does not remain within the confines of conservancy borders. As a result, more collaborative approaches towards management and utilisation between conservancies would promote both conservation and benefit objectives. Different approaches, based on strong resource-use rights of each participating conservancy, need to be explored further.
5. Wildlife resources in many conservancies are now so abundant that they can be harvested to a much larger extent and for much greater benefits than was previously the case. To achieve this, however, non-protectionist perspectives and management methods, and a more business-oriented approach will need to be adopted. In addition, because of "boom and bust" climatic conditions in the north-west, people should be prepared for large off-takes of wildlife when dry cycles begin.
6. The conservation and use of wildlife has influenced a great deal of conservancy planning and development. However, most of these communal areas remain farmland where people make a living from activities that often conflict with conservation, as shown by increasing numbers of problem animal incidents. Losses due to these incidents are now partly mitigated by benefits from wildlife, but more harmony between wildlife and competing land uses must be sought. One solution is more active, objective and effective land use planning and zonation that can actually be enforced.

5.1.7.5 Future focus for the project in the context of the North West Conservancies

The MET/GEF project could address the following key activities over the next 5 years:

Key activity 1

Linking the conservancies with SCP with Etosha. This must focus on the following sub-components:

- a) Partnership agreements between MET and the conservancies
- b) Management arrangements (including the devolution of more powers to conservancies and wildlife monitoring)
- c) Infrastructure needs (fences, water points, cut lines)
- d) Wildlife re-introductions
- e) Veterinary concerns
- f) Law enforcement modalities (especially controlling tourism numbers and impacts)
- g) Cost sharing arrangements
- h) The use of honorary nature conservators
- i) Facilitating appropriate tourism facilities (in line with the North West Tourism Master plan)

5.1.8 Linkages between the North West and Central South Zones

The bigger picture is for the entire Namib Desert to be integrated into a three-nation trans-frontier park that includes the following conservation areas which, when combined, will constitute the world's greatest contiguous conservation area:

- Richtersveld National Park (State Owned - South Africa, but managed contractually with the community)
- Orange River Mouth Wetlands Park (South Africa and Namibia co-managed)
- Ai Ais / Huns Mountains Game Park (Namibia State Owned)
- Gondwana Nature Reserve (Privately Owned)
- Sperrgebiet National Park (Namibia State Owned)
- National Diamond Coast Recreation Area (Namibia State Owned)
- Namib Naukluft Park (Namibia State Owned)
- 6 offshore islands (Namibia State Owned)
- Namib Rand Nature Reserve (Privately Owned)
- Walvis Bay Wetland Nature Reserve (Namibia State Owned – management delegated to local authority)
- National West Coast Recreation Area (Namibia State Owned)
- Skeleton Coast Park (Namibia State Owned)
- 19 Conservancies in the Erongo and Kunene Regions (Community Based)
- Etosha National Park (Namibia State Owned)
- Iona National Park (Angola State Owned)

The collaboration of over 30 conservation units to form a “mega park” will be unique in the world, and it will no doubt attract considerable interest from a tourism, conservation and development point of view. It will be highly innovative in that sensible zonation will enable mining in certain areas, towns, harbours, resorts, marine culture, recreation, film making, agriculture, power generation, desalination and a great variety of other forms of land use that all fit together in a greater sustainable development network. Ownership and custodianship of the land and its resources will be in the hands of three governments, local

authorities, private individuals, companies and communities. This “mega park” will correspond to an existing initiative offshore, the Benguela Current Large Marine Ecosystem Project (BCLME), which is also GEF funded. Close collaboration between the marine and terrestrial initiatives will ensure that policies, plans and projects are designed and implemented in a complimentary way.

Whilst this vision is awesome and seemingly impossible to attain, it should be borne in mind that very little actually needs to be done for it to become reality. The beauty of the vision is that it builds on foundations that already exist. The MET/GEF project need only be the “glue” that binds them!

It is proposed that the first phase of the MET/GEF project focus on the following pilot projects:

- Etosha/Conservancy/SCP linkage
- Walvis Bay Wetlands proclamation and devolution pilot project
- Namib Naukluft Park/Namib farms linkage pilot project
- Sperrgebiet proclamation and management pilot project
- Ai Ais/Huns Mountains / Gondwana linkage pilot project

All of these can be initiated within the next three years, and then run for another two years as pilot projects. Thereafter, they can all be up scaled to form the Three-Nations Namib Desert Initiative (TNNDI).

The TNNDI will:

- Develop a long term vision for the sustainable development of the Namib Desert;
- Encourage appropriate and collaborative management between all partners that currently use and manage the Namib; and
- Create a mechanism for long term research and monitoring.

Even during phase 1 of the project, a feasibility study could commence to prepare for the achievement of the ultimate objective. This study should:

1. Compile an inventory and provide an analysis of land use within the Namib Desert (i.e. to the west of the 150 mm isoheyt), highlighting the State, private and communal conservation areas in all three countries. Where conservation areas extend eastwards from the Namib, linking the Namib with other conservation areas to the east (e.g. Etosha), they should be included in the paper.
2. Analyse and map (broadly and on the basis of best available information) the biodiversity, tourism and conservation status and potential of these areas, highlighting the added value possibilities of the TNNDI.
3. Identify all major land and resource management stakeholders and evaluate their initial response to the proposed TNND Initiative (e.g. through personal visits, telephonic interviews, questionnaires, etc.).
4. Provide an analysis that places the TNNDI in the context of the relevant UN environmental conventions and various SADC protocols.
5. Propose a process for implementing the TNNDI.

5.2 North East Zone

5.2.1 Introduction

The Terms of Reference required the consultants to consider only Bwabwata National Park; however Mamili, Mudumu and Mahango National Parks are included in the discussion as they share ecosystems and challenges. Khaudum Game Park, the Mangetti Game Camp and Waterberg Plateau Park are not included in this report. Thus, this chapter focuses primarily on the Caprivi Region.

5.2.1.1 Background

The Caprivi Strip was named after Count Georg Leo von Caprivi, who was the German Imperial Chancellor from 20 March 1890 to 27 October 1894 and therefore, in this capacity, responsible for the conclusion of the Heligoland-Zanzibar treaty (Appendix 1.1). Neither the eastern or western Caprivi appear to have had a local or traditional name. Under the Heligoland-Zanzibar Treaty of 1 July 1890, Germany was conceded a strip of land between 21° east longitude and the Zambezi River (the Caprivi Strip). Demarcation of the boundary was problematic at the time (Appendix 1.2) and remains so today – ownership of Kasikili Island in the Chobe River is still disputed with Botswana.

5.2.2 Comparative advantage – the assets of the zone

Streitwolf, the first Imperial Resident of the Caprivi under the German occupation, regarded the wildlife and its habitats as the most valuable economic assets of the Caprivi (Streitwolf 1911). The following are regarded as Caprivi's comparative advantages and key assets:

5.2.2.1 Rainfall

High rainfall, some areas of relatively good soils, sub-tropical vegetation and high levels of biodiversity and wildlife biomass – this contrasts starkly with Namibia's otherwise arid and semi-arid landscape, thus providing diversity in the Namibian tourism product.

The Caprivi enjoys the highest rainfall in Namibia (Appendix 1.4: Map 2) ranging from 500mm in the west to a peak of around 700mm in the extreme east. However, this level of rainfall is marginal for dryland cropping and it can be expected that crops will fail on average once in every four years. It is possible that the Caprivi is subject to long term cycles in rainfall and there may have been only one and a half complete cycles since 1914. Prolonged deficits below the mean can be expected to have a deleterious effect on the water table and, in particular, to result in the drying-out of the key floodplain habitats which are heavily used by cattle and wildlife.

5.2.2.2 Rivers

Substantial perennial rivers that provide habitat for wildlife and visual relief, and that also act as "biodiversity corridors" which make Caprivi the key to transboundary conservation options between Namibia, Botswana, Zambia and Angola. An added bonus is the fact that pro-conservation land use is practiced along much of Caprivi's borders with these neighbouring countries.

The key features of the Caprivi are its large perennial rivers and the floodplains and riverine

woodlands fringing them (Appendix 1.4: Map 1; Annex 1.3). Barnard (1998: Table 2.2, p75) lists the northeast wetlands – the Zambezi, Chobe, (including Impalila island at their confluence), Linyanti, Kwando, and Okavango river frontages – as sites of special ecological importance in Namibia. These floodplains support substantial populations of wildlife, albeit in lower concentrations than in the past. Geographically, Caprivi is at the centre of the proposed 'Four-Corners' transfrontier conservation area. The area has the potential to benefit from economic multiplier effects which the TFCA should generate – provided it can consolidate and expand its wildlife areas through co-management. Equally, a failure to bring about these desirable changes could negatively impact trans-boundary initiative in all of the surrounding countries.

5.2.2.3 Biodiversity

The biological diversity of the Caprivi is the richest in Namibia. The communal land in east Caprivi has highest number of relatively diverse and rare species of mammals and west Caprivi has the greatest richness of rare and common species (Barnard 1998, p247). The species diversity of birds is also the highest because of the varied habitats and relatively high rainfall.

Because of Caprivi's unique geography, most species populations range among neighbouring countries. As a result, levels of species endemism in the Caprivi are low. There are exceptions, however. An endemic killifish (*Nothobranchius* spp) occurs in ephemeral pans in East Caprivi, but its status is uncertain; and the Mpacha grass frog (*Ptychadena mpacha*) has only been found in Katima Mulilo. Because of its wetlands, the Caprivi is important for frog conservation. There are concerns about several reptile species in the Caprivi, but none are endemic. The greatest conservation concern remains the habitats of the Caprivi: of the 470km of Okavango River frontage in Namibia only 30km are still pristine. Large dense populations of alien invasive species have replaced the indigenous vegetation around Katima Mulilo.

The current knowledge of the ecological and socio-economic status of the Caprivi is relatively high. Mendelsohn & Roberts (1997) present a comprehensive set of data together with an analysis of the key issues in 'An environmental profile and atlas of the Caprivi'. The database of maps prepared under this project has been maintained and updated and is in continuous use by Namibian and visiting researchers. Barnard (1998) reviews the biodiversity of the Caprivi and presents an economic summary of the value of land use based on indigenous species. Martin (2002, 2003, 2004a and 2004b) examines the status of buffalo, roan, sable, tsessebe, red lechwe, reedbuck, waterbuck, puku and elephants in the Caprivi and the requirements for management of these species. Numerous papers on the social and economic issues in the Caprivi have been done by the Directorate of Environmental Affairs (Ashley, Barnes, Brown, Jones, O'Connell and others). This is by no means a comprehensive list and additional references are given in Barnard (1998) and Martin's reports.

The Directorate of Scientific Services have conducted aerial surveys of the large mammals in the Caprivi since 1980, as frequently as budget constraints have allowed (DSS 2002). Comprehensive surveys of hippo, crocodiles, elephants and other large mammal species were carried out in August-September 2004. A number of NGOs are active in the Caprivi (e.g. IRDNC, NNF, WWF, LIFE) and have established systems for monitoring a range of ecological variables and management parameters through game transects and event book records. It is unlikely that such detailed monitoring systems exist anywhere else in southern

Africa.

5.2.2.4 Infrastructure

Excellent infrastructure exists and links Namibia with some of Southern Africa's finest tourism attractions, namely the Okavango Swamps, Victoria Falls and Chobe Game Reserve. The highest-valued land use for the area lies in tourism. Yaron *et al* (1993) and Ashley *et al* (1994) estimated the net financial return from wildlife exceeded that from cattle in the Caprivi (N\$3.6 million versus N\$2.8 million) and that the return per hectare was even higher (N\$1.83 versus N\$1.41 - Table 4.13, page 267 in Barnard, 1998). Ashley & O'Connell (Box 4.20, page 268 in Barnard (1998)) conclude that the financial benefits of wildlife are capable of outweighing all costs of wildlife management, including crop losses. These figures pertain to the time of inception of communal land wildlife enterprises in Caprivi: the long term potential for wildlife is considerably higher. The potential for tourism is elaborated on in the following section with other natural resource based uses.

5.2.3 Challenges and opportunities

The Caprivi is not a 'self-contained' ecological system. With all of its main rivers originating in countries to the north and shared with neighbouring countries, the Caprivi is vulnerable to possible changes in river flow regimes (e.g. any dams which may be built in Zambia or Angola). The potential impact of diversion of water from the Okavango river to Windhoek, a project under consideration (Barnard 1998, p142), could have far-reaching effects on both the Caprivi and the Okavango swamps in Botswana.

The relatively high rainfall and fertile floodplains have resulted in substantial populations of both humans and cattle (Map 4, Appendix 1.4) concentrated mainly at the eastern and western extremities of the Caprivi. The present population is estimated at about 130,000 with the largest numbers in the east. Mendelsohn & Roberts (1997, page 18) list the extent of the area cleared for agriculture; in 1996 some 21% of the wetlands had already been cleared. This proportion has probably risen to nearly 30% in the year 2004 (Appendix 1.3). Mendelsohn & Roberts (1997) and Barnard (1998) both view the clearance of land in key habitats as the greatest threat to the biodiversity of the Caprivi.

The patterns of settlement and the nature of the associated subsistence activities in the Caprivi are perhaps a greater problem than the number of people alone. The average density of humans over the entire Caprivi is less than 7 persons/km², a level conducive to the development of wildlife land use (Parker & Graham 1989). However, current settlement patterns such as the 'ribbon' settlement along rivers and the scattered villages in floodplains present a troublesome environment for wildlife and biodiversity.

Illegal hunting has been a problem in the Caprivi for many years and is responsible for the depleted populations of many large mammal species. The situation is exacerbated by a lack of civil order north of the Caprivi and by periodic conflicts between groups within the Caprivi. The total area of wildlife range protected by conservancies in the east Caprivi is relatively small (less than 2,000km²); however, it is hoped that this area will increase under the project. In the new staff structures envisaged under the project (Subcontract 2) there should be adequate protection for the State protected areas but, as with the conservancies, the total area of parks in the east Caprivi is not large (less than 1,500km²). There is a need for rapid institutional development extending beyond conservancies into key habitats.

Unfortunately, a number of activities have been allowed in the Parks that contravene the principles of the protected areas and their Draft Management Plans. These include the establishment of military bases (necessitated by the previously unstable situation in west Caprivi), the establishment of a prisoners rehabilitation centre near Bagani, various irrigation schemes, cattle herding, trophy hunting (in Mahango and Mamili -- both of which are tiny parks where it is very difficult to separate trophy hunters from other tourists) and crop cultivation. It is hoped that this situation of unhindered, *ad hoc* development will be curtailed once the parks are re-proclaimed and their status confirmed by the Namibian government. Reversing the gradual undermining of the integrity of the parks should be a high priority for MET and this project.

To realise the full economic value of wildlife in the Caprivi it is essential to overcome the present fragmented spatial distribution of wildlife areas, particularly in eastern Caprivi. The present size of both protected areas and conservancies and their separation limits species population viability. At present, buffalo, roan, sable, tsessebe and wetland grazer species populations do not form a continuous distribution across the range of potentially available habitat (Martin 2002, 2003, 2004a). Red lechwe, in particular, need to be able to move over the full extent of floodplains in the Caprivi in order to enhance their chance for survival. Freshwater fish are threatened mainly by overexploitation and the loss of riverine vegetation². Between 1992 and 1994 there was a decline of almost 50% of fish caught (Hay *et al* 2000).

The key challenges facing conservation in Caprivi may be summarised as follows:

1. Habitat alteration as a result of inappropriate agriculture and land management practices.
2. Habitat deterioration due to adverse climatic factors and reduced river functioning (especially in the case of the Kwando/Linyanti system).
3. Tenuous MET control over the parks and inadequate conservation efforts – leading to unsustainable wildlife use (poaching) and human encroachment into the parks.
4. Relative instability and inadequate conservation in Angola, resulting in range restrictions for migrating wildlife such as elephant. This causes “bottlenecks” in areas such as Buffalo and Mahango.
5. Large elephant numbers generally, especially influxes from Botswana.
6. Tribal conflicts, which complicate conservation and development efforts.
7. Most of the parks are too small to be viable on their own.

5.2.3.1 Habitats and species not represented in, or not adequately protected by Protected Areas

The State protected areas and conservancies in the Caprivi are shown on Map 3, Appendix 1.4. Significantly, only a small part of the key floodplain areas are located in parks. There are no protected areas in the Chobe-Zambezi river system, which accounts for about half of the best wetland grazer habitat in the Caprivi. Salambala conservancy may provide the best hope for maintaining species such as reedbuck, waterbuck, lechwe and puku. Mudumu and Mamili national parks and the ‘Golden Triangle’ (the Kwando core area of the West Caprivi Game Reserve) provide protection for a small part of the floodplain habitats in the Kwando-Linyanti river system. The conservancies on the east bank of the Kwando River may prove

² Fish stocks in the Okavango River in particular have deteriorated significantly since 1984 due to both overexploitation and de-vegetation. It is reported that, even if overexploitation of the fish is curtailed, it will be difficult for the depleted fish populations to recover due to the loss of habitat.

important in the future (Kwandu, Wuparo and Mayuni) but, at the moment, livestock densities in the floodplain habitats are relatively high. Mahango national park and the 'Buffalo Area' (the Western Core area of the Caprivi Game Reserve) protect a small part of the floodplain habitat on the Kavango River. Some crude estimates of the wetland habitats in State Protected Areas are given in Table 5.3.

Table 5.3: Wetland habitats conserved in State Protected Areas

Protected area	Area km ²	Floodplain Habitat	
		Proportion of park %	Area km ²
Mamili National Park	320	100	320
Mudumu National Park	1008	5	50
Kwando Core Conservation Area	205	50	103
Bwabwata Multiple Use Area	3087	0	0
Buffalo Core Conservation Area	700	10	70
Mahango National Park	245	20	49
		TOTAL	592

Source: Park areas from GFA-Agrer (2000)

At best, 600km² of floodplains are conserved in State Protected Areas. The remainder (2,500km²) is subject to cattle grazing pressure and must be regarded as less than optimum wildlife habitat. The floodplains are the focus of conflict between wildlife management and people, domestic livestock and cultivation. Table 5.4 shows the percentage of vegetation types within the north-east zone occurring within the different land use categories. This data demonstrates the potential for communal conservancies to augment the coverage of vegetation types by the PA system, notably Northern and Central Kalahari, Caprivi floodplains and Riverine Woodlands.

Table 5.4: The percentage of vegetation types within the North-East zone occurring within different land use categories.

Biome	Vegetation type	Percentage of vegetation types within different land uses				
		State Protected Areas	Forestry Reserves	Communal Conservancies	Commercial Conservancies	Total
Acacia Tree-and-Shrub Savanna	Central Kalahari	0.0	0.0	37.7	0.9	38.6
	Karstveld	0.0	0.0	0.0	7.8	7.8
	Thornbush Shrubland	0.1	0.0	3.0	14.3	17.3
	Western Highlands	0.0	0.0	0.0	0.0	0.0
Broadleaved Tree-and-Shrub Savanna	Caprivi Floodplains	9.6	0.0	19.1	0.0	28.7
	Caprivi Mopane Woodlands	14.8	0.0	11.1	0.0	25.9
	Eastern Drainage	43.6	0.0	5.5	0.0	49.1
	North-eastern Kalahari woodlands	13.1	3.1	3.1	0.0	19.3
	Northern Kalahari	0.6	0.0	52.4	4.0	56.9
	Okavango Valley	4.0	0.0	1.7	0.0	5.7
	Omatako Drainage	0.0	0.0	9.8	0.0	9.8
	Riverine Woodlands & Islands	39.0	0.0	23.1	0.0	62.1

5.2.3.2 Potential for tourism and other natural resource based uses

The potential for development of tourism in the Caprivi is well outlined in GFA-Agrer (2000) which draws largely on Deloitte & Touche (1997). There is a large and promising future for tourism in the Caprivi which can be expected to increase exponentially as progress is made with trans-frontier conservation areas. At present, development is in its infancy.

In the development of the wildlife sector, non-consumptive tourism on high quality wildlife land will give by far the greatest economic returns (Barnes *et al* 2001, Martin 1993). However, only a limited amount of land in any country is suitable for high quality game viewing tourism and, if wildlife is to compete with alternative land uses over larger tracts of land, then it is necessary to harness a range of sustainable uses to maximise the income from wildlife. Safari hunting is one such use. Martin (1993) found that whilst high quality ecotourism could very easily realise net returns greater than US\$25/ha, the net income values for safari hunting reached a ceiling of about US\$7/ha. This may nevertheless be the highest valued use for wildlife and the highest valued overall land use during developmental stages in most areas of the Caprivi outside of the tourism-oriented zones of its protected areas.

Safari hunting is capable of producing competitive returns from land with less capital investment than that required for non-hunting tourism and with a lower adverse ecological impact. It has other advantages. Whilst it may take several years for any non-hunting tourism venture to build up markets, the returns from sport hunting are almost instantaneous – provided a minimum population of wildlife is present. This feature may be very important in the development of local community wildlife programmes where benefits are needed from the outset in order to provide the incentives for wildlife conservation.

Barnes *et al* (2002) observe that instability in markets for wildlife use activities can affect sustainability and give examples to show that recent political events in southern Africa have severely affected growth in non-consumptive tourism in parts of Namibia. In particular, tourism income was sharply reduced in some of the conservancies examined in their study. Safari hunting has been demonstrated to be far less susceptible to these types of market perturbations. It may be that the political instability to which Barnes *et al.* (*ibid.*) refer obliquely is the present traumatic situation in Zimbabwe. It is significant to note that whilst the Zimbabwe ecotourism market collapsed very shortly after the inception of the said 'political events', its safari hunting market has persisted throughout – albeit slightly reduced in volume in the 2004 hunting season. A similar situation existed during the 'liberation war' in the 1970s in Zimbabwe. Where there was no ecotourism activity to speak of, a viable and resilient safari hunting industry continued throughout the war. This consideration should affect decision-making on land uses in the areas of this study.

Perhaps the key lesson to be applied is that there is need for considerable flexibility in planning tourism development. Safari hunting may play a key role in the developmental stages but as market potential for non-hunting tourism increases, hunting should move into the less attractive scenic areas such as the central zone of Bwabwata.

Barnard (1998) and GFA-Agrer (2000) both note the need for local communities to gain a greater share of the proceeds from tourism in their areas. GFA-Agrer (*ibid*) does not encourage the concept of local communities running their own tourism facilities but instead advocates the employment of local people in the tourism industry. This is a rather simplistic

approach. For example, in Popa Falls on the Okavango River the camping facilities offered by local communities far exceeds the aesthetic quality of those offered by the State agency. However, in terms of 'up-market' lodges, no-one would suggest that local communities should attempt to compete with commercial investors. However, local communities should have effective ownership of resort sites on their land and be able to negotiate maximum returns on leases.

By far the highest-valued commodities available in the Caprivi are elephant products – ivory, hide and meat. Early colonizers understood this fact and it has not changed. In an ideal world where these products could achieve their true values unprejudiced by artificial constraints, elephants would provide the sustainable use incentives needed for local communities to invest in their conservation and management. Given that there is an overabundance of elephant in the Caprivi and that the costs to local people and biodiversity are high, it is essential that Namibia continues its campaign to remove the barriers preventing the real values of elephant from being achieved.

With the exception of elephant, the competitive advantage for wildlife lies in value-added recreational activities such as photographic tourism and sport hunting – values which are denied to the cattle industry. With few exceptions, the simple harvesting of wildlife is the lowest-valued use for the resource and few wildlife populations can sustain significant harvests without prejudicing other, higher-valued uses such as sport hunting. Thus practices such as allocating communities quotas of animals to be hunted 'for own use' should be examined critically. Not only does this place the wrong value on resources but it also fails to inculcate any sense of management in local communities. Despite this, there are exceptions. There is good reason to harvest species such as red lechwe which go through 'boom-and-bust' cycles and which are at the mercy of long-term rainfall cycles, as their numbers will inevitably be reduced when dry conditions prevail.

Values of plant products are likely to appreciate continuously and, as an adjunct to wildlife-based land use, should be encouraged. It is important to avoid situations like the one that has occurred in the development of large transfrontier conservation areas in Mozambique. In Mozambique, local peoples are diverted into undertaking a range of minor 'backyard natural resource projects' of trivial value and they are not included in the main negotiations or management affecting the truly valuable resources upon which the entire success of the TFCA will be based.

5.2.4 Strategies/recommendations: Creating linkages and cooperative management practices between land users and land managers

The present mosaic of small parks and small conservancies is not up to the challenge of conserving the Caprivi's prime wildlife habitats. The conservancies (shown on Map 3, Appendix 1.4) are critical for floodplain habitat conservation and linkages between the fragmented parks in the eastern Caprivi. Mashi, Mayuni and Kwandu conservancies could link Mudumu and the Forest Reserve with the eastern core area of Bwabwata. Wuparo could link Mudumu and Mamili. However, there are unwelcome intrusions of land between all of these blocks which need to be brought "into the fold." In the absence of any State protected areas in the extreme east of the Caprivi, Salambala, Kasika and Impalila conservancies could perform a much needed conservation role.

The importance of these conservancies becomes even greater when the larger vision of a transfrontier conservation area is considered. Salambala is directly opposite the Chobe

Enclave in Botswana and presents an immediate opportunity for community collaboration on wildlife management across borders. Impalila and Kasika are situated at the centre of the 'Four Corners' TFCA and provide a vital corridor to link wildlife populations in four countries.

Building on the foundations laid through the development of a common conservation and tourism vision for Caprivi,³ institutions need to be established which, in the first instance, focus on managing the floodplains over extensive areas. Inevitably this means co-management between the State, neighbouring conservancies and areas which are not yet formed into conservancies. The nature of this co-management must be one where the geographic boundaries are identified and the stakeholders within a zone jointly grapple with the problems on an equal footing and with equal status (Ruitenbeek and Cartier 2001).

The first step in this process entails a greater devolution of authority to communities – local people are unlikely to abandon a traditional way of life without this. The next step is to broker the way for co-management of key blocks of land with an emphasis on the floodplains. This may mean abandoning the present narrow concepts of 'conservancies' with 'approved management plans' and begin a process of forming cascaded institutions (Martin 1999) capable of meeting the demands of several levels of scale (Murphree 2000).

When strong institutions have been formed amongst the communities neighbouring protected areas, the stage will have been set for co-management of larger blocks of land including protected areas through the next tier of institutional development. In a complex co-management regime with government agencies and local people sharing responsibilities, the relationship must shift away from the 'command-and-control' position at one end of the management continuum (where government takes most of the decisions) to the 'laissez-faire' end of the continuum where the control is largely in the hands of local stakeholders. Only then will new and relevant institutions be able to emerge (Ruitenbeek and Cartier 2001).

The individual parks in the north east are discussed as follows.

5.2.5 Bwabwata National Park

5.2.5.1 Background

The proposed Bwabwata National Park is a reconfiguration of the existing Caprivi Game Park – with some fundamental changes. The most significant are:

- Incorporating the Kwando Triangle into the park and zoning this as the Kwando Core Area
- Including the Mahango Game Park into Bwabwata
- Zoning the Buffalo area as a core conservation area
- De-proclaiming heavily settled and developed areas (Bagani and Omega)
- Zoning the middle portion as a Multiple Use Area

About 60 per cent of the Namibia's elephants are found in this park, especially during the

³ This vision was built over a number of years, following an extensive process of consultation between MET and local communities. It resulted in a vision document that was accepted by the communities and endorsed by Cabinet.

dry season when they concentrate on the floodplains along the rivers (Tarr, 1996). Other large mammals found in the park include the rare sable (*Hippotragus niger*), roan (*Hippotragus equinus*), lechwe (*Kobus leche*), waterbuck (*Kobus ellipsiprymnus*), reedbuck (*Redunca arundinum*), tsessebe (*Damaliscus lunatus*) and some large herds of buffalo (*Syncerus caffer*). Hippopotamus (*Hippopotamus amphibius*) and crocodiles (*Crocodylus niloticus*) are also found in large numbers in the rivers. The old Mahango National Park is also renowned for its prolific bird life of about 350 species, while in the remaining parts of Bwabwata National Park about 339 species of birds have been recorded (Olivier and Olivier, 1993).

Bwabwata National Park is situated in the Northern Kalahari or forest savanna and woodland vegetation type (Giess, 1971). Large tree species found in Bwabwata National Park are unique in that most of them are not found elsewhere in Namibia. However, they do occur in other countries like Zimbabwe and Zambia. These are species such as red syringa (*Burkea africana*), silver terminalia (*Terminalia sericea*), Zambezi teak (*Baikiaea plurijuga*) and common apple-leaf (*Lonchocarpus capassa*) (Barnard, 1998).

Management and development plans for the Mahango and Buffalo section of Bwabwata National Park were prepared by Environmental Information Services (EIS) between November 1994 and January 1996, and for the Kwando Core Area through the North-East Parks Project in January 1999.

5.2.5.2 Kwando Core Area

Conservation importance

The Kwando area includes pockets of important riverine woodland, floodplains and broad-leaved woodlands and Omuramba habitats.

The vision in the Draft Management Plan for Kwando Core Area is that the area shall be proclaimed as part of the Bwabwata National Park as a key habitat for wildlife moving between Botswana, Namibia, Angola and Zambia. The park shall be managed as a core area supporting wildlife, tourism, and rural development. It shall protect the Kwando riverine habitats, Kalahari woodlands, omuramba grasslands and their associated biodiversity, particularly hippo, roan, lechwe and Burchell's zebra. Tourism shall be non-consumptive, low-volume, low-impact, with emphasis on a high-quality nature experience. All tourism concessions shall be allocated to neighbouring communities that have formed conservancies. Management shall include the establishment of mutually-beneficial partnerships with communities.

Management and Development Issues

The draft management plan completed as part of the KFW funded NE Parks project identified a number of priority actions required in order to properly manage this area. A modification of these actions appears in Table 5.5 below.

Table 5.5: Priority of Management Programmes and Ranking of Situation Analysis and Needs Assessment for the Kwando Core Area.
The indicative time scale illustrates the time frame to resolve the various issues.

Priority of Management Programmes	Ranking of Situation Analysis and Needs Assessment for the Kwando Core Area		
	Priority (1st to 3rd years)	Secondary (2nd to 4th years)	Tertiary (4th to 5 th years)
1. Administration	<ol style="list-style-type: none"> 1. Clarify status of the proposed Bwabwata National Park. 2. Formalise the boundaries of the Kwando Core Area. 3. Upgrade staff structure (see Subcontract 2). 4. Formalise joint management strategy with partners (e.g. conservancies and tourism operators). 	<ol style="list-style-type: none"> 1. Design and implement training programme for all staff levels. 	<ol style="list-style-type: none"> 1. Assess and access potential sources for sustainable funding for the park and support zones.
2. Infrastructure development and maintenance	<ol style="list-style-type: none"> 1. Upgrade staff accommodation at Susuwe Station. 2. Power and telephones should be installed. 3. An entrance gate should be constructed on the road leading from the Trans-Caprivi highway to Susuwe and southward. The southward road must bypass the military camp. 4. Expanded road network needed to reduce linear nature of the tourism product. 5. Establish co-management agreement with tourism operators so that they help maintain roads and firebreaks. 	<ol style="list-style-type: none"> 1. There are few signs to direct visitors in the Park. 2. Cleaning up of dilapidated sites. 	<ol style="list-style-type: none"> 1. Cleaning up of dilapidated sites to be completed. 2. Inappropriate road alignments are to be closed or relocated.
3. Protection	<ol style="list-style-type: none"> 1. Improve law enforcement – appoint honorary nature conservators to assist MET. 2. Wild fires that enter the Park need to be controlled. 3. Formalise rules for the settlements within the Park (e.g. military). 	<ol style="list-style-type: none"> 1. Train staff to deal with visitors to the Park. 	
4. Support Zone	<ol style="list-style-type: none"> 1. Improve communication with local communities, especially conservancies. 2. Enter into a co-management agreement with conservancies, tourism operators, the Military and NGOs to ensure good management of the greater Kwando-Linyanti area. 		

Priority of Management Programmes	Ranking of Situation Analysis and Needs Assessment for the Kwando Core Area		
	Priority (1st to 3rd years)	Secondary (2nd to 4th years)	Tertiary (4th to 5th years)
5. Tourism and Visitor	<ol style="list-style-type: none"> 1. Set rules and regulations governing the use of the Kwando Core Area – this includes setting strict carrying capacity limits for the number of vehicles and tourists that enter each day. 2. Use honorary nature conservators to help implement the rules . 3. Enter into non-exclusive concession agreements with lodges that use the area. 4. Do not allow hunting in the Kwando Core Area. 	<ol style="list-style-type: none"> 1. Monitor visitor impacts. 	
6. Research and Monitoring	<ol style="list-style-type: none"> 1. A research and monitoring programme specifically for the Kwando Core Area (e.g. aerial surveys to monitor population trends in the KLCA) needs to be developed. 2. Protocols that allow local communities to harvest natural resources from within the Park are to be formulated. 	<ol style="list-style-type: none"> 1. Movement of key species between Botswana, Angola and Zambia should be monitored. 2. Impact of elephant on the riverine vegetation should be monitored. 3. Impact of fire and the effectiveness of the fire management programme should be monitored. 	<ol style="list-style-type: none"> 1. Assess the need to develop long-term strategies for research both within and adjacent to the parks. 2. Tourism use of the Conservation Area and the potential income should be monitored.

5.2.5.1 Mahango Game Park and Buffalo core area

Background

At the time of the compilation of the KFW-funded management plans for the north east parks, it was envisaged that the Mahango Game Park and the Buffalo Core Conservation Area would be combined to form the Okavango National Park. This name change is no longer being considered, but the consolidation of Mahango and Buffalo remains part of the broader vision within the creation of the expanded Bwabwata National Park. This consolidation of the two adjacent areas is justified by the fact that this is the only place in Namibia where a protected area spans a perennial river – in this case the Okavango.

Conservation importance

According to the Draft Management Plan, the Buffalo Core Area shall be managed as an integral part of the Bwabwata National Park, mainly to protect the Okavango wetland, riparian woodland, broadleaf Kalahari sand woodland and their associated biodiversity; in particular: avifauna, fish species, buffalo, sable, lechwe, bushbuck, hippo and crocodile. Tourism shall be non-consumptive; a combination of a high-volume lodge at Buffalo, and low-volume, low-impact, high-quality nature tourism in the rest of the area. Management shall include the establishment of mutually beneficial partnerships with communities. Buffalo shall be a core area for the multiple use area in Bwabwata National Park

Mahango Game Reserve shall also be managed as an integral part of the Bwabwata National Park mainly to protect the Okavango wetland, riparian woodland and their associated biodiversity; in particular avifauna, fish species, sable, bushbuck, sitatunga, lechwe, reedbuck, hippo and crocodile. Tourism shall be non-consumptive low-volume, low-impact with an emphasis on high quality nature experience. Accommodation facilities will not be allowed in the park, since there are adequate beds available in the various lodges along the west bank of the Okavango River between Mahango and Divundu. Management shall include the establishment of mutually beneficial partnerships with communities.

Management and development issues

The most significant management issues in Buffalo and Mahango are the existence of a double electrified fence along the border by the Botswana Government and the lack of recognition of the parks by some sectors of the local community and even the Namibian government.

The purpose of the fence is to act as a barrier to cattle movement; however, it has also had a marked impact on the movement of wildlife back and forth between Botswana and Caprivi. The continued presence of this fence therefore threatens the future viability of the proposed Bwabwata National Park and its associated Support Zones.

The two governments (Botswana and Namibia) have held negotiations in an attempt to resolve these issues. One option that could result in the border fence being removed is contingent upon the Namibian authorities implementing a fencing scheme within Namibia that would allow for the declaration of a “cattle free zone” adjacent to the Botswana border.

The issue of the legitimacy of the park is a much more complex issue, as it has its roots in the

way the park was proclaimed by the then South African government and the previous presence in the park by the former South African Defence Force. For most local people, the park has negative connotations and its integrity is thus undermined frequently by locals and even at high level. This has led to the rapid encroachment of the Buffalo area and its use for irrigated agriculture, a prison rehabilitation centre, a military base and numerous villages. These activities threaten the integrity of the area and severely undermine sense of place. Nevertheless, MET has made concerted efforts in recent years to restore the parks legitimacy in the eyes of local people and politicians.

It is not envisaged to implement an active management programme in the multiple use area, though the establishment of boreholes and permanent water in the dry woodland will improve the viability of species such as Roan and Buffalo, and it might help to encourage more extensive movement of elephant. The basic vision for this area is to enable the local community to manage the area as a hunting concession.

Table 5.6: Priority of Management Programmes and Ranking of Situation Analysis and Needs Assessment for the Mahango Game Park and Buffalo Core Area.

The indicative time scale illustrates the time frame to resolve the various issues.

Priority of Management Programmes	Ranking of Situation Analysis and Needs Assessment for the Buffalo Core Area and Mahango		
	Priority (1st to 3rd years)	Secondary (2nd to 4th years)	Tertiary (4th to 5th years)
1. Administration	<ol style="list-style-type: none"> 1. Clarify status of the proposed Bwabwata National Park and secure political and local support for the park through tourism and other natural resource use concessions. 2. Formalise the boundaries of the Buffalo Core Area and the areas to be deproclaimed. Once formalise, the northern boundary of the Buffalo area must be clearly demarcated, possibly fenced. 3. Upgrade staff structure (see Subcontract 2). 	<ol style="list-style-type: none"> 1. Design and implement training programme for all staff levels. 	<ol style="list-style-type: none"> 1. Assess and access potential sources for sustainable funding for the park and support zones.
2. Infrastructure development and maintenance	<ol style="list-style-type: none"> 1. Expanded road network needed to reduce linear nature of the tourism product in the Buffalo area. 2. Establish co-management agreement with tourism operators so that they help maintain roads and firebreaks. 	<ol style="list-style-type: none"> 1. Cleaning up of dilapidated sites (Buffalo military base) to be initiated. 	<ol style="list-style-type: none"> 1. Cleaning up of dilapidated sites to be completed.
3. Protection	<ol style="list-style-type: none"> 1. Improve law enforcement – appoint honorary nature conservators to assist MET. 2. Formalise rules for the settlements within the Buffalo area (e.g. military, prison farm, irrigation schemes). 3. Work more closely with Botswana government to improve cross-border protection measures. 	<ol style="list-style-type: none"> 1. Train staff to deal with visitors to the Park. 	<ol style="list-style-type: none"> 1. Facilitate elephant movement between Botswana and Angola, with the Buffalo and Multiple use areas being the corridor.
4. Support Zone	<ol style="list-style-type: none"> 1. Improve communication with local communities both in Bwabwata and around Mahango. 2. Enter into a co-management agreement with tourism operators, the Military and NGOs to ensure good management of the greater Okavango area. 	<ol style="list-style-type: none"> 1. Establish joint law-enforcement activities with NDF. 	

Priority of Management Programmes	Ranking of Situation Analysis and Needs Assessment for the Buffalo Core Area and Mahango		
	Priority (1st to 3rd years)	Secondary (2nd to 4th years)	Tertiary (4th to 5th years)
5. Tourism and Visitor	<ol style="list-style-type: none"> 1. Facilitate the establishment of a small lodge at Buffalo. 2. Set rules and regulations governing the use of the Buffalo Core Area – this includes setting strict carrying capacity limits for the number of vehicles and tourists that enter each day. 3. Use honorary nature conservators to help implement the rules. 4. Place a moratorium on further lodge developments along the west bank of the Okavango river, between Mahango and Divundu. 5. Do not allow hunting in either Mahango nor the Buffalo Core Area. 	<ol style="list-style-type: none"> 1. Monitor visitor impacts. 	
6. Research and Monitoring	<ol style="list-style-type: none"> 1. A research and monitoring programme specifically for the Buffalo Core Area and Mahango (e.g. aerial surveys to monitor population trends needs to be developed). 2. Protocols that allow local communities to harvest natural resources from within the Park are to be formulated. 	<ol style="list-style-type: none"> 1. Movement of key species between Botswana, Angola should be monitored. 2. Impact of elephant on the riverine vegetation should be monitored. 3. Impact of fire and the effectiveness of the fire management programme should be monitored. 	<ol style="list-style-type: none"> 1. Assess the need to develop long-term strategies for research both within and adjacent to the parks. 2. Tourism use of the Conservation Area and the potential income should be monitored.

5.2.6 Mamili National Park

5.2.6.1 Background

Mamili National Park is situated in eastern Caprivi and shares borders with Botswana in the west, south and east at the Kwando River. This 320 km² park was proclaimed in 1990 (Tarr, 1996). According to MET (undated report) the park used to represent Namibia's equivalent of the Okavango delta in Botswana, though it is smaller in size than the latter. However, in recent years the Linyanti swamps have not been as flooded as they used to be. Mamili National Park is open throughout the year between sunrise and sunset; however, due to flooding most of the park is inaccessible between May and August. There are two basic camping sites at Nzalu and Lyadura, respectively, but due to the park's proximity to Mudumu National Park, which has better accommodation facilities, visitors to Mamili National Park are often day visitors who visit the park from Mudumu National Park (MET undated).

MET (undated) report that aquatic species such as hippopotamus, crocodiles, and spotted-necked otters (*Lutra maculicollis*) are abundant in the Kwando River. Floodplain and swamp antelopes such as waterbuck, lechwe, sitatunga (*Tragelaphus spekei*) and a small population of puku (*Kobus vardonii*) also found refuge in the park. Other mammals in the park include elephant, buffalo, giraffe, warthog, lion and leopard. Eastern Caprivi has been reputed to be a bird paradise with about 430 species of birds, covering roughly 70 per cent of Namibia's total bird species (Olivier and Olivier, 1993).

The vegetation of Mamili National Park is mainly made up of reedbeds, dominated by *Phragmites australis* with some large trees on the islands. Dominant tree species on the islands include Knob-thorn (*A. nigrescens*), African mangosteen (*Garcinia livingstonei*), Apple-leaf (*Lonchocarpus capassa*) and Giant diospyros (*Diospyros mespiliformis*). Magic guarri (*Euclea divinorum*), blue bush (*Diospyros lycioides*) and russet bushwillow (*Combretum hereroense*) dominate in the understorey. In some flooded parts the tree layer consists of small isolated leadwood (*Combretum imberbe*) and silver terminalia (*T. sericea*) trees. There are open grasslands in seasonally inundated areas with *Miscanthus junceus*, *Eichinocloa stagnina*, *Vossia cuspidata* and *E. pyramidalis* as the dominant grass species. Areas that are subjected to extended periods of flooding contain water tolerant grass species of which *Imperata cylindrica*, *Hemarthria altissima*, *Eragrostis lappula*, *Digitaria brazzae*, *Hyparrhenia rufa*, *Loudetia simplex* and *Tristachya superba* predominate. *Cynodon dactylon* forms extensive lawns in some parts of the park.

Mamili National Park has both an integrated development plan and a management plan prepared through the North-East Parks Project in January 1999 and March 1999, respectively. Zonation of the Park is complicated by the current low water regime. At present, much of the fragile wetland areas are exposed leading to a predominantly dryland park. According to the Draft Management Plan, the zonation of the park must serve a dual purpose of meeting both the management objectives of the park and tourism use needs.

In view of current conditions, all of Mamili National Park south and west of the Sishika Channel is designated in the Draft Management Plan as a Special Protection Zone. This is to ensure that the remaining wetlands are not disturbed. At high water much of this area is inaccessible by vehicle and so will be naturally protected. The remainder of the park is to be designated as a Natural Zone with the exception of a Development Zone around the

Shisinze Station that should not exceed ten hectares.

5.2.6.2 Conservation importance

The stated vision for Mamili National Park is that it shall protect the unique processes of the Kwando-Linyanti system, its ecologically important habitats and its biodiversity. The park shall be managed as an integral part of the broader Kwando-Linyanti conservation area as a core area for local and migratory wildlife, tourism, and rural development. In particular, the park shall protect lechwe, buffalo, reedbuck, hippo, elephant and lion. Tourism shall be non-consumptive, low-volume and low-impact, with emphasis on a high-quality nature experience. Tourism concessions shall be allocated to neighbouring communities that have formed conservancies. Management shall include the establishment of mutually beneficial partnerships with communities.

5.2.6.3 Management and Development Issues

The draft management plan completed as part of the KFW funded NE Parks project identified a number of priority actions required in order to properly manage this area. A modification of these actions appears in Table 5.7, below.

Table 5.7: Priority of Management Programmes and Ranking of Situation Analysis and Needs Assessment for Mamili National Park.
NB. The indicative time scale illustrates the time frame to resolve the various issues.

Priority of Management Programmes	Ranking of Situation Analysis and Needs Assessment for Mamili National Park		
	Priority (1st to 3rd years)	Secondary (2 nd to 4th years)	Tertiary (4th to 5 th years)
1. Administration	<ol style="list-style-type: none"> 1. Formalise and gazette Park boundaries and upgrade to National Park status. 2. Appoint staff responsible for Park (see subcontract 2). 3. Implement Park entry and fee structure. 	<ol style="list-style-type: none"> 1. Design and implement training programme for all staff levels. 	<ol style="list-style-type: none"> 1. Assess possibilities for out-sourcing various management functions (fire break maintenance, road maintenance <i>etc.</i>). 2. Assess and access potential sources for sustainable funding for the park and support zones.
2. Infrastructure development	<ol style="list-style-type: none"> 1. Upgrade staff accommodation at Shisinze Station. 2. Erect and staff entrance gates to the Park . 3. Erect signs to direct visitors in the Park 4. Establish tourist facilities (hides, camping areas <i>etc.</i>) . 5. Maintain roads and firebreaks. 		
3. Protection	<ol style="list-style-type: none"> 1. Remove illegal settlements from within the Park. 2. Stop cattle encroachment into the park. 3. Organise and implement a comprehensive law enforcement programme. 4. Control wild fires that enter the Park. 	<ol style="list-style-type: none"> 1. Train staff to deal with visitors to the Park. 	
4. Support Zone	<ol style="list-style-type: none"> 1. Establish the legitimacy of the park boundary amongst local communities. 2. Empower communities to deal with problem animals. 3. Improve communication with local communities . 		

Priority of Management Programmes	Ranking of Situation Analysis and Needs Assessment for Mamili National Park		
	Priority (1st to 3rd years)	Secondary (2nd to 4th years)	Tertiary (4th to 5 th years)
5. Tourism and Visitor	<ol style="list-style-type: none"> 1. Establish tourism facilities in the park (could be a small tented lodge and a low density camp site) and marginally upgrade the road network (tourism concessionaire could do this). 2. Establish and enforce rules and regulations governing the use of the Park 3. Appoint Honorary Nature Conservators to assist with tourism control. 4. Do not allow any hunting in Mamili. 		
6. Research and Monitoring	<ol style="list-style-type: none"> 1. Basic monitoring of wildlife populations . 	<ol style="list-style-type: none"> 1. Long-term strategies for research both within and adjacent to the parks needs to be developed. 	

5.2.7 Mudumu National Park

5.2.7.1 Background

Mudumu National Park is situated in eastern Caprivi and borders Botswana at the Kwando River. The park covers an area of about 1010 km² and was proclaimed in 1990 (Tarr, 1996). According to the KFW-funded management plan, the size of the park has been reduced to 800km² following discussions with neighbouring communities.

According to MET (undated), game in the park includes elephant, buffalo, roan, sable, kudu, impala, oribi (*Aurebia aurebi*) and Burchell's zebra. The park is also a sanctuary for red lechwe and sitatunga, while hippo and crocodile are found in the waterways. Wild dogs (*L. pictus*) are seen in the park from time to time. Several rare species of birds are also attracted to the backswamps and floodplains, including Slaty Egret (*Egretta venaceigula*), Rufous bellied Heron (*Butorides rufiventris*) and Wattled Crane (*Grus carunculatus*).

The vegetation of Mudumu National Park is typical woodland extensively dominated by mopane (*C. mopane*). Camel thorn (*A. erioloba*) can be found in the relic floodplains to the south-east (Olivier and Olivier, 1993). Extensive stands of reeds (*Phragmites australis*) and forests dominated by figs (*Ficus* spp.), Natal mahogany (*Trichilia emetica*) and African mangosteen (*Garcinia livingstonei*) are found along the Kwando River in the west and on islands. The grass layer is mainly composed of coarse grasses such as *Eragrostis pallens*, *Aristida meridionalis*, *A. stipitata*, *Andropogon chinensis* and *Panicum kalaharensense*. Extensive mats of *Echinocloa stagnina*, *Vossia cuspidata* and *E. pyramidalis* are found on seasonally flooded plains, while *Cynodon dactylon* forms lawns at the water margin and drawdown zone.

Mudumu National Park has both a management plan and an integrated development plan prepared through the North-East Parks Project in April 1998 and January 1999, respectively.

The western part of the park is dominated by the Kwando River and associated flood plains. The remainder of the park is dominated by *Colophospermum mopane* woodland.

The riverine area adjacent to the Kwando River is reasonably well developed while the remainder of the park does not support any unique or sensitive features of high conservation value that would justify special protection at this time (see management plan). In view of this, the entire park has been zoned as a Natural Zone with the exception of two development areas. The first Development Zone encompasses an area of up to ten hectares that surrounds Ngenda Station. The second Development Zone is restricted to the Lianshulu Development Zone that consists of an 8km² concession area granted under a 30-year lease.

5.2.7.2 Conservation importance

According to the Draft Management Plan, Mudumu National Park shall be managed as an integral part of the broader Kwando-Linyanti conservation area, mainly as a core area for wildlife, tourism and rural development. In particular, the park protects the Kwando riverine habitats and mopane woodlands, together with hippo, buffalo, zebra, elephant and impala.

5.2.7.3 Management and Development Issues

The Draft Management Plan envisages tourism to be non-consumptive, low-volume, low-impact with emphasis on a high-quality nature experience – this seems to be an appropriate vision. Tourism facilities shall be a combination of a private lodge and a concession allocated to neighbouring communities that have formed conservancies. Management shall include the establishment of mutually beneficial partnerships with communities.

The draft management plan completed as part of the KfW funded NE Parks project identified a number of priority actions required in order to properly manage this area. A modification of these actions appears in Table 5.8, below.

5.2.7.4 Concluding Remarks

The Caprivi is strategically situated to become the major crossroads of tourism traffic linking countries across the central region of southern Africa. With its spectacular floodplains and wilderness atmosphere it could become a tourism destination rather than just a transit area.

The extent to which it fulfils its potential will hinge on increasing wildlife populations through making larger areas of habitat available. This, in turn, requires a co-management effort between the State and the peoples of the Caprivi in a partnership of equals.

The burgeoning elephant population could pose a threat to conservation and development. It is recommended that the problem is tackled with the full involvement of local peoples in decision taking. This implies a greater degree of empowerment.

Reconciliation of the MET-GEF project and the KfW North East Parks programme should present little difficulty. Both share common goals and appreciate the potential of Caprivi to develop in a manner which provides revenue for the State and raises the standards of living of local communities. The organisational structures proposed for the protected areas are similar in both projects and the need for devolved and adequate budgets is recognised.

The most important contributions that the MET/GEF project could make in the north east are summarised in Table 9.2 (in Section 9).

**Table 5.8: Priority of Management Programmes and Ranking of Situation Analysis and Needs Assessment for Mudumu National Park.
NB. The indicative time scale illustrates the time frame to resolve the various issues.**

Priority of Management Programmes	Ranking of Situation Analysis and Needs Assessment for Mudumu National Park		
	Priority (1st to 3rd years)	Secondary (2nd to 4th years)	Tertiary (4th to 5 th years)
1. Administration	<ol style="list-style-type: none"> 1. Formalise and gazette Park boundaries and upgrade to National Park status. 2. Appoint staff responsible for Park (see subcontract 2). 3. Implement Park entry and fee structure. 	<ol style="list-style-type: none"> 1. Design and implement training programme for all staff levels. 	
2. Infrastructure development	<ol style="list-style-type: none"> 1. Nakatwa Station occupies a prime tourism site and should be removed. 2. Ngenda Station should be upgraded to become the park headquarters. 3. Erect entrance gates to the Park.. 4. Two east-west roads either side of the Mudumu mulapo should be opened to facilitate the control of wild fires. 5. The pump and borehole at Santika pan should be rehabilitated. 6. Outsource some maintenance functions (e.g. water provision for wildlife) to Lianshulu concessionaire. 	<ol style="list-style-type: none"> 1. Feasibility of establishing other artificial pans is to be investigated. 	
3. Protection	<ol style="list-style-type: none"> 1. Implement effective law enforcement – appoint Honorary Nature Conservators to assist. 2. Control wild fires that enter the Park. 	<ol style="list-style-type: none"> 1. Train staff to deal with visitors to the Park 	
4. Support Zone	<ol style="list-style-type: none"> 1. Empower surrounding communities to deal with problem animals 2. Improve communication with local communities . 	<ol style="list-style-type: none"> 1. Stop livestock encroachment into the park. 	

Priority of Management Programmes	Ranking of Situation Analysis and Needs Assessment for Mudumu National Park		
	Priority (1st to 3rd years)	Secondary (2nd to 4th years)	Tertiary (4th to 5 th years)
5. Tourism and Visitor	<ol style="list-style-type: none"> 1. Enable diversified tourism experiences in the park (e.g. night driving, walking). 2. Do not allow additional tourism facilities in the park, except hides at pans and additional roads . 3. Establish clear no rules and regulations governing the use of the Park. 4. Do not allow any hunting in Mudumu. 		
6. Research and Monitoring	<ol style="list-style-type: none"> 1. Develop research and monitoring programmes for the Park. 	<ol style="list-style-type: none"> 1. Investigate impact of elephants on the vegetation along the Kwando river. 	<ol style="list-style-type: none"> 1. Assess the need to develop long-term strategies for research both within and adjacent to the parks.

5.3 The Central-South Zone

5.3.1 Introduction

The configuration of this region is shown in Figure 5.3. It covers the Karas, Hardap and Khomas Regions, the Okavango district of Otjozondjupa, the Gobabis district of Omaheke, and the Karibib and Swakopmund districts of Erongo with the exclusion of the West Coast Recreation Area, which falls into the North-West zone. Median annual rainfall ranges from just on 400 mm in the north-eastern part of the zone to less than 50 mm along the coast and in the south. Most of this zone (>80%) receives less than 250 mm. Rainfall is also highly variable (coefficient of variation between 50 and 90%) and the highest evaporation rates in Namibia are experienced in this zone (2.0-2.6 m per year). This zone also records the most extreme temperature range in Namibia, with the average maximum temperature during the hottest month being above 36° C and the average minimum during the coldest month being less than 2°C.

The zone contains four desert systems:

- *the Namib*, which can be divided into the gravel plains of the “Central Namib” vegetation type north of the Kuiseb River, and the sand dune sea of the “Southern Namib” south of the Kuiseb to near Luderitz
- *the Succulent Karoo*, consisting of the “winter rainfall” area from Luderitz south to the Orange River and on into South Africa, and in fact representing an area where rainfall occurs with almost equal improbability throughout the year
- *the Nama Karoo*, which receive mainly summer rainfall and comprises five different vegetation types in this zone (see Table 5.9)
- *the Kalahari*, consisting of components of both the “Southern” and “Central” Kalahari in this zone

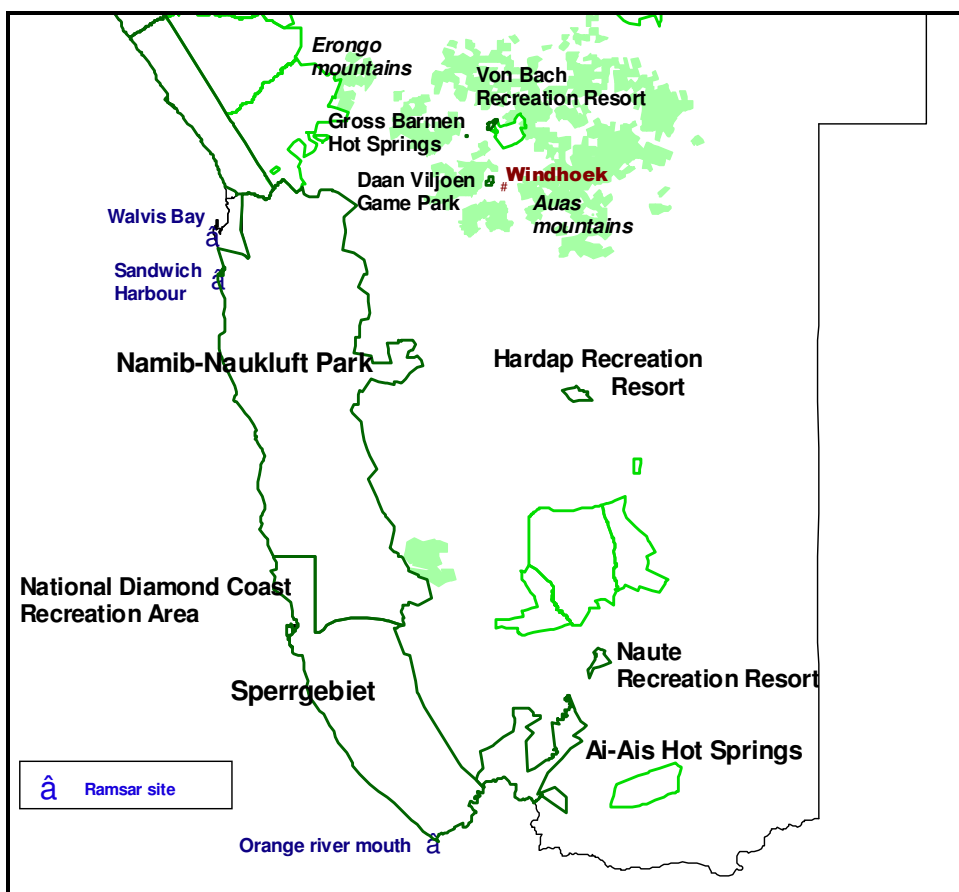
To the north, the vegetation is semi-arid Acacia tree-and-shrub Savanna, comprising a number of vegetation types, such as Highland Savanna around Windhoek, Thornbush Savanna from Okavango northwards and Escarpment-Transition Savanna in the area of Karibib. The Central-South Zone has a number of other important components, which include:

- *Inland Wetlands* – the only perennial one being the Orange River, which forms the southern boundary of the zone and the international border with South Africa. A number of important ephemeral wetlands occur in the zone, the largest being the south-flowing Fish River. West flowing ephemeral systems include the Swakop, Khan and Kuiseb rivers which flow through to the coast (the Kuiseb has not broken through for a number of decades) and a number of smaller rivers which end in pans in the sand dunes (e.g. Tsaugab and Koichab rivers which end in Sossusvlei and Koichab Pan respectively). Two main ephemeral river systems – the Nossob and Auob – drain the Kalahari, running south-west into the Botswana/South Africa Kalahari Gemsbok Transfrontier Park. The area from north-east and east of Keetmanshoop, running south mainly within the Karas Dwarf Shrub Karoo vegetation type, is rich in ephemeral pans. And finally, most of the man-made impoundments, and the largest ones, occur in this zone, including Hardap, Naute, von Bach, Swakoppoort, Oanob and Omdel dams. Because of the aridity of the zone, all wetlands have particular importance.
- *Inselbergs and escarpments* – important for their increased diversity (at habitat/micro-habitat and species levels), water run-off and refugia for species heavily utilized on the plains. The second highest point in Namibia (after the Brandberg) is the Moltkeblick

(2,479 m) in the Auas range of the central highlands around Windhoek. These highlands, together with the western escarpment, which runs the length of the Central-South zone, and includes the Naukluft and Huns mountains, form the main topographic features of the zone. It is associated with these two features that the greatest number of endemic plants and animals are to be found in Namibia. A host of small inselbergs and other topographic features include the volcanic Brukkaros, the Karas and Small Karas mountains and the Fish River Canyon, the second largest canyon in the world.

- *Coastal and Marine biomes* – consisting of a coastline within this zone of some 730 km containing coastal wetlands such as the Orange River mouth, Sandwich Harbour and Walvis Bay lagoon, sandy beaches and rocky shores, as well as some 20 offshore islands ranging from small rocky outcrops to about 100 ha in size. Namibia has proclaimed an exclusive economic zone that extends 200 nautical miles out to sea.

Figure 5.3: Configuration of the Central-South region



The human population is generally very small in the Central-South zone. Karas and Hardap regions each have less than 70,000 people, with some 20% and 25% respectively being urban. The Khomas region has a higher population of some 250,000, with over 85% being urban, mainly in Windhoek, the capital city of Namibia and the seat of government. In the rural areas, because of the arid nature of the zone, the population density is well below 0.5 persons per km² over more than 90% of the zone. This zone also contains the two coastal harbour towns of Walvis Bay and Luderitz, and some of the larger towns of the country (e.g. Rehoboth, Swakopmund, Okahandja, Keetmanshoop, Mariental, Gobabis).

Most of the zone consists of freehold and communal farmland. The communal areas are centered on Aminuis, Bersiba, near Karasburg and Warmbad. Apart from some very limited and intensive crop production under irrigation near Mariental (Hardap Dam), at Naute Dam and along the ephemeral Auob River near the village of Stampriet, the vast majority of the land is extensive rangeland livestock and wildlife farming within indigenous ecosystems. Cattle predominate in the Gobabis, Khomas and Okahandja areas, while mainly sheep and goats are farmed in the more arid south and western areas. The mean carrying capacity (stocking biomass) of this zone is low, ranging from about 30 kg/ha in the extreme north and east of the zone to less than 10 kg/ha in the south and west. Because of the low and highly variable rainfall in this zone, the carrying capacity also varies considerably from year to year. As a result, over 75% of the Central-South zone is rated as falling into an area defined as being at "high to very high risk" for conventional farming.

Land under State Protected Areas in this zone is found mainly in the extreme western and southern areas. These areas were set aside because they were unsuitable for farming, being too arid and too mountainous. The largest park in the zone and in Namibia, and one of the largest in the world is the Namib-Naukluft Park (5.07 million ha). Also in this zone is the Huns Mountains/ Ai-Ais/ Fish River Canyon Park complex, Daan Viljoen Game Park and the Naute Dam, Hardap, Von Bach and Gross-Barmen Resorts. Two other areas are in the process of being proclaimed as protected areas, the Sperrgebiet (or "forbidden area") being the diamond mining concession south of Luderitz to the Orange River, and the Walvis Bay Nature Reserve. Once these areas are proclaimed, they will form a linked protected area network with the Namib-Naukluft Park and cover a combined area of some 7.3 million ha, forming the larger protected area in Africa. This complex, in turn, links to the West Coast Recreation Area north of Swakopmund, which links to the Skeleton Coast Park. The full extent of this protected landscape in Namibia will then run from the Orange River to the Cunene River, and cover an area of over 10 million ha. Nor is this the end of the story. The Sperrgebiet comes within a whisker of linking to the Huns Mountain/ Fish River complex. This complex, in turn, borders onto the Richtersveld Park in South Africa, immediately south of the Orange River. In the north, the Skeleton Coast Park similarly borders onto the Iona National Park in Angola, which is immediately north of the Cunene River. The currently proclaimed and pending protected areas in the Central-South zone thus form an integral part of a three-nation protected area landscape that has some of the most diverse, dramatic and fascinating scenery, archaeology, cultures and biota on this planet.

In addition to the State Protected area network there are a number of community and private initiatives that enhance biodiversity conservation in the zone. These include conservancies, both on freehold and communal land, and private nature reserves. There are two registered and two emerging communal conservancies in the Karas region, and a host of freehold conservancies mainly in the Khomas, Gobabis, Okahandja and Erongo areas. In addition, there are two large private reserves adjacent to State Protected areas, the NamibRand Reserve bordering on the Namib-Naukluft Park and the Gondwana Cañon Park bordering on the Fish River Canyon Park.

5.3.2 Comparative advantage – the assets of the zone

The Central-South zone has a plethora of attributes that make it a highly attractive area for development and investment, for government, private sector and development partners. There are a few higher order considerations, some of them linked, which provide the anchor points for such development:

5.3.2.1 *Land capability*

In areas of low rainfall in Namibia significantly greater financial and economic returns can generally be earned from land uses and enterprises based on indigenous biodiversity rather than from conventional farming. Much of the Central-South lends itself to (i) tourism, based on scenic landscapes, wildlife, cultures and rural lifestyles, and (ii) wildlife production, based on a suite of species and sometimes integrated with domestic stock farming. The area is predisposed to expand rapidly in these areas because:

1. The national policy setting supports investment and land-use conversion, there is sufficient confidence in the sector, and a critical mass of land managers have embarked on these changes to good effect.
2. The tourism sector is growing and so are the associated market opportunities.
3. Government shows commitment to expand and open up the protected area network, which provides the anchor points for tourism and wildlife conservation.
4. Government shows strong support to conservancies and community-based initiatives in the wildlife and tourism sector, as foci for sustainable rural development.

5.3.2.2 *Special natural features*

The Central-South zone has a number of special features which, if linked together in intelligent and effective ways, would predispose the zone to rapid growth based on its tourism potential:

1. Four deserts – the Namib, the Succulent Karoo, the Nama Karoo and the Kalahari, each with a number of diverse vegetation types.
2. The most plant-diverse desert in the world – the Succulent Karoo.
3. Large and nearly-linked protected areas, containing a large component of the most dramatic and diverse landscapes of the zone, including the Namib gravel plains, the Namib sand sea, the Sperrgebiet, and over 700 km of coastline.
4. Transboundary links with the Richtersveld in South Africa, and links to protected areas in the North-West zone and into Angola – being part of a three national protected landscape.
5. Three Ramsar sites, being wetlands of international importance, at the Orange River mouth (a site proclaimed in partnership with South Africa), Sandwich Harbour and Walvis Bay, the last two being the richest coastal lagoons on the southern African coast based on wetland bird counts.
6. The world's second largest canyon – the Fish River Canyon.
7. The mystic Sperrgebiet, closed for almost a century, with its diamonds, dramatic coastline, historic buildings and mining history, and vast untouched wilderness areas.
8. The Orange River, cutting through deep gorges, on its way from the Lesotho highlands to the Atlantic Ocean – the next perennial river to the north being 1,400 km away.
9. The largest area of sand dunes south of the Sahara stretching over some 350 km and covering over 3.5 million ha.
10. Spectacular and diverse open landscapes with rich topography, much of its readily accessible.

5.3.2.3 *Man-made features*

There are a number of developments in the zone that serve as tourism nodes and staging points. The most obvious of these is Windhoek, with its international airport, and modern facilities and services. The Central-South zone is particularly well equipped with respect to the following:

1. *Communications* - an extremely good road network, linking to South Africa and Botswana, as well as to other destinations in Namibia and to the trans-Caprivi highway, good air links - international, within the country and within the zone, and good telecommunications and internet links.
2. *Services* - ready access to car hire and travel agents, good banking, foreign exchange and credit card services, and good medical support and back-up.
3. *Established tourism routes and facilities* – the three main tourism attractions in the area currently consist of the Sossusvlei-Sesriem area of the Namib-Naukluft Park, Swakopmund-Walvis Bay area and the Fish River Canyon. There are a large number of guest and hunting farms in the Khomas, Gobabis, Okahandja and Erongo areas, and Luderitz is growing in popularity.
4. *Conservancies* (both communal and freehold) and private game parks are expanding and proliferating, which creates opportunities for further tourism and conservation growth and partnership.

5.3.3 Challenges and opportunities

The southern regions of Namibia have only relatively recently started attracting tourists in significant numbers, mainly to Sossusvlei and the Fish River Canyon. The North-West and North-East zones have traditionally been the main tourism destinations. This can be seen in the nature of the developments in the south, particularly the fact that access to the parks is very limited, and there are relatively few tourism facilities in many areas. Some of the main challenges in the area, linked to the opportunities that addressing these challenges will create, include:

5.3.3.1 Creating linkages – existing initiatives

There are a number of reasons for linking different regions – some ecological, others economic and market related. The main ecological reasons are:

1. *To cover adequate components of the biomes, habitats, micro-habitats, species and genetic variations*, both in terms of diversity as well as in sufficient numbers to ensure that both ecosystems (in space) and evosystems (evolutionary systems – over time) function effectively.
2. *To create space for movement*. One of the most important adaptations to arid and unpredictable environments is the ability to move - far and fast. Most wildlife, particularly larger mammals and birds, are highly mobile and nomadic. Large open systems allow for such responses. Even in one of the largest parks in the world, the Namib-Naukluft park, large ungulates are restricted from moving eastwards in dry times, and die along the park boundary fence.
3. *To accommodate wide-ranging species with large home ranges*. The endangered Lappet-faced Vulture is at its highest density in the Namib-Naukluft Park. Yet this 5 million ha park does not contain the entire home range of a single pair. Birds expose themselves to the risk of persecution and poisoning on adjacent farmlands when they leave the park.
4. *To make provision for climate change*. The best response we have at this stage is to manage for open systems, create linkages and “corridors” for plants and animals to move, disperse and colonize new areas as conditions shift.

The main economic reasons are to create a diversity of marketing opportunities, to cater to a wide range of interests that are environmentally and socially acceptable (e.g. spectacular landscapes, geology, archaeology, flora – including specialist interests such as succulents, birding, wildlife, hiking, horse-riding, wilderness, off-road 4x4 driving, photography,

hunting, fishing, etc.), and to keep tourists gainfully occupied in the area for as long as possible, thereby creating wealth, the opportunity for further service and support industries and generating employment in the zone.

The following linkages *within* the zone are important:

1. The Namib-Naukluft Park must work seamlessly with the Sperrgebiet National Park.
2. The Sperrgebiet must establish an open corridor with the Huns Mountain/Ai-Ais/Fish River Canyon Park complex.
3. These parks should all seek linkages through partnership and mutual incentives with private land owners on the eastern boundaries, and take down fences to allow wildlife to move eastwards during dry periods. There are a number of large land-holding partnerships ready for the plucking. These include NamibRand adjacent to the Namib-Naukluft Park, the emerging Namib-Huib Plateau Park adjacent to the Sperrgebiet, and the Gondwana Cañon Park adjacent to the Fish River Canyon Park.
4. Incentives should be created to bring the landowners between the Huns Mountains and the Fish River Canyon Park into an open conservancy, that fully links these two components.
5. Close links need to be established between the Ministry of Environment & Tourism and the Ministry of Fisheries and Marine resources, to establish and manage coastal and marine protected area ecosystems, including the offshore islands.

The following links *with other zones* are important:

1. With the North-West zone via the West Coast Recreation area and thence up to the Skeleton Coast Park, Iona in Angola and across to the Etosha National Park.
2. With the Richtersveld Park in South Africa.

5.3.3.2 *New initiatives*

Most of the protected areas of Namibia were established prior to the science of biodiversity conservation. Indeed, most protected areas were established more because the land was deemed unsuitable for farming than because it was appropriate for conservation imperatives. As a result, many vegetation types are very poorly represented, or entirely unrepresented in the protected area network (Table 5.9). In some cases, private nature reserves and conservancies make significant contributions to the percent of land held under conservation-friendly management. This approach is in line with government's call for "innovative approaches" to securing adequate coverage of all habitats for conservation.

The Central-South zone contains the entire ranges of eight of the vegetation types that occur there (Table 5.10). In all but one case, the coverage per vegetation types within the zone is very similar to the national figure, the exception being in the West-central Escarpment Transition, where the zone contains 15.8% of this vegetation type versus 9.1% at the national level.

Seven vegetation types in two biomes have less than 1% representation in the state protected area network in this zone, with four of them being totally unrepresented. An additional vegetation type has only 1.8% of its area represented. When taking into account the other forms of biodiversity-friendly land management such as private nature reserves and conservancies, one vegetation type remains totally unprotected (Dwarf Shrub – Southern Kalahari Transition), one is at just 0.4% (Southern Kalahari) and one is at 9.1% (Karas Dwarf Shrubland).

Three vegetation types in the Namib and Succulent Karoo are almost entirely protected.

Table 5.9: The percentage of vegetation types within the Central-South zone occurring within different land use categories.

Biome	Vegetation type	Percentage of vegetation types within different land uses				
		State Protected Areas	Private Nature Reserves	Communal Conservancies	Commercial Conservancies	Total
Namib	Central gravel plains	66.4	0	21.6	0	88.0
	Southern sand sea	87.8	1.4	0	1.0	90.3
Succulent Karoo	Succulent Steppe	90.3	0.1	0	0	90.4
Nama Karoo	West-central Escarpment Transition	15.8	0	33.3	0	49.1
	Desert-Dwarf Shrub Transition	19.6	4.5	0	3.4	27.5
	Dwarf Shrub Savanna	1.8	1.3	12.5	0.2	15.8
	Karas Dwarf Shrubland	0.6	0	8.4	0	9.1
	Dwarf Shrub-Southern Kalahari Transition	0	0	0	0	0
Acacia Tree-and-Shrub Savanna	Southern Kalahari	0	0	0	0.4	0.4
	Central Kalahari	0	0	0	12.6	12.6
	Highland Shrubland	0.2	0	0	39.5	39.7
	Thornbush Shrubland	0.3	0	0	44.3	44.6
	Western Highlands	0	0	11.8	13.2	25.1

In addition to vegetation types, there are some areas outside the protected network that are relatively rich in biodiversity and endemic species. The Karas Mountains south-east of Keetmanshoop has high plant diversity and endemism, as does the northern side of the Orange river from Noordoewer eastwards. This latter area is also rich in mammal endemics. The entire escarpment and transition zone is a rich zone of endemism.

With these two aspects in mind it is clear that it would be highly desirable to secure representative components of the under-represented vegetation types in the areas with high diversity importance (Table 5.11).

Table 5.10: The approximate percentage of each vegetation type that occurs within the Central-South zone, and a comparison of percentages of protection of different vegetation types in the PAN within the Central-South zone and at the national level.

Biome	Vegetation type (VT)	Approximate % of each vegetation type within Central-South zone	State Protected Areas	
			% VT in PAN in Central-South zone	% VT in PAN at national level
Namib	Central gravel plains	30	66.4	62.8
	Southern sand sea	100	87.8	87.8
Succulent Karoo	Succulent Steppe	100	90.3	90.3
Nama Karoo	West-central Escarpment Transition	35	15.8	9.1
	Desert-Dwarf Shrub Transition	100	19.6	19.6
	Dwarf Shrub Savanna	100	1.8	1.8
	Karas Dwarf Shrubland	100	0.6	0.6
	Dwarf Shrub-Southern Kalahari Transition	100	0	0
Acacia Tree-and-Shrub Savanna	Southern Kalahari	100	0	0
	Central Kalahari	70	0	0
	Highland Shrubland	100	0.2	0.2
	Thornbush Shrubland	30	0.3	0.1
	Western Highlands	15	0	0.5

Table 5.11: The priority vegetation types and recommended actions and targets to adequately protect biodiversity.

Biome: Nama Karoo

Vegetation type	Recommended actions
Dwarf Shrub Savanna	1.8% in PAN (small parts of Fish River Canyon, Hardap & Naute). A further 1.8% receives high level of protection in a private nature reserve, and 12.5% in two emerging communal conservancies (Berseba & Behanie). An initial target of 4% of this vegetation type would be appropriate – through linkages of existing areas. This vegetation type is quite diverse across both north-south and east-west gradients. It would thus be beneficial to acquire land in a number of different places within the vegetation type. Options include: (a) north of the Fish River Canyon Park, linking this to Naute; (b) land to the south (linking to Naute), west and north of the Berseba/Behanie communal conservancies; (c) land to the east of the Naukluft, creating an east-west landscape covering three vegetation types; and (d) land adjacent and to the west of Hardap. Options (a), (c) & (d) would be the preferred priorities - all three. Both the existing and future parks should be used to lever (through incentives and co-management options) compatible and biodiversity friendly land uses on adjacent land.
Karas Dwarf Shrubland	0.6% in PAN and a further 8.4% within communal conservancies (mainly !Kob!Naub). See recommendations under “Dwarf Shrub – Southern Kalahari Transition” to target Karas mountain and adjacent areas, thus linking this and next vegetation types. In addition to the Karas Mountain and adjacent area, the southernmost area in this vegetation type along the Orange River, is high in both diversity and endemics – plant and animal. The most strategic area to target is the Blydeverwacht Plateau and south to the Orange River, in the extreme south-eastern corner of Namibia. This would include a diversity of habitats including wetlands and riparian belt along the Orange River, and link to Augrabies National Park in South Africa, thereby creating a transboundary protected area. In addition, the area is close to the Arahmsvlei and Onseepkans border posts and highways, making it ideally located for tourism purposes and lodge developments. Could be a good “joint venture” between public and private sectors, for land acquisition, tourism development and park management. In addition to about 2-3% of this vegetation type linked to the Karas Mountain area (see next vegetation type), an additional 2% should be acquired in the extreme south-eastern corner of Namibia and bordering on the Orange River
Dwarf Shrub – Southern Kalahari Transition	0% in PAN, and 0% under any other form of protection. Currently the only vegetation type in Namibia that enjoys absolutely no form of protection. Apart from some small ephemeral pans, there are no distinguishing features to this vegetation type and no significant routes, infrastructure, etc. At its north-western side it approaches the base of the Karas Mountains (Groot Karasberge). This small mountain range (inselberg) is a site high in plant diversity and endemism, and falls within the Karas Dwarf Shrubland, of which only some 0.6% occurs within the PAN. It is thus recommended that the Karas mountains and surrounding areas – to east and west - be the focal point for land acquisition, so that both vegetation types are represented and linked. An initial target of some 3-4% in the Dwarf Shrub – Kalahari Transition would be appropriate (and 2-3% at this linked site in the Karas Dwarf Shrubland – which together with part of the Karas mountain will make a highly diverse and interesting Karoo park. Incentives for neighbours to practice biodiversity friendly land uses and co-management approaches should be explored and implemented.

Biome: Salt Pans

Vegetation type	Recommended actions
Pans	95.8% of the surface area of pans in Namibia are contained within the PAN. While this seems impressive, it is heavily biased towards the Etosha and other large pans in the north-central parts of the country within the Etosha National Park. There are a series of smaller pans, particularly in the Karas Dwarf Shrubland north-east of Keetmanshoop and in the Southern Kalahari and its transition zones that are unprotected. It is not suggested that these areas should be targeted for inclusion in the PAN exclusively on the presence of ephemeral pans. However, it is recommended that pans should be one of the positive contributing factors considered when looking to acquire land in the underrepresented vegetation types of the Central-South zone. It is also recommended that the pans in this area should gain higher priority within the wetlands portfolio of the relevant MET staff and the Wetlands Working Group, to understand their role better and to develop, in partnership with land owners, appropriate management approaches.

Biome: Acacia Tree-and-Shrub Savanna

Vegetation type	Recommended actions
Southern Kalahari	0% in PAN, 0.4% in freehold conservancies. One of the least protected vegetation types in Namibia. Well protected in South Africa and Botswana within the Kalahari Gemsbok Transboundary Park. With the opening of the Mata Mata gate and the flow of tourism traffic, there is considerable potential to link tourism and wildlife management in this area. The primary focus should be for public and private sector partners to acquire land in this area, and along the national border, with a future vision to incorporating a state/private sector land partnership within the current transboundary park, turning it into a three-nation initiative, and lifting the fence between Namibia and SA. By linking land in Namibia to the very large Kalahari Park, a 3-4% representation of this vegetation type in Namibia would be ecologically viable. In isolation, it would not. The linkage would also hugely promote its marketability and thus its economic viability.
Central Kalahari	Totally unrepresented (0%) in the PAN, and only some 7% (approx) in two emerging communal conservancies in the North-East zone (Ozanahi & Wilddog) which are densely populated by both people and domestic stock, heavily grazed and ecologically somewhat degraded; and a small amount of land in freehold conservancies. This is one of the priority areas requiring conservation attention. Suggest an initial target of 5%, with specific geographic location to creating a link between communal and freehold conservancies. For new protected areas, a very strategic approach should be adopted to create linkages with other conservation- and indigenous biodiversity-oriented land uses. Even small blocks of land that create networks, linked to incentives (e.g. using the small state park(s) as focal introduction points for high value species such as rhino, and then open up to partnerships, outsourcing, co-management, etc.) could prove highly effective for landscape conservation. (See comments under "Thornbush Shrubland re paradigm shift.)

Biome: Acacia Tree-and-Shrub Savanna (cont)	
Vegetation type	Recommended actions
Highland Shrubland	0.2% in PAN (Daan Viljoen) with some 40% contained within freehold conservancies. Given the large conservancy contribution, the emphasis should be to try and link up areas through small strategic acquisitions, outsource and co-manage with neighbouring conservancies and create incentives for enhanced wildlife and tourism-based activities and improved biodiversity and ecosystems management. The first target should be land adjacent to Daan Viljoen – Windhoek Municipal land, and linkages to north and south, to blocks of conservancies. Tourism lodge companies could be harnessed to invest in land as part of larger open and linked landscapes. Creating a significant protected area immediately adjacent to Windhoek would have large economic benefits for the city – if only half the annual tourists spent just 1 day longer in the Windhoek area, (spending N\$600/day on average) it would directly contribute N\$90 million per year to the Windhoek economy. To achieve such linkages through smart partnerships, only some 2-3% of the land area within this vegetation type would probably have to be acquired within the PAN system.
Thornbush Shrubland	0.1% in PAN, at least 15% in freehold conservancies. Focus in this vegetation type should be to help link between the conservancies from the east (communal and freehold) and Etosha National Park, essentially linking the North-East and the North-West zones. Currently a solid block of conservancies stretch from Khardum and the Botswana border to Waterberg. West of Waterberg, a mosaic of freehold conservancies, in this Thornbush Shrubland and Karstveld vegetation types almost link up to Etosha. Strategic purchases of land, linked to outsourcing, co-management and incentives for like-minded approaches, would create a full east-west linkage across the entire country. There is already a north-south link created along the west coast, and the east-west link would in turn be linked along its eastern side to the Okavango, then across the Caprivi and into neighbouring countries. To achieve such links within this vegetation type, some 3% of the area (and mainly to the north of the Central-South zone) would need to be obtained within the PAN. This approach requires a paradigm shift. Whereas in the past park managers have thought of acquiring as large blocks of stand-alone land as possible, the proposed approach requires conservation professionals to think in terms of partnership, integrated land management, co-management, out-sourcing, building landscape management across multiple partners, working closely together for common goals and objectives, and at finding innovative ways of creating incentives to entice people to work for conservation and biodiversity values.
Western Highlands	0.5% in PAN (Etosha), none protected in the Central-South zone, plus some 1% in Concession areas on N-W zone, 25% in communal and 4% in freehold conservancies. An important vegetation type that, together with the escarpment belts, contain high biodiversity and, in particularly, rich endemic fauna and flora. Also a high value area for ecotourism. Priority should be given to strengthening the management capacity of conservancies in this area, by making provision in the new Parks & Wildlife Bill for regulations pertinent and personalized to specific conservancies, to manage and control, to zone and to enforce the by-laws of the conservancy, both with members and outsiders visiting. No additional proclamation is recommended.

5.3.3.3 *Wildlife reintroductions*

When Hendrik Hop ventured along the lower Löwen River towards Keetmanshoop on 22 December 1761 he crossed a plain covered in “large herds of wild animals, *viz* rhinoceri, giraffes, buffaloes, kudus, gemsboks, stags and aurochs”.

The south of Namibia from the Orange River, was the first entry point of the early explorers, hunters and traders of European descent. They brought with them firearms that they used with reckless abandon, thinking that the supply of wildlife was infinite. They also traded firearms for livestock, thereby making hunting much easier and more efficient for the indigenous people of the area. This early hunting led to the first wave of population declines and extinctions in the southern parts of Namibia, prior to land settlement and farming by western settlers. By 1800 elephants were already extinct south of the Orange River in Namaqualand and, within a few decades, they had been eliminated from the southern regions of Namibia. This was followed by the elimination of rhinos, giraffe, lions, buffalo and Burchell’s zebra, all of which had been recorded as being common to very common, particularly along the river systems, both perennial and ephemeral.

A second wave of impacts occurred as a result of introduced land-use practices based on western farming methods. These included:

- *The erection of fences*, that cut off the nomadic/migration patterns of many species. Mobility is an essential arid-zone survival strategy to allow access to water and suitable pastures in a highly unpredictable and temporally patchy environment.
- *Unherded flocks of small-stock*, which led to overgrazing and declining productivity of the rangelands. This impacted on both the farmer’s livelihood and indigenous herbivores that competed for grazing.
- *Excessive utilisation of the still relatively common wildlife species* (e.g. springbok, oryx, kudu, Hartmann’s mountain zebra, ostrich) in an attempt to realise and maintain a reasonable level of household income in a marginally productive, highly variable and degrading desert ecosystem.
- *A zero tolerance attitude to predators of small-stock*, and the use of highly unselective control mechanisms, such as gin-traps and poisons, to try and totally eradicate these species. These practices have largely eliminated the scavenging cohort of mammals and birds from most small-stock farming areas; research in Namibia has shown that, for every target predator killed more than 100 non-target animals are destroyed.

As a result, farming practices built up a vast “ecological debt” in the south of Namibia, part of which involved the following species to be eliminated from the far south or hugely reduced: spotted hyaena, African wild dog, red hartebeest, eland and blue wildebeest (Table 5.12).

With the current increase in protected areas, private nature reserves, conservancies and tourism facilities in the south, and the impetus towards partnership and multi-stakeholder landscape management, it is recommended that an aggressive reintroduction programme of wildlife to the south of Namibia be implemented. This program should be based on historic distribution patterns and subject to appropriate conditions existing, such as land partnerships to create sufficiently large areas to be viable for certain species.

The last column in Table 5.12 presents recommendations for each species. These recommendations are based not only on the present and historic status of the relevant

species and their ability to survive and thrive under present conditions, but also on the appropriateness of any action within the wider socio-economic, conservation and land-use contexts.

The recommended actions have been divided into four categories.

Key activity 1

Species that are priority candidates for immediate introduction:

- i. *Giraffe*: Try and source animals in arid northwest, start with two or three groups of 8-10 animals;
- ii. *Red Hartebeest*: Introduce herds of 20-30 animals in selected areas with water management in place;
- iii. *Burchell's Zebra*: Source small herds (e.g. NamibRand) and place, with Wildebeest, in selected areas
- iv. *Blue Wildebeest*: Source small herds in arid areas and reintroduce with Burchell's Zebra in selected areas.

Key activity 2

Species that, once appropriate conditions have been met, are good candidates for introduction in the medium term (next three to five years):

- i. *Spotted Hyaena*: Once game numbers have built up (3-5 years) and if not self colonising;
- ii. *Elephant*: Source small herd in northwest, fencing adequate and partnerships;
- iii. *Black Rhino*: Feasibility assessment of Huns Mnts, Naukluft, Fish River Canyon/ Gondwana Cañon;
- iv. *Eland*: A few herds from NW of about 30 animals each, with water management & partnerships.

Key activity 3

Species that might be worth considering in the long term (five plus years) once appropriate conditions have been met, and after the priority species above have been reintroduced:

- i. *Warthog*: Marginal – try a small number in carefully selected area – along Orange River;
- ii. *Hippo*: Small herd, as part of transboundary initiative, in Orange River at suitable place;
- iii. *Buffalo*: Long-term possibility – Vet clearance, disease-free, partnerships, fencing, water.

Key activity 4

Species for which no action is recommended, because their introduction is unlikely to be successful (Wild Dog) or appropriate (Lion):

Species alien to the area, such as Blesbok and Black Wildebeest, should not be introduced.

5.3.4 Information needs

Implementing policies and action plans requires motivated, knowledgeable and confident staff. This staff must be supported by senior personnel at technical and political levels that are prepared to be pro-active, decisive and are prepared to devolve authority and responsibility to local levels of implementation, while holding staff accountable for implementing the program. It is far easier to call for more information, more studies and to hide behind information deficits. We will never know everything about anything, especially

the hugely complex interactions and functions of ecosystems and their diverse components. Knowledge gaps will always be a convenient mantle to cower behind and an excuse for no action for the faint-hearted, lazy, incompetent and insecure. There are knowledge gaps in the Central-South zone. Perhaps less is known about large parts of the south than about either of the other zones. However, enough is known to get on with full scale implementation and development, because knowledge comes from doing, monitoring and adapting, not from watching from afar.

Good biodiversity information exists for the larger mammals, birds, freshwater fishes and trees in Namibia, including for the Central-South zone. Less details, but generally adequate information exists for an understanding of patterns of diversity and endemism, for plants, smaller mammals, reptiles, amphibians and some groups of invertebrates such as arachnids. The information tends to be patchy, with some areas well collected and known, while other areas are virtually unknown – and this also varies between taxa. For most groups, field collecting and further taxonomic work will turn up large numbers of new species, particularly for insects and other invertebrates. The general patterns, however, are unlikely to change significantly.

For this reason, emphasis is placed on the broader patterns of diversity and endemism, with a particular focus of acquiring a diversity of habitats and micro-habitats within all vegetation types, through incentive-based partnerships, linkages, collaboration and co-management approaches. Essentially the philosophy at this stage in Namibia's development should be to secure the habitats and corridors, and the species will look after themselves.

In conclusion, biodiversity information (including archaeological and historic) can be collected over time, as a tertiary activity, and by visiting scientists, museum and herbarium staff, etc. This information should not cloud the management plan and its implementation. In the event that new biodiversity information would have a bearing on management, the necessary management responses can be incorporated into the management plan, annual workplan and budgets. Process information on impacts, leading to adaptive management should be the focus. The most important component of all is learning to work in partnership, and developing and adapting co-management and incentive-based skills, at all levels.

Table 5.12: Present and historic distribution and status of large mammals that have been driven to extinction or severely decimated in the southern regions of the Central-South zone

Species	Present status	Historic status	Notes	Recommended actions
Spotted Hyaena <i>Crocuta crocuta</i>	Extinct in all but Namib-Naukluft & Sperrgebiet	Widespread and not uncommon	Exterminated on farmlands. Rare in Sperrgebiet, from where recolonise adjacent Fish River Canyon and Huns Mountain.	Once game numbers have increased, consider reintroduction from farms in arid zones, when trapped. Record all sightings, tracks, kills, etc.
Lion <i>Panthera leo</i>	Extinct	Uncommon to common	By mid-1800s had been largely exterminated from area.	No action in short to medium term – inappropriate to introduce for areas where people are on foot.
African Wild Dog <i>Lycaon pictus</i>	Extinct	Uncommon and sporadic in south & west, more common in east and central regions	Packs used to follow game herds, moving over huge distances. Last animals killed during first quarter of 1900s.	No action – introductions are unlikely to be successful or appropriate at this stage.
African Elephant <i>Loxodonta africana</i>	Extinct	Common	Shot to extinction in the region in early 1800s. Prior to that herds occurred throughout area, particularly in larger river courses, moving seasonally over large distances. Present elephant numbers and range in NW of Namibia demonstrate their adaptation to arid desert conditions.	Once sufficient land has been secured, and partnership agreements with neighbours established, the reintroduction of a small herd from the NW of Namibia should be considered. Target areas are Orange and Fish Rivers and adjacent ephemeral river systems.
Black Rhinoceros <i>Diceros bicornis</i>	Extinct	Uncommon (common in places)	Shot to extinction in early 1800s. Animals would come from afar to the few water holes, where shot, giving the false appearance of being common in some areas. Habitat is highly suitable, and rhino in similar habitat in NW thrive.	Conduct feasibility survey of suitable introduction areas in south – e.g. Huns Mountains, Sperrgebiet, Naukluft, Fish River Canyon/Gondwana Cañon Parks.
Burchell's Zebra <i>Equus burchelli</i>	Extinct	Uncommon to common	Historic records show this species to be relatively common on the plains throughout southern Namibia, including adjacent to the Fish River. They migrated in response to rainfall, ranging over huge areas.	Once sufficient land is procured and arrangements with neighbours established, a small herd should be reintroduced on plains east of the Fish River.
Warthog <i>Phacochoerus aethiopicus africanus</i>	Extinct (The entire subspecies of Cape Warthog is extinct)	Probably rare	Extreme south-west of species' range. Occurred historically down to the Orange River, but rarely reported in writings of early explorers. Occasional records from the Ganab area show they venture into hyper arid and arid habitat. Probably severely affected by rinderpest in 1890s.	No action in short-term. Once other species have been re-established a small number of animals could be released into a carefully selected area – possibly along the Orange River - sourced from central western region.

Species	Present status	Historic status	Notes	Recommended actions
Hippopotamus <i>Hippopotamus amphibius</i>	Extinct	Common in the Orange River	Occurred in the Orange River, last animals shot out between 1925 and 1930 at the mouth of the Fish River. Animals said to have moved up Fish River, perhaps even to Kuiseb and Swakop Rivers in wet years, where historic records and hippo tusks confirm their presence, and suggest a wetter period a few centuries ago.	As part of transboundary cooperation, look at establishing a small population in the Orange River.
Giraffe <i>Giraffa camelopardalis</i>	Extinct – four animals recently reintroduced to Gondwana Cañon Park	Common	Occurred in river courses and savanna areas throughout the south up until about 1840, when hunted to extinction. The south contains pockets of good habitat for giraffe, particularly along river courses. They thrive in similar habitat in Kaokoveld.	Priority species for reintroduction of a few dozen animals into two or three carefully selected areas. Animals should be sourced from arid NW of Namibia.
Blue Wildebeest <i>Connochaetes taurinus</i>	Extinct	Uncommon	Occurred as far south as the Orange River, and west to the Fish River, but not common in the south-west, probably seasonal when conditions permitted and highly migratory/nomadic. Declined initially probably due to rinderpest, then hunting, with veterinary support to prevent transmission of “snotsiekte” & “uitpeuloog.”	Reintroduction a small population to east of Fish River, on plains, together with Burchell’s Zebra.
Red Hartebeest <i>Alcelaphus buselaphus</i>	Extinct	Uncommon to common	Occurred along the Orange River (to mouth), west of Warmbad and a resident herd occurred at Ai-Ais until 1912. Shot in large numbers in south.	Reintroduce at suitable localities.
Buffalo <i>Syncerus caffer</i>	Extinct	Widespread, not uncommon (seasonally?)	Records from 18th & 19th centuries show that large herds occurred widely along the Orange & Fish Rivers and adjacent plains, also eastwards to Botswana and northwards throughout Namibia. Shown one of the most severe declines, mainly as a result of rinderpest panzootic of the 1890s, and subsequent hunting.	No action in short to medium term. Requires huge range in arid areas – thus would need open systems and partnership arrangements with many neighbours. Also need disease-free animals and special permission from Veterinary Services, unlikely in near future.
Eland <i>Taurotragus oryx</i>	Extinct	Uncommon, perhaps seasonal	Recorded along Orange River (Ramansdrift to mouth) in 18th & 19th centuries, and widespread throughout, except in extreme western desert. Moved widely, over large areas.	No action in short to medium term. Requires huge range in arid areas – thus would need open systems and partnership arrangements with many neighbours.

5.3.5 Investing in Protected Areas

The current and emerging protected areas provide the main anchor points for both biodiversity conservation and tourism development in the Central-South zone. Together, these aspects offer amongst the best opportunities for economic growth, job creation and improved livelihoods for people in the south of Namibia. They also offer ideal opportunities to promote the three pillars of sustainable development – economic, social and ecological. Each park and protected area is discussed as follows:

5.3.5.1 Namib-Naukluft Park

Background

The Namib-Naukluft Park covers an area of about 50,700 km² and is the largest protected area in Namibia, and the fourth largest in the world. It is situated in the central Namib Desert with the Atlantic Ocean to the west. The park was first proclaimed in 1907, and then re-proclaimed in 1979, 1986, 1989 and 1990 due to changes in the park boundaries. The park is open throughout the year between sunrise and sunset. A number of picnic and camping sites are scattered throughout the park. Lodge accommodation is not provided within the park. These can be found on guest farms and private nature reserves adjacent or close to the park. Accommodation is also available at Swakopmund and Walvis Bay in the form of bungalows and hotels.

Conservation importance

The entire park falls below the 100 mm median annual rainfall belt, with the exception of a small part of the Naukluft mountains, which falls into the 100-150 mm belt. Despite these dry conditions, there is a diversity of life forms, specially adapted to those conditions. Herds of Hartmann's mountain zebras (*E. z. hartmannae*) inhabit the rugged canyons of the Kuiseb and Swakop rivers and the Naukluft mountains. Small families of klipspringers (*O. oreotragus*) and troops of chacma baboons (*Papio ursinus*) are also found in these areas, while oryx (*O. gazella*) and springbok (*A. marsupialis*) are found throughout the park in a variety of habitats, but mainly on the plains. Kudu are fairly abundant in the densely wooded river valleys. The Namib-Naukluft Park is also home to feral horses (*Equus caballus*) found in the Garub area.

A number of small mammals, such as Grant's golden mole (*Eremitalpa granti*), the dune hairy-footed gerbil (*Gerbillurus tytonis*) and Setzer's hairy-footed gerbil (*G. setzeri*), are endemic to the Namib Desert. Carnivores found in the Namib-Naukluft Park include black-backed jackal (*C. mesomelas*), spotted hyena, leopard, African wild cat (*Felis lybica*), aardwolf (*Proteles cristatus*), Cape fox (*Vulpes chama*) and bat-eared fox (*Otocyon megalotis*). Bird life is rich, especially in the Naukluft section of the Namib-Naukluft Park where about 204 species have been recorded. These include Swallowtailed Bee-eater (*Merops hirundineus*), Scimitar-billed Woodhoopoe (*Rhinopomastus cyanomelas*), Cardinal Woodpecker (*Dendropicos fuscescens*) and Brubru (*Nilaus afer*) in the riverine forests of the Kuiseb and Swakop rivers. In the gravel plains can be found Gray's Lark (*Ammomanes grayi*), Ostriches (*Struthio camelus*), Rüppell's Korhaan (*Eupodotis rueppellii*) and Tractrac Chat (*Cercomela tractrac*), while rocky areas are inhabited by Longbilled Lark (*Mirafra curvirostris*), Herero Chat (*Namibornis herero*) and Palewinged Starling (*Onychognathus nabouroup*). The Namib is an important breeding area for Lappet-faced Vultures (*Torgos tracheliotus*). The Namib Desert is justifiably famous

for its numerous smaller creatures, such as barking geckos (*Ptenopus* spp.), the side-winding adder (*Bitis peringueyi*), tenebrionid beetles (*Lepidochora* spp.) the head-standing beetle (*Onomacris unquicularis*) and a number of other insects.

The vegetation of the Namib-Naukluft Park consists of the gravel plains of the Central Namib, the sand sea of the Southern Namib, and Dwarf Shrub Transition of the Nama Karoo biome mainly in the Naukluft mountains. A number of ephemeral rivers and pans cut across or into the park, the largest being the Kuiseb river. Others include the Tsondab and Tsauchab rivers, which end in the Tsondabvlei and Sossusvlei respectively in the dune field. Typical tree species of the gravel communities include blue-leaved commiphora (*Commiphora glaucescens*), Satin-bark commiphora (*C. tenuipetiolata*) with a well-developed shrub stratum dominated by pomegranates (*Rhigozum trichotomum*), wild raisin bushes (*Grewia tenax*) and trumpet thorn (*C. alexandri*). The gravel plains are devoid of vegetation for most of the year but after good summer rains the communities are transformed into expanses of waving *Stipagrostis* grasses. The resurrection bush (*Myrothamnus flabellifolia*) is a feature of the mountain communities together with well established stands of shepherd's tree (*B. albitrunca*), mountain thorn (*A. hereroensis*), conspicuous quiver trees (*Aloe dichotoma*) and western woody euphorbia (*Euphorbia guerichiana*) on the southern slopes in the mountain communities. The deep gorges of the Naukluft Mountains with their perennial springs form the kloof communities, which contain a variety of trees and shrubs represented by about 157 species. Dominant trees include large common cluster figs (*Ficus sycomorus*) sweet thorn (*A. karroo*) and ebony trees (*Euclea pseudebenus*). The sea sand is devoid of vegetation apart from isolated clumps of perennial grass on tussock dunes, and stands of camel thorn (*A. erioloba*) and three thorn (*Rhigozum trichotomum*) in watercourses and washes. Trees such as kapokbos (*Eriocephalus ericoides*), mountain thorn (*A. hereroensis*) and shepherd's tree (*B. albitrunca*) dominate the plateau communities on top of the Naukluft Mountains, while Acacias dominate along river washes. The desert is also renowned for the world famous welwitschia (*Welwitschia mirabilis*) on the gravel plains and the !nara plant (*Acanthosicyos horrida*) in the Kuiseb valley and where ground water is just below the surface.

Management issues

A master plan for the Namib Naukluft Park was prepared in September 1979, and a development plan prepared in July 1999. More recently, a frame management and tourism development plan was developed (2004) that sets the following Vision for the Park: To create a world class Desert Tourism Experience which is ecologically and financially sustainable, and which contributes to Namibia's economic development.

The management and development plan justifies this vision statement by stating that the plan departs from traditional park plans by seeking to integrate the park into the social and economic setting of the landscape, rather than focusing on just the biodiversity landscape. This intention is appropriate and is in conformity with the approach taken here. Nevertheless, indigenous biodiversity, landscapes and protected areas offer a range of land uses that can "unlock" the value of the park to serve as an engine for local and national development without placing one particular economic land use as the primary rationale for the existence of the park. By placing biodiversity values as the core focus, the economic and social importance and opportunities are not automatically negated. It is recommended that the vision and strategic goals of this management plan be revised, to reflect a triple bottom line approach, with biodiversity values taking an entrenched primacy.

The plan sets policies and guiding principles for the following aspects:

- Natural resources – biota (fauna & flora), water, soils, geology and landscapes;
- Cultural, historical and archaeological resources;
- Zonation;
- Tourism;
- Collaboration and partnership;
- Community and social;
- Land;
- Marketing;
- Infrastructure – tourism developments, roads, fences, airstrips, waste disposal;
- Administration and management.

Some of the policy statements and guiding principles are rather inward-looking and do not embrace the principles of partnership, incentives for mosaic multi-partner landscape co-management and the other values necessary to optimize socio-economic development and biodiversity conservation. For example, under “collaboration and partnership” the policy states: “Collaboration with outside parties must only be considered when there is a need for it as identified and initiated by MET and where roles, responsibility and outputs are defined via formal contractual agreements, where it is cost-effective to do it and it can be managed and controlled”. This is not partnership. This is archaic defensive park-behind-wire old-school mentality. Aspects of the management plan need to be thoroughly reviewed to bring in new ways of approaching the issues.

Development issues

The following development priorities have been identified as part of the evolving Business Plan for the park:

1. Park infrastructure, both upgrading and new developments, including office and information centre, workshop, staff accommodation, park gates and picnic- and campsite.
2. Park roads network – upgrade and develop tracks in the park.
3. Equipment, including vehicles (4x4, tractors, off-road four-wheel motorbikes), water pumps and borehole equipment, office and workshop equipment and signage.
4. Staffing, including a chief control warden, two chief wardens, three wardens, three rangers, four conservation scientists, four community/social facilitators/officers, concession manager, tourism officer and about 65 junior grades, including 20 gate control staff.
5. Operating costs to achieve the Vision of the Management Plan, including management, monitoring, survey work, research, marketing, professional services, etc.
6. Enhanced park management, particularly along the coast, public access roads and ephemeral rivers, liaise with mining operators, rehabilitate old mines and address off-road driving more effectively (tourism control).
7. Improve knowledge through research and monitoring – of rainfall, water use, inventory of species, wildlife trends, archaeology, anthropology, geology & history, tourism impacts, etc.
8. Development of tourism facilities and realistic rental returns from facilities for investment in, and operation of, the park.

5.3.5.2 Ai-Ais/Huns Mountains/Fish River Canyon complex

Background

This complex was proclaimed for the first time in 1968 and then re-proclaimed in 1988 and now covers an area of some 350,000 ha. The park is popular with hikers who tackle the tough 85 km Fish River Canyon Backpacking Trail. The trail is closed for visitors during the hot summer months, from September to April, but the Ai-Ais Hot Spring Resort and Hobas campsite remain open throughout the year.

Conservation importance

The park supports a rich and diverse bird life but relatively few species of large mammals. Mammals that are found in the park include the following: 6 species of bats; 20 species of carnivores; 7 species of ungulates; 22 species of rodents. Other wildlife includes 10 species of frogs, 43 species of lizards and about 26 species of snakes.

The park has as some of its attractions the rugged and beautiful scenery, and diverse flora, containing elements of both the succulent winter rainfall Karoo as well as summer rainfalls Nama-Karoo biomes. Some large specimens of sweet thorn (*Acacia karoo*) and buffalo-thorn (*Ziziphus mucronata*) are but some of the large trees found along the Orange River. An agreement has been signed between Namibia and South Africa to link the Ai-Ais complex in Namibia with the Richtersveld National Park across the Orange River on the South African side to establish a trans-frontier conservation park (TFCP) between the two countries.

Management issues

A frame management plan for this park is under development. There have been frequent changes in the management of the park which has resulted in low Ministry presence and lack of sustained management. Limited accommodation for park officials is also a hindrance to proper management of the park.

Development issues

The following development priorities have been identified as part of the evolving Park Master Plan and Business Plan:

- Park infrastructure, including office and information centre, workshop, staff accommodation, park gates and picnic- and campsite
- Park roads network – upgrade and develop tracks in the park
- Equipment, including vehicles, water pumps, office and workshop equipment and signage
- Staffing, including a warden, ranger, conservation scientist, concession manager, tourism officer and a number of junior grades
- Operating costs to achieve the Vision of the Management Plan, including management, monitoring, survey work, research, marketing, professional services, etc.
- Enhanced park management, particularly along the Orange River (illegal grazing and agriculture), liaise with mining operators, rehabilitate old mines and address environmental problems at Ai-Ais (sewage, solid waste and tourism control)
- Improve knowledge through research and monitoring – of rainfall, water use, inventory

- of species, wildlife trends, archaeology, geology & history, tourism impacts, etc.
- Development of tourism facilities and realistic rental returns from facilities for investment in, and operation of, the park.

5.3.5.3 Sperrgebiet

(proclamation approved by Cabinet – still to be promulgated)

Background

The Sperrgebiet (German for “restricted area”) is State Land and at present inaccessible to the public due to restrictions imposed by the Namibian Police and the Ministry of Mines and Energy to protect the economically vital diamond resources. However, the area will be proclaimed a National Park in the near future (8th Ordinary Cabinet meeting, 26 April 2004) and it is envisaged that part of this scenic area will be opened for controlled tourism. This follows a long consultative process of preparing a land use plan for the area, details consultations between different ministries and regional government authorities, wide public consultations, and the development of broad management plans for the area. The Sperrgebiet has been identified as one of five priority areas in Namibia requiring urgent support (MET 2001).

Conservation importance

The Sperrgebiet, the northern section of the Succulent Karoo biome, is priority area for conservation in Namibia. The Succulent Karoo is one of Namibia’s prime biodiversity hotspots and supports nearly a quarter of Namibia’s plant diversity on a small fraction of the country’s land surface. The Sperrgebiet contains over 90% of the Succulent Karoo biome. Apart from its plant riches, it supports a diverse fauna with healthy populations of antelopes and other mammals, including predators such as brown hyena as well as birds, reptiles and invertebrates. The level of endemism among plants is unrivalled in arid areas around the globe, matching that of the wetter parts of the Succulent Karoo Biome further south, and several reptiles and invertebrates are also restricted to this area or its immediate surroundings. Large tracts of virtually untouched landscapes provide wilderness areas. However, some parts of the area have been and are being mined and prospecting activities are presently taking place in many areas. Restoration efforts have so far been limited and the integration of mining and prospecting activities in the future national park poses a great challenge. Mining companies have, in more recent years, adopted much improved environmental standards, and detailed environmental assessments, environmental action plans and rehabilitation plans now form part of all new mining initiatives.

During a 2-year planning process, supported by a great variety of stakeholders at the local to national levels, conservation priorities were identified for the Succulent Karoo biome in Namibia. In parallel, a conservation planning study was undertaken for the Sperrgebiet, building onto a just completed land use plan for the area (MET 2001). This resulted in the following priorities being agreed:

- retain and restore biodiversity areas under greatest land-use pressure and create corridors and linkages through smart partnerships;
- engage key industries, create capacity and link biodiversity with job creation (eco-biodiversity);
- mainstream conservation priorities into land-use planning and link to incentives-based initiatives to enhance people’ livelihoods; and

- create awareness of the unique value of the Succulent Karoo Hotspot (awareness raising).

The Sperrgebiet Conservation Planning study focused on aspects related to the establishment of a new protected area (as recommended in the land-use plan) and was guided by a technical team of experts, including stakeholders from the tourism and mining industry, other ministries and conservation orientated civil society groups.

The main aspects covered in the resulting “Implementation Strategy” for the Sperrgebiet were:

- administration and legal framework;
- management and business plan;
- park infrastructure;
- marketing and fund raising;
- land consolidation and buffer/support areas;
- baseline research; and
- awareness, training and staff.

Development issues

Park management and development is currently still being planned. However, as this is a new area falling within the Protected Area network, the following priorities can be inferred:

1. Park infrastructure, including office, staff accommodation, park gates and basic workshop facilities.
2. Park roads network – consolidation, upgrade and develop tracks as appropriate for management and tourism.
3. Equipment, including vehicles, water pumps, office and workshop equipment and signage.
4. Staffing, still to be determined.
5. Operating costs to achieve the objectives of the Management Plan, including management, monitoring, survey work, research, marketing, professional services, etc.
6. Rehabilitation of mining areas, mining scrap, old tracks etc.
7. Enhanced attention to particular areas, e.g. Orange River mouth (Ramsar site) and areas around Oranjemund and Luderitz, park neighbour partnership on eastern boundary, areas being mined and processing sites, etc.
8. Creating seamless linkages with Namib-Naukluft Park and Huns Mountain area.
9. Improve knowledge through research and monitoring – of rainfall, water use, inventory of species, wildlife trends, archaeology, geology & history, tourism impacts, mining impacts, etc.
10. Development of tourism facilities and realistic rental returns from facilities for investment in, and operation of, the park.

6. Data Management Systems

6.1 Introduction

This section addresses the adequacy of data and information management systems in use by the MET with respect to the ‘vision’ guiding the MET-UNDP-GEF Strengthening the System of National Protected Areas.

There are two aspects to consider:

- Data management for decision-making at Park and management zone level for park management activities; survey and monitoring; and scientific research, largely the responsibility of the DPW and the DSS.
- Data management for national level considerations such as biodiversity monitoring and management, and giving effect to international conventions such as the Convention on International Trade in Endangered Species (CITES), which is the responsibility of the DPW and DSS, and the Convention on Biological Diversity (CBD) which falls under the remit of the DEA.

The section begins by briefly documenting the data currently collected within the MET related to wildlife and biodiversity conservation, where this is computerized, and how it is used. It is organised by Directorate and consists of a description followed by observations that highlight opportunities and challenges in the context of the new vision for wildlife and biodiversity conservation. This is followed by recommendations for activities to be undertaken during the first phase of the project.

6.2 Data management within the MET

6.2.1 Directorate of Parks and Wildlife Management

Park staff collect information on:

- natural resources such as rainfall, vegetation and grazing, water point spoor, migrations in response to rain, mortalities and cause, problem animal incidents;
- park infrastructure such as condition of water points and boreholes;
- threats such as transgressions, alien plants, erosion and tourism (see section on tourist data in sub-contract 2);
- farm inspections which record such things as numbers and biomass of animal species, disease, poaching problems.

The information recorded varies from Park to Park according to the particular needs and constraints of the Park in terms of terrain, resources (financial and personnel), and the focus of the Warden. This information is compiled in weekly, monthly, quarterly and annual reports together with information on personnel activities such as patrols, farm inspections, capture, culling, and leave taken. These reports are then sent up the chain of command to Windhoek.

Observations

Data collection is patchy. While some data are collected on a regular basis such as rainfall, most appears to be collected in an *ad hoc* way for several reasons. This may be due to circumstance and logistics (such as vast, relatively empty areas to be covered) but also due to a lack of planning and direction for reasons described in the report of sub-contract two's capacity assessment. Activities such as game counts, for example, are done well in some areas but tend to depend on the motivation of the Chief Wardens and the management of the funding available. It is also due to the historic focus of collecting information required to allow management to maximise wildlife numbers within parks and determine off take quotas in parcels of land outside parks

The data collected could be much better used. At the moment the information in reports is only 'visible' to decision makers in the immediate present before being 'buried' once filed. As one MET official commented, "the weekly information dribble makes it difficult for Wardens to get a handle on the overall picture and understand how critical a situation may be. Compare, for example, the episodic information that a borehole has ceased to work with a map showing which boreholes are not functioning". There is a recognition of the usefulness of using data more effectively by storing it in databases and geo-referencing to enable mapping and analysis, but no mechanism to guide the process.

6.2.2 The Community Based Natural Resource Management Programme (CBNRM)

This is housed within the Wildlife Management Division and is highly significant in terms of data management. The programme's purpose is "to enable communities to integrate wildlife use with other land uses in ways most likely to improve sustainable rural livelihoods". It demonstrates the progressive development of a standardized natural resource monitoring system that is designed around the information needs of the community to enable adaptive management of the conservancy resources. The system is known as the "Event Book System" as it includes the monitoring of stochastic events (such as fire, mortality) as well as routine activities such as game counts. It is organized by topic or theme (eg problem animals, poaching, vegetation, predators) and provides for data collection, monthly/quarterly reporting and analysis of trends over time. The system is paper-based at ground level but the data are also entered into a consistently structured computerized GIS⁴ database, CONINFO, to enable analysis, information mapping and display.

Observations

The CBNRM Programme has found several advantages in this approach in terms of data management:

- It can be tailored to fit the objectives of the users including the community and feeding information up to national level e.g. the NW game count⁵ where analysis occurs at local, regional and national levels;
- It enables adaptive management through monitoring the impacts of management plans;
- It can be introduced incrementally;
- Its outputs (posters, maps, charts) communicate the results of monitoring activities internally thus promoting a sense of achievement and ownership, which together with its participatory nature, reinforces the sustainability of the system;
- The technical tools and products enable working relationships between stakeholders to be built.

⁴ Geographical Information System

⁵ At the local and regional levels distributions and numbers are discussed and added to trend graphs. At a national level the data are used by government to verify and adjust quota applications of individual conservancies so they are compatible with regional game population trends. They are also used to map trends and make data accessible for analysis in conjunction with other factors (e.g. rainfall, water, livestock density distribution); as well as to calculate the economic value of animal populations, and in tourism planning at conservancy level.

6.2.3 Directorate of Scientific Services

6.2.3.1 Division Monitoring, Research and Planning

Subdivision Wildlife survey and Monitoring Unit

Subdivision Wildlife Survey and Monitoring Unit are responsible for conducting wildlife surveys, especially aerial surveys, and overseeing monitoring programs throughout the country. GIS (ArcView) is used effectively to, for example, display the results of aerial counts in terms of densities of animals.

Subdivision Etosha Ecological Institute

Subdivision Etosha Ecological Institute is responsible for conducting and coordinating management related scientific research and monitoring of wildlife species and populations of ecological and economic importance in the Kunene, Omusati, Ohangwena, Oshana and Omusati regions. It collects long term data on the population structure of plains ungulates and rainfall⁶. It has also developed expertise in remote sensing, and produces a satellite based fire warning system whereby maps of fires are produced in near real-time. When these are detected near a park, the Director of Parks and Wildlife is notified so he can then issue appropriate instruction to parks personnel. This information is much valued. In the past NOAA-AVHRR data were used for monitoring vegetation productivity, and investigated as a possible famine early warning system but this system has not been operational since 2000 as it is not regarded as a priority. EEI staff also support the National Centre for Remote Sensing (NRSC) by providing satellite images to help improve the quality of fire scar maps.

The RS/GIS officer is developing an information system for Etosha that will eventually be extended to all Parks. So far a computer interface has been developed to provide easy access to essential background information about the Park – general information and history, maps, reports, tables, photographs and references – and facilitate the drafting of the Management Plan for the Park. The aim is to help decision makers understand what is happening on the ground, but he currently has to guess what kind of information would be useful.

It is also intended that something similar to the CBNRM-CONINFO database be implemented in protected areas across the country, starting with Namib-Naukluft. The RS/GIS officer will liaise with CBNRM, while staff within DPWM will initiate and implement the process. This will use the management plan for a given protected area as the focus of a participatory exercise with Park staff, as well as determining the information needs of top level administrators, and ensuring that their requirements are covered by the events that are being recorded in the field. The monitoring and recording of events will be logged on paper, and will only be computerised at a later stage in Windhoek.

Subdivision Research and Planning

This sub-division is responsible for conducting and coordinating management-related

⁶ Probably also similar data for Namib-Naukluft where there used to be a resident research component

scientific research and monitoring wildlife species and populations of ecological and economic importance in the other regions of Namibia. This includes the Black Rhino management strategy, a large intensive management programme. It also supports CBNRM with information and participation, for example the North-West Game Counts.

6.2.3.2 Division Wildlife Utilization

This division has an advisory and regulatory role concerning wildlife utilization on privately and communally owned land in Namibia, through the implementation of the relevant legislation, including the implementation of the Convention on International Trade in Endangered Species of wild fauna and flora (CITES). For the past five years data collected from permit applications and report-backs from farmers and Ministry staff (e.g. species numbers, permit applications, live capture) has been entered into a database linked to GIS (ArcView) for display. The aim is to be able to locate and assess such things as under stocked land to determine where better land use needs to be encouraged.

6.2.4 Directorate of Forestry

The National Remote Sensing Centre (NRSC) is a source of satellite imagery, plus national vegetation maps from a project completed in 1997. State of the art equipment was provided and GIS expertise transferred to local staff but this has since been eroded by charging for map products before there was adequate demand (see section 6.2.5.2. on the Northern Namibia Environmental Programme where a similar process occurred and 'observations' at the end of section 6.2).

6.2.5 Directorate of Environmental Affairs

This section covers relevant activities regarding information of relevance to park management housed within the DEA. It includes environmental information systems as these can be sources of baseline data for maps and input data for GIS-based analyses.

6.2.5.1 National Biodiversity Programme

Namibia's history of scientific inquiry means that substantial information about its biodiversity has been collected. The National Biodiversity Programme was established in 1994 to strengthen, computerise and make these data available for environmental planning and management purposes. Biodiversity information in Namibia is decentralised at a number of the National Biodiversity Programme's partner institutions, individuals & others. Some of these partner institutions have been supported financially or otherwise encouraged to update, computerise, and analyse this information themselves and, where possible, post summary details on their own websites. It forms the overall structure under which its working groups operate and collect data.

6.2.5.2 Northern Namibia Environmental Project (NNEP)

This project (January 1997 - June 2002) aimed to enhance rural livelihoods in northern Namibia by promoting planning for sustainable environmental management through approaches that were information-based and participatory. It compiled environmental information, maps and data into a GIS that is now housed at the Natural Resource Information Service (NRIS), Ministry of Lands, Resettlement and Rehabilitation, Oshakati. NRIS was not visited during the course of this work although it appears that the excellent

achievements of the NNEP project in terms of GIS and its use for sustainable resource use have not been as effective as they might be in informing MET policy. This is due to a combination of interacting reasons that include the Centre's location in a different Ministry, together with a lack of integrated information management system guided by the information needs of a long-term conservation vision for protected area management; but also due to an erosion of expertise due to a lack of effective demand. Charging for map products was introduced before the demand for those products had been established. Low demand reduced the work for the GIS unit and in the process erodes motivation and the skills in using GIS software (which need maintenance and development through practice). The problem is that it is not immediately obvious to potential users how GIS products can be used to make their lives easier or their work more effective.

6.2.5.3 Environmental Information Systems Unit

There are several projects of relevance in terms of providing digital data for more sophisticated GIS analyses:

1. *Information and Communication Service for Sustainable Development in Namibia* project has compiled data and recently finalised a first draft of the Integrated State of the Environment report which has been circulated within the MET for review. These data have been used to develop indicators of sustainable use which are likely to be available on the web in the future. The project has also compiled a National Environmental Meta-database documenting information on data collected by institutions and individuals in the environmental-related monitoring fields.
2. *Atlas of Namibia*, completed in 2000. It has been published in hard copy and provides GIS data layers in digital form freely on its website, however some datasets need updating e.g. census data. This information has led to a greater knowledge and understanding about the country's environment and widely used as a basis for planning other projects. Five years ago the compiler calculated that \$4 or 5 million had been saved by others by having access to free Atlas data. That figure must be significantly greater now.
3. *The Regional Environmental Profiles* project has compiled a set of baseline environmental information for Caprivi, and the Ohagwena, Omusati, Oshana and Oshikoto regions, including Etosha National Park.

6.2.5.4 The MET Resource Centre

This houses MET's environmental data in a range of formats, for example, environmentally related and socio-economic literature; feasibility studies and activity reports; Environmental Impact Assessments; journals; Research Discussion Papers of the DEA. Its electronic records of have been combined into a single with guided search engine. There is also the Namibian Libraries Environmental Database which combines the resources of 7 specialized libraries.

Observations

Good progress has been made in assembling and making freely available information on Namibian biodiversity and environment and identifying ambitious activities for the future. The National Biodiversity Strategy and Action Plan is addressed in a separate section but from the point of view of data management systems, national priorities need to be identified, the data/information that needs to be collected on the ground at the level of Parks and conservancies need to be fed into the data management process.

It should be noted that the policy of free access to databases has increased the level of awareness of Namibia's environment. However, there needs to be greater understanding in how to use the digital data for conservation purposes before these data are used to their full capacity

6.3 Summary of Key Points

6.3.1 Existing data systems

Data collection is patchy and disparate with respect to the new orientation, as historically it has been gathered with a focus on monitoring numbers to maximize populations in parks and regulate off-take. Much of the information reported at Park level is not used as effectively as it might be. Several computerised systems are being developed independently to deal with focused issues, and a strategic approach is needed to ensure they work together and deliver the information require. The CBNRM has gone furthest along this route and the DSS are looking into how they can implement a similar system.

6.3.2 Data availability

Namibia has several excellent initiatives for making information freely available in an accessible format that has helped communication, understanding and cost savings for the users.

6.3.3 Biodiversity conservation

Good information exists for the larger mammals, birds, freshwater fishes and trees in Namibia. The museums and the botanical society, for example, have played a valuable role in cataloguing the presence and absence of such species in Namibia. Otherwise, the information is patchy; however the broad patterns of diversity and endemism are known well enough to guide conservation priorities by enabling the identification of key habitats and corridors, as has been noted in section 4.4.2 above

6.3.4 Use of GIS

This is *ad hoc*; however when it is used it has been shown to be very effective. To develop the use of existing GIS data, there needs to be a dialogue between potential users and providers to identify user needs and how GIS data can make their work more effective and efficient. Demand for GIS data products will only be generated once users understand the benefits of using GIS.

6.3.5 Organizational culture

Addressing the above points requires a shift in culture as addressed by the report of sub-component 2 and towards viewing data collection and information provision as integral to effective policy and management through the use of monitoring data for adaptive management. In particular mechanisms are required to ensure that information flows between directorates.

6.4 Recommendations

In some cases data/information management capacity may refer only to the software and hardware necessary to build databases and information systems. In others it encompasses the political commitment, constructive policies and public support necessary to apply information to the issues of concern. In the context of this project, information management capacity comprises both direct assets such as data, expertise, facilities; and indirect assets such as organisational culture and processes that consolidate direct assets into management systems and partnerships.

Giving effect to the integrated vision for protected areas requires acknowledging the two-way flow of information: a 'bottom up' aspect in which primary data from research and monitoring activities are transformed into information products for specific users; and a 'top down' aspect which involves determining the information needed, how it will be used, by whom and when it is needed.

With the reorientation of parks strategy there is a need to review the data collection and information provision mechanisms used by the MET in both Parks and non-Park areas. At the same time there are national level obligations such as the Convention on Biodiversity and CITES. The new draft Parks and Wildlife Management Bill, for example, requires that a National Biodiversity Action Plan be prepared every five years that includes:

- an assessment of the state of wildlife, wildlife habitats and the natural environment in Namibia, and an assessment of trends in this regard;
- an assessment of the effects that conservation and other activities undertaken under or required by this Act have had on wildlife, wildlife habitats and the environment generally, over the previous five years;
- an assessment of the extent to which the objectives of the Plan have been achieved;
- recommendations for amending the Plan.

This requires a system of monitoring for adaptive management, a process by which knowledge is gathered through priority-setting, action, monitoring, and modification of activities accordingly. Under the long-term conservation vision information, priorities are those required for management and development of the parks and related land areas. Ecological, social and economic data are needed to determine such things as the level of pressure from tourism and illegal activities; identification of sensitive areas and special species; water management issues; partnership management and the impact of economic diversification.

For maximal effect this information should be produced in a form that can be easily accessed by primary users within the MET, but also other parts of government such as mining, agriculture, planning, to raise the profile of these issues within their decision-making.

6.4.1 An assessment of data/information requirements: demonstrating how information can be used

The first step is to conduct a 'needs assessment.' This would be a consultative process to determine the information required by users at national and park levels, the data required to provide the information, and the processes and mechanisms by which that will happen. Given the current orientation within the MET, the time invested in such a process is likely to ultimately ensure more efficient and cost effective use of resources. It also means that it is

more likely to result in a system that is self-sustaining, because it will generate the case studies that are required to demonstrate the value and use of information management (digital or otherwise), and in doing so generate the demand for data products.

The aim would be to facilitate an effective dialogue between those gathering the information and those using it, with the key spin-off being that the act of discussing priorities improves communication between providers and users, and helps users clarify the information they require⁷.

Once this process has taken place information products and services can be designed, and roles and responsibilities agreed that include the data each collects, the information each provides and the standard to which it is provided. Finally the capacity required (human, software, hardware) will need to be built.

An organisational structure would be required at national level to keep this process on track, such as establishing a steering committee to oversee its implementation, and ensure the process takes place at national, management zone and local/protected area levels. The national committee will then be in a good position to roll out the process over the second phase of the project.

At the national level this would involve determining information required for national level policy, analysis and international level commitments. It would also involve monitoring interventions at the 'Integrated Region' level by collating and co-ordinating information for the region's protected areas and ensuring the requisite information reaches national level decision-makers. At the park level this would be a part of the protected area Management Planning process, directed by the information requirements of the national/IR level and priorities at Park level.

A key decision to be made will be the degree to which data collection on the ground should be purely paper-based as with the CBNRM, given the level of expertise available in the Parks or whether it is feasible to use technology such as GPS. The data system should, however, be compatible with CBNRM to facilitate co-ordination between parks and adjacent conservancies.

6.4.2 An integrated GIS based system

It is recommended that while the needs assessment process should investigate the balance between paper-based (as used by CBNRM) and computer based data collection systems at ground level, GIS should be an integral part of the information flow for the following reasons:

1. It provides summary information on which to base management decisions e.g. being able to determine at a glance how many animals there are; where they are, how they move around the region; population trends of the various species over time.
2. GIS and Remote Sensing technologies enable actions at specific locations to be viewed in context, thus facilitating monitoring across geographical and social boundaries to form a bigger picture.
3. It supports the planning, undertaking and reporting of monitoring activities.
4. It facilitates efficient internal reporting and information flow between data collectors,

⁷ This will involve considering such issues as the information required to achieve their main goals; as well as identifying the constraints affecting the use of information.

information producers and information users.

5. It facilitates the evolution of a system in response to user and stakeholder needs, thus creating joint ownership and inbuilt sustainability.
6. Helps generate trust, build a common vision, and cement working relationships between partners and stakeholders.
7. Makes wildlife and biodiversity visible to external audiences, and therefore more likely to be considered by other projects and programmes.

6.5 Key Activities

Key activity 1

Establish a steering committee or identify individuals with responsibility for overseeing the needs assessment process and ensure that experience of the use of GIS and data management is shared among the users for whom it is relevant.

Key activity 2

Undertake a needs assessment process to identify potential uses for GIS data in achieving conservation targets, monitoring the results of actions and interventions, and adapting activities accordingly. Ensure that the necessary information for the management and development of parks and related lands is collected, and that there is mutual understanding between the information users and the data collectors. This could take the form of workshops at national level and Park level, to learn from existing experience in Namibia to determine information needs, the data required to provide the information and how it might be collected.

Key activity 3

Design a mechanism to co-ordinate the process that involves:

- a) The establishment of a national level unit that receives copies of all data, compiles summaries and analyses, and performs more sophisticated analyses for national decision-makers.
- b) The training and establishment of technical capacity in GIS. This would require at least one GIS competent per Park to enter data into a computer database and display summaries (depending on the size and variety of information needed for management plan monitoring and decision-making)

Key activity 4

Develop materials required at each level e.g. database construction and maintenance.

Key activity 5

Install computer hardware and software at Park and national level.

7. Audit of the Adequacy of Current Control Procedures Concerning Prospecting and Mining in Protected Areas

7.1 Introduction

The Ministry of Environment and Tourism, tour operators and environmentalists have expressed concern for some years that prospecting and mining in protected areas is causing adverse impacts upon the environment and undermining the “sense of place” of these parks.

There appears to be some justification for these concerns. Addressing this issue requires an examination of the current system of allocating licenses, setting conditions and monitoring the activities after they have commenced. The original Terms of Reference focussed on the Policy for Prospecting and Mining in Parks and National Monuments, but the consultants are of the opinion that this policy should not be examined in isolation. For this reason, all policies and laws relating to prospecting and mining have been reviewed.

The principle legislation governing prospecting and mining activities in Namibia is the Minerals Act (1992). Emerging new legislation, notably the revised Minerals Bill and the Environmental Management Bill are expected to improve the legislative safeguards already in place. Namibia's Environmental Assessment Policy (1995), METs Policy on Mining and Prospecting in Protected Areas and National Monuments (1999), and the Minerals Policy of Namibia (2003) provide important and generally consistent guidance and elaboration that is useful in the context of prospecting and mining in protected areas (PAs). These policies seem to clarify some of the inconsistencies in the existing legislation and they also propose practical mechanisms for institutional collaboration where it is needed.

Under the current law, mining and prospecting in PAs is permitted but subject to strict environmental requirements. Co-ordination between MET and MME, especially on issuing permits, setting appropriate conditions and post implementation monitoring, needs to be improved.

This section provides:

- an overview of the key policies and laws (in chronological order) relevant to prospecting and mining in protected areas,
- an examination of the current system of managing this sector's activities in PAs.
- recommendations for the MET/GEF project
- specific comments on the Policy for Prospecting and Mining in Parks.

7.2 Overview of policies and laws

7.2.1 Nature Conservation Ordinance, 1975

This outdated Ordinance (which will soon be replaced by the Parks and Wildlife Bill) provides the Minister with the authority to set conditions for any activity, including prospecting and mining, in parks. Whilst the Minister may theoretically deny authorizing an activity, the Namibian Constitution makes it clear that minerals are the property of the State and the subsequent Minerals Act (1992) gives the Minister of Mines and Energy the authority to grant a prospecting or mining right anywhere in Namibia. The apparent contradiction in these pieces of legislation has to a large extent been addressed at the policy level (see below), where MME and MET (together with other ministries) have agreed to collaborate and to take joint decisions in cases where jurisdictional overlaps occur.

7.2.2 Minerals (Prospecting and Mining) Act, 1992

This Act controls all mining activity in Namibia. Mineral rights are vested in the State, and companies or individuals are required to apply to the Ministry of Mines and Energy (MME) for licences to explore and mine mineral deposits.

In the event that a mineral license lapses, is cancelled or the holder of the license abandons a

license area (including reconnaissance, prospecting, retention or mining areas), they are required to take all necessary steps to remedy, to the satisfaction of the Minister, any damage caused to the environment by their activities.

The Act also requires the holder of a mineral license to report any incidence in which any mineral is spilled in the sea or on land or if such land becomes polluted or if any damage is caused to any plant or animal. This must be reported to the Minister of the MME and the license holder must take whatever steps are considered necessary in terms of good practice to remedy the situation. If the license holder fails to comply with this in good time, the Minister has the right to take whatever steps are necessary to remedy the situation, at the expense of the license holder. These are adequate safeguards and provide a solid foundation for good management.

A new Bill is being prepared which introduces requirements for financial guarantees for reparation of environmental damage and the setting up of trust funds for rehabilitation after mine closure. Specification of these requirements will be contained in yet to be drafted Regulations. Penalties for non-compliance are also envisaged.

7.2.3 Namibia's Environmental Assessment Policy for Sustainable Development and Environmental Conservation (1995)

The Ministry of Environment and Tourism published the Cabinet-approved Policy in 1995. This policy requires that all policies, programmes and projects (including mining and prospecting), as listed in the policy, whether they are initiated by the government or private sector, be subject to an Environmental Assessment (EA). The Government recognises that EAs seek to ensure that the environmental consequences of development projects and policies are considered, understood and incorporated into the planning process. The term environment is broadly interpreted to include biophysical, social, economic, cultural, historical and political components.

The format and requirements for an environmental assessment are laid out in the policy. The purpose of the policy is seen as informing decision makers and promoting accountability, ensuring that alternatives and environmental costs and benefits are considered, promoting the user pays principle, and promoting sustainable development.

The principles set out to:

- better inform decision-makers;
- consider a broad range of options and alternatives when addressing specific projects;
- strive for a high degree of public participation and involvement;
- take into account the environmental costs and benefits;
- incorporate internationally accepted norms and standards where appropriate;
- take into account secondary and cumulative environmental impacts;
- promote sustainable development, and, especially to ensure that a reasonable attempt is made to minimise possible negative impacts and maximise benefits.

This policy is widely followed, and has formed the basis for Terms of Reference for over 50 EIAs conducted in the country over the past 10 years.

7.2.4 Policy for Prospecting and Mining in Protected Areas and National Monuments (1999)

This policy is essentially a “popularization” of current legislation regarding mining and nature conservation. The policy aims to sensitize various stakeholders about the importance of conservation and tourism, and about the fact that many of the country’s parks (especially the coastal areas) are extremely sensitive. In this context, it urges for environmentally-responsible mining.

The policy recognises the right of the State to issue prospecting and mining licenses in protected areas, but it urges MME not to encourage the exploitation of low-value minerals and dimension stone in parks. It reflects on Namibia’s EA policy and urges for intersectoral collaboration where prospecting and mining is allowed in parks.

This policy is assessed in more detail later.

7.2.5 Minerals Policy of Namibia (2003)

The Policy sets out guiding principles for the development of the mining sector designed to ensure that it maintains its leading role in the growth of the national economy while at the same time operating within environmentally acceptable limits. To this end, one of the objectives of the policy is listed as ensuring compliance with national and other relevant environmental policies. It recognises that some prospectors and mining companies have in the past, shown little respect for the environment and as a result have caused significant adverse environmental impacts.

The Policy therefore commits MME to ensuring that the development of the mining industry proceeds on an environmentally sustainable basis, that mineral development in proclaimed protected areas commences only when rehabilitation is guaranteed, to investigating the establishment of financial mechanisms (environmental trust funds or bonds) for environmental rehabilitation and aftercare in other areas, and to developing national waste management standards and guidelines in consultation with the mining industry. It stipulates that the government will enact exploration and mining legislation benchmarked against environmental global best practice, that it will investigate the establishment of mandatory mechanisms for funding of final mine closure plans (including rehabilitation) and that it will monitor industry compliance with this through the use of Environmental Management Plan (EMP) contracts.

This policy compliments and re-enforces the EA policy and the Policy on Prospecting and Mining in National Monuments. In fact, in some cases it goes further than the other policies by addressing aftercare issues and defining best practice as being bench-marked against international standards.

7.2.6 Draft Parks and Wildlife Bill

Updated Parks and Wildlife legislation, superceding and repealing the pre-independence Nature Conservation Ordinance of 1975, is expected to be tabled during 2005. The new legislation will inter alia, improve the conservation of biodiversity in Namibia.

In article 36, the new Bill states that:

“No person shall undertake any prospecting or mining activities of any nature within a protected area except under and in accordance with a written authorization from the Minister. The Minister shall not grant any permit under subsection (1) in respect of land included in any protected area unless:

- (a) a detailed assessment of the potential environmental impacts of the proposed activities has been undertaken during a procedure that made adequate provision for public participation; and
- (b) the Minister is satisfied that proposed activities will not significantly prejudice the attainment of the management objectives for that protected area; and
- (c) the permit is subject to appropriate, effective and enforceable terms and conditions to avoid the risk of adverse effects and to ensure that any adverse effects that may occur as a consequence of the activities taking place are adequately mitigated and rectified."

This is consistent with METs Policy on Prospecting and Mining in Parks, the Minerals Policy and the Mining Act, except for the stipulation of authorizing agency. There still appears to be a stand-off between MME and MET on who has the last word regarding authorization of prospecting and mining in parks.

7.2.7 Draft Environmental Management Bill

The purpose of the Bill is to

"give effect to Article 95(l) and 91(c) of the Namibian Constitution by establishing general principles for the management of the environment and natural resources; to promote the co-ordinated and integrated management of the environment; to give statutory effect to Namibia's Environmental Assessment Policy; to enable the Minister of Environment and Tourism to give effect to Namibia's obligations under international conventions."

The Bill sets out various environmental rights and duties: it ensures that proponents and decision makers can be held accountable to the public, and sets out the following list of principles for environmental management:

- Renewable resources shall be utilised on a sustainable basis for the benefit of current and future generations of Namibians.
- Community involvement in natural resource management and sharing in the benefits arising there from shall be promoted and facilitated.
- Public participation in decision making affecting the environment shall be promoted,
- Fair and equitable access to natural resources shall be promoted.
- Equitable access to sufficient water of acceptable quality and adequate sanitation shall be promoted and the water needs of ecological systems shall be fulfilled to ensure the sustainability of such systems.
- The precautionary principle and the principle of preventative action shall be applied;
- There shall be prior environmental assessment of projects and proposals which may significantly affect the environment or use of natural resources.
- Sustainable development planning shall be promoted in land use planning.
- Namibia's moveable and immoveable cultural and natural heritage, including its biodiversity, shall be protected and respected for the benefit of current and future generations.
- Generators of waste and polluting substances shall adopt the best practicable environmental option to reduce such generation at source.
- The 'polluter pays' principle shall be applied.
- Reduction, re-use and recycling shall be promoted.
- There shall be no importation of waste into Namibia.

The Bill also provides the Minister of Environment and Tourism with a range of general powers including the right to stop a person from

"Performing any activity or failing to perform an activity as a result of which the

environment or any components thereof is or may be seriously damaged, endangered or detrimentally affected."

It should be noted that the minister of MME has essentially the same power through the Minerals Act.

In terms of the proposed legislation it will be possible to exercise control over certain activities within defined sensitive areas. The listed activities in sensitive areas require an Environmental Assessment to be completed before a decision to permit development can be taken. The draft legislation describes the circumstances requiring Environmental Assessments. In Schedule A of the Bill, activities will be listed which require Environmental Assessment unless the Ministry of Environment and Tourism, in consultation with the relevant sector Authority, determines otherwise.

Section 3.2 of the draft Bill states that should one of the listed activities take place in, or have an effect on an area listed in Schedule B, an Environmental Assessment has to be carried out. No official list of sensitive areas exists at present, but a preliminary draft of such a list has been compiled. If it is determined that a project or development which is not included in Schedules A and B could have a significant impact on the environment, the Ministry of Environment and Tourism, in consultation with the relevant sector Authorities may require an Environmental Assessment under section 3.3 of the draft Bill.

7.2.8 Conclusion on the policy and legal environment

For the most part, the various policies and laws regarding prospecting and mining in Namibia are adequate, relatively consistent and mutually supportive. The main deficiency of course is that the Environmental Management Bill has not yet been passed, but this gap is not so serious in the context of mining because of the many clauses in the Minerals Act that require EIAs, EMPs etc.

The common threads that run through the existing policies and laws are:

1. Prospecting and mining is permitted on all land, including parks. However, special cases can be made and the minister of MME may withdraw an area from prospecting and mining if the justification is "national interest".
2. Sufficient safeguards exist (e.g. conducting EIAs) to ensure that prospecting and mining operations are properly assessed before prospecting and mining may commence.
3. Sufficient safeguards exist (e.g. Environmental Management Plans) to ensure that the suggestions made in the EIAs are transformed into operational procedures.
4. Provision is foreseen in the emerging legislation to establish a rehabilitation fund.
5. Government (MME in collaboration with MET) may close down an operation if conditions are not being met.
6. Institutional arrangements are in place to enable intersectoral collaboration to take place between MME, MET and other sectors such as fisheries, lands, agriculture, water, national monuments and finances, and to enable joint decision making relating to prospecting and mining in parks and national monuments.

However, at least one inconsistency remains, this being the balance of power between MET and MME regarding the authorisation of prospecting and mining in parks. As noted earlier, the problem is largely dealt with at the policy level, where the various organs of government have agreed to work with each other in the national interest.

In spite of this pragmatism, it is unclear what will happen if MET request certain areas to be declared “no-go” for prospecting and mining, while MME insist that they should be kept open. The only precedent in this regard to date, is the land use plan for Sperrgebiet. In this case, MME and MET collaborated in the compilation of the land use plan, which does propose no-go areas for mining, and this has been accepted by MME. It is hard to know what would happen if it came to light that an important mineral deposit was in fact located in such an area.

Thus, it is recommended that MET and MME seek to harmonise their legislation on this key point.

7.3 Assessment of institutional matters

This assessment has been based on interviews with a number of persons from various government agencies, consultants and the private sector. Also, it draws on personal experience gained in recent years.

1. The inter-sectoral committee on prospecting and mining has been in existence for many years and is an appropriate forum for joint decision making. In this committee, officials from MET, MME and others have the opportunity to state their case for or against an application, and to set conditions. The key to the success of this committee is the active participation of its members and institutional commitment to keep it going. Opinions differ on how well it functions currently – MME say it works well and that MET have every opportunity to interact, but MET claim that their opinions are not always taken seriously.
2. It is clear that neither MME nor MET have the capacity to effectively implement existing or emerging policies and laws regarding prospecting and mining in Namibia generally. The position of Chief Inspector of Mines in MME has been vacant for some time and they only have seven claims and five mining inspectors. A number of these personnel are still undergoing in-service training and cannot be considered as having adequate experience to effectively monitor operations on the ground. Moreover, they are all Windhoek based so significant resources are required (not always available) to get them into the field
3. MET have more flexibility since in most cases the parks have adequate staff who can check up on the mining activities. However, MET also have limited resources and field staff report that they cannot always visit the mines regularly enough. A greater challenge for MET is improving the communication between head office and the parks. Park staff report that they are often not consulted when decisions are made regarding operating conditions for the prospector/miner, and sometimes have no fore-warning that the operator is about to arrive. This places them at a disadvantage, reduces their feeling of ownership and consequently affects their commitment.
4. DEA within MET has only a small number of staff, and they have a significant work load because of other sectors (other than mining) which they must attend to. This places them under pressure and they can consequently not always set aside enough time to properly assess each prospecting or mining application. As a result, important meetings are sometimes missed or staff are under-prepared when confronted by their colleagues from other ministries. Both MME and private sector operators complain that the turn-around time for reviewing EIAs or setting conditions (environmental contracts) is too long and the process is cumbersome. They call for more efficiency.
5. Some people feel that environmental contracts (or letters of condition) are becoming rather generic and that in some cases, the conditions are not strict enough.

6. There is an argument that more use should be made of independent reviewers (of EIAs) and third party compliance monitoring. To an extent, government is both the proponent, the policeman and the judge – a situation that could lead to a conflict of interests and a gradual relaxation of standards. The fact is that government receives fees and taxes (and in the future might also get royalties) from mining operations, and in at least one case (NAMDEB) government is a share-holder in the mining company. The obvious model in this case is for MET/MME to agree on a more robust system where a third party is contracted to assist with guiding, reviewing and monitoring, and that the proponent must foot the bill.
7. As with all permitting authorities, both MME and MET are under pressure, sometimes political in nature, to process applications rapidly and, as far as possible, favourably. Given the social, economic and political importance of development in Namibia, this pressure is understandable but not always helpful in the long term. As noted above, external review might assist both ministries in achieving the necessary degree of robustness in its systems.

In conclusion, institutional structures for administering applications for prospecting and mining in Namibia are largely in place and functional. However, staff are inadequate and/or have inadequate experience to enable proper post-implementation monitoring. Third party assistance is required.

7.4 Recommendations for the MET/GEF project

The issues raised in this assessment do not require any external funding in order to be addressed. Government could align its policy and legislative environment relatively easily, and the imminent release of both the amended Mining Bill and the Environmental Management Bill provide the ideal opportunity.

See Appendix 2 for specific comments on the Policy on Prospecting and Mining in Protected Areas, and information on the application and Environmental Assessment processes.

8. World Heritage Sites

8.1 Background

World Heritage Sites are registered under the United Nations Educational, Scientific and Cultural Organization (UNESCO). This specialized United Nations agency focuses on Education, Social and Natural Science, Culture and Communication issues, and has facilitated the development of the Convention Concerning the Protection of the World Cultural and Natural Heritage (see full text later in this report). This convention was concluded in Paris on 16 November 1972, but only entered into force on 17 December 1975. 178 States had signed the Convention as of 1 May 2004, with Namibia acceding to it on 4 June 2000.

The convention aims to protect cultural and natural heritage sites in the interests of all the nations of the world, irrespective of where the sites are. It recognises that protection of heritage at the national level often remains incomplete because of the scale of the resources which it requires and of the insufficient economic, scientific and technical resources of the country where the property to be protected is situated. Usually, the country within which

the site is located, applies to UNESCO for it to be registered (see Form and Guidelines in Appendix 3 – they may also be downloaded from www.unesco.org).

In view of the need for global action in some cases, the convention enables the international community as a whole to participate in the protection of the cultural and natural heritage of outstanding universal value, by the granting of collective assistance which, although not taking the place of action by the State concerned, will serve as an effective complement to the government(s) concerned.

Within UNESCO, there is the World Heritage Committee, which is the statutory body responsible for decision-making on all matters related to the implementation of the World Heritage Convention. It meets once a year, in June, to:

- Select new properties for the World Heritage List from among the cultural and natural properties nominated by the different countries. The Committee is assisted by the Advisory bodies .
- Examine reports on the state of conservation of listed properties and ask the States Parties to take action when properties are not being properly managed.
- Allocate finances of the World Heritage Fund for properties in need of repair or restoration; for emergency action if properties are in immediate danger; for providing technical assistance and training; and for promotion.

The World Heritage List grows longer every year as new nominations are accepted by the World Heritage Committee and more countries sign the World Heritage Convention.

Drawing up the World Heritage List presents a difficult challenge: what is it that constitutes the 'outstanding universal value' of a cultural or natural treasure? To be included on the World Heritage List, a property must satisfy the selection criteria adopted by the Committee.

- *A cultural monument:* could be a masterpiece of creative genius; have exerted great architectural influence; be associated with ideas or beliefs of universal significance; or it may be an outstanding example of a traditional way of life that represents a certain culture.
- *A natural property:* may exemplify major stages of the earth's history; represent ongoing ecological and biological processes; contain the most important natural habitats for conservation of globally significant biodiversity; or it may be a setting of exceptional beauty.

When a property on the World Heritage List is seriously threatened, it may be inscribed on the List of World Heritage in Danger, which entitles it to special attention and international assistance.

If Namibia succeeds in registering a WHS, it will be obliged to ensure the identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritage situated on its territory. It will do this as much as possible using its own resources, but shall be entitled to apply for international assistance and co-operation, in particular, financial, artistic, scientific and technical.

8.2 Progress in Namibia to date

8.2.1 Legal and institutional arrangements

Namibia has gone some way towards establishing the necessary mechanisms for registering a WHS. Under the auspices of the Ministry of Basic Education, Sport and Culture, the National Heritage Act was passed in 2004, thus paving the way for process of registering WHSs.

As required by the Convention and under the authority of the Act, the Ministry has established a National Committee on the Implementation of the Convention. This committee, which is chaired by the Director of the National Monuments Council, meets three times per year. Members include high level representation from the following institutions:

- Basic Education, Sport and Culture
- Ministry of Mines and Energy
- Ministry of Lands, Resettlement and Rehabilitation
- Ministry of Fisheries and Marine Resources
- Ministry of Environment and Tourism
- Ministry of Agriculture, Water and Rural Development
- NACOBTA
- DRFN
- UNESCO
- Polytechnic
- UNAM

The National Committee is supported by a Technical Committee, which consists of the same institutions listed above, but in this case represented by technical rather than high level personnel. This meeting meets on an ad hoc basis. In addition to the Technical Committee, the National Committee may appoint a smaller, site specific Technical Committee that will include specialists relating to that site who can oversee the preparations for the registration of the site.

The Ministry of Basic Education, Sport and Culture is hopeful that key ministries, especially MET will become more active on the various committees that have been set up. They view MET as a key partner in the process of registering sites and in subsequent management.

8.2.2 Registration of sites

To register a WHS in Namibia, the sponsoring agency (whoever initiates the suggestion) must formally request the National Committee to place the issue on the agenda so that it can be discussed at their next meeting. The National Committee may then request its technical committee to advise on the merits of the case and the implications for Namibia.

Once the National Committee has agreed to the site being submitted for registration, it is responsible for notifying UNESCO's World Heritage Committee (in writing) of its intention to apply for WHS status for the site. The actual application for registration is more complex and time consuming, as it requires Namibia to complete a Nomination Dossier and a Management Plan for the site.

The Convention Secretariat may make up to US\$30 000 available to support this process, but the National Committee is expected to seek matching funds locally to augment this amount. Once the Plan and Dossier have been prepared, the National Committee formally submits the request for registration. This request must be submitted to the World Heritage Centre (WHC) in Paris, by 1 February each year.

Having received the request, the WHC requests its Advisory Committee (located in Rome) to review the application and to advise on its suitability. In most cases, the secretariat dispatches an accredited International Evaluator to the country. The evaluator conducts a thorough inspection of the site and assesses the adequacy of existing or emerging institutional structures, agreements between land/resource managers, plans for the area, local legislation, etc. If the evaluator submits a favourable report, the World Heritage Committee will place the application on its agenda and the issue will then be discussed at their meeting, which is held in June each year.

Thus, the minimum time from submission to approval is 6 months, though the preparation of the submission could take months or years, depending on its complexity. Once the submission has been approved by the World Heritage Committee, Namibia is notified formally of the registration of the site, and only then may signs be put up informing the public of the status of the site.

Once the site is registered, Namibia must of course ensure that the site is properly managed and it must inform the World Heritage Committee every two years on its progress regarding the conservation and management of the site. "Properly Managed" in this case means⁸:

To ensure that effective and active measures are taken for the protection, conservation and presentation of the cultural and natural heritage situated on its territory, each States Party to this Convention shall endeavour, in so far as possible, and as appropriate for each country:

- (a) to adopt a general policy which aims to give the cultural and natural heritage a function in the life of the community and to integrate the protection of that heritage into comprehensive planning programmes;*
- (b) to set up within its territories, where such services do not exist, one or more services for the protection, conservation, and presentation of the cultural and natural heritage with an appropriate staff and possessing the means to discharge their functions;*
- (c) to develop scientific and technical studies and research and to work out such operating methods as will make the State capable of counteracting the dangers that threaten its cultural or natural heritage;*
- (d) to take the appropriate legal, scientific, technical, administrative and financial measures necessary for the identification, protection, conservation, presentation and rehabilitation of this heritage; and*
- (e) to foster the establishment or development of national or regional centres for training in the protection, conservation and presentation of the cultural and natural heritage and to encourage scientific research in this field.*

Namibia has already submitted a list of potential sites to the World Heritage Committee, and work has commenced on the registration of Twyfelfontein as the first site. An International Evaluator has already visited the site, but was critical of some aspects of its current management. For this reason, additional preparatory work needs to be done in-country and it is expected that the site will only be registered in 2006.

The advantages of having a WHS are as follows:

- *Conservation* – by having a site registered under the convention, Namibia will be obliged

⁸ See Article 5 of the Convention

to protect it.

- *Marketing* - the WHS list is well established and known world-wide. It provides accurate information to the more discerning tourist.
- *Awareness and education* – Visitors and locals will pay more attention to the site because of its enhanced status. This might help to encourage more responsible behaviour and improved conservation of the site/area.
- *National pride* – it should be a source of considerable pride to be the custodian of a site or area that is recognised to be of global value. This pride might raise the profile of environmental and cultural issues in Namibia.
- *Capacity building* – Namibia will be eligible for assistance in managing its sites.

9. Costed Action Plan

Table 9.1: Outputs, output indicators, activities, responsibilities and annual targets for North-West zone

Outputs	Output Indicator	Activities	Responsibilities	Annual Targets	Budget Description
Output 1 – Partnership agreements					
Output 1.1 Partnership agreements between MET and conservancies	Signed agreements with each of the conservancies in the north west	Activity 1.1.1 Meeting with all the conservancies to discuss the vision and workshop the elements that will be in the agreement. Issues that will need to be addressed include decision making procedures, dispute resolution, reporting mechanisms, wildlife management & monitoring, dealing with problem animals, infrastructure maintenance, tourism (access) control, zonation, revenue and cost sharing, etc.	MET, supported by the conservancies		N\$25000 transport and accommodation N\$8000 workshop facilitator and rapporteur
		Activity 1.1.2. Draft the agreement	MET		N\$ 4 days x 1 Consultant @ N\$3500 per day = N\$14000
		Activity 1.1.3. Distribute the agreement amongst all key stakeholders and request their comments	MET, supported by the conservancies		None
		Activity 1.1.4. Sign contracts – needs to be a high-profile signing ceremony – maybe conducted somewhere in the region (e.g. Khorixas)	MET		N\$10000 for transport and accommodation
Output 1.2 Communication forum established between MET and conservancies	MET and conservancies meet regularly and discuss issues of mutual concern	Activity 1.2.1. Hold regular (3 times per year) meetings with the conservancies and other stakeholders	MET		Recurrent budget – all stakeholders to cover their own costs
Output 1.3 Partnership agreements between MET and farmers neighbouring Etosha	Signed agreements with farmers	Activity 1.3.1 Meeting with all the farmers to discuss the vision and workshop the elements that will be in the agreements. Issues that will need to be addressed include decision making procedures, dispute resolution, reporting mechanisms, wildlife management & monitoring, dealing with problem animals, infrastructure maintenance, etc.	MET, supported by the farmers		N\$10000 transport and accommodation N\$8000 workshop facilitator and rapporteur
		Activity 1.3.2. Draft the agreement	MET		N\$ 4 days x 1 Consultant @ N\$3500 per day = N\$14000
		Activity 1.3.3. Distribute the agreement amongst farmers and request their comments	MET		None

Outputs	Output Indicator	Activities	Responsibilities	Annual Targets	Budget Description
		Activity 1.3.4. Sign contracts – needs to be a high-profile signing ceremony – maybe conducted somewhere in the region (e.g. Outjo)	MET		N\$10000 for transport and accommodation
Output 1.4 Communication forum established between MET and farmers	MET and farmers meet regularly and discuss issues of mutual concern	Activity 1.4.1. Hold regular (3 times per year) meetings with the farmers and other stakeholders	MET		Recurrent budget – all stakeholders to cover their own costs
Output 2 – Appointment of Honorary Nature Conservators					
Output 2.1 Appointment of Honorary Nature Conservators	At least 10 honorary nature conservators are appointed by MET for the north west	Activity 2.1.1. Consult with the conservancy committees, regional and local authorities, local MET offices and tour operators in the area in order to obtain nominations of good candidates	MET		Recurrent MET budget
		Activity 2.1.2. Make final selection and write letters to each person, inviting them to be Honorary Nature Conservators	MET		Recurrent MET budget
		Activity 2.1.3. Appoint as soon as confirmation of willingness has been obtained, making sure to inform the new appointees of their rights and responsibilities	MET		Recurrent MET budget
		Activity 2.1.4. Inform all the stakeholders in region, notably the conservancy committees, local MET offices, NGOs, tour operators, local and regional authorities	MET		Recurrent MET budget
Output 2.2 Communication forum established between MET and Honorary Nature Conservators	MET and Honorary Nature Conservators meet regularly in a formal setting and discuss issues of mutual concern	Activity 2.2.1 Hold regular meeting with the Honorary Nature Conservators and other stakeholders.	MET		Recurrent budget – all stakeholders to cover their own costs
Output 3 – Revitalization of the Etosha Ecological Institute					
Output 3.1 EEI conducts management-oriented research that is needed	Research conducted according to needs identified, and findings are published in accessible	Activity 3.1.1. Review previous research needs-assessments to establish past thinking on what work is required	MET		Routine MET task (DSS)

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Outputs	Output Indicator	Activities	Responsibilities	Annual Targets	Budget Description
for management of Etosha and surrounding areas.	format	Activity 3.1.2. Hold a workshop attended by MET scientists, park managers, conservancy representatives, farmers representatives and selected NGOs (e.g. NNF, DRFN, CRIAA) in order to prioritize research needs, based partly on previous assessments, current thinking, management plan priorities and practical considerations	MET		N\$10 000 for transport and accommodation N\$5000 for facilitation
		Activity 3.1.3. Develop a list of incentives that will attract visiting researchers who would be prepared to work alongside MET scientists	MET		1 consultant x 5 days @ N\$3500 pd = N\$17,500
		Activity 3.1.4. Develop a full set of procedures/guidelines for transparency, safeguards and accountability for visiting researchers. Use existing MET policy for visiting researchers as a starting point. Make it clear what MET will provide (e.g. office space, housing) and what the researchers will have to provide (e.g. transport, computer, food, etc.).	MET		1 consultant x 5 days @ N\$3500 pd = N\$17,500
		Activity 3.1.5. Set aside office and laboratory space in the EEI to accommodate visiting and own researchers	MET		Routine MET
		Activity 3.1.6 Negotiate with NWR for the use of one or two "Research Houses" within the senior staff quarters. If not available, build some additional accommodation in Okaukuejo and/or negotiate with surrounding farmers – some might offer accommodation as a contribution	MET		If built from scratch, two research cabins would cost N\$350,000 each (total N\$700,000)
		Activity 3.1.7. Advertise in local, regional and foreign media – a call for expressions of interest from institutions and/or individuals	MET		N\$10,000 for placing adverts
		Activity 3.1.8. Establish a mechanism for receiving the researchers and for providing the necessary guidance and, where appropriate, supervision	MET		MET to do this themselves

Outputs	Output Indicator	Activities	Responsibilities	Annual Targets	Budget Description
Output 4: Diversification of tourism in Etosha					
Output 4.1 Etosha’s tourism product is transformed	Visitors to Etosha are provided with additional opportunities and experiences, including wider choice of accommodation and activities	Activity 4.1.1. Reflect on previous MET reports on diversifying tourism in Etosha and, based on these, the Etosha Management Plan and interviews with key stakeholders in the industry, develop an Etosha Tourism Strategy. This must include a strategic assessment of environmental impacts	MET		40 consultant days @ N\$3500 = N\$140,000
		Activity 4.1.2. Develop a set of conditions for new products (lodges). Base these on key economic and environmental criteria (use the Kruger National Park model – they recently advertised a number of new concessions)	MET		5 consultant days @ N\$3500 = N\$17,500
		Activity 4.1.3 Advertise the packages and allocate according to pre-determined criteria. Be sure to be totally transparent in this. The criteria must be made known ahead of time	MET		MET recurrent budget
Output 5 – Impact management of prospecting and mining					
Output 5.1 Impact management of prospecting and mining, especially in Skeleton Coast Park	Negative impacts from prospecting and mining activities are within reasonable limits, and are rehabilitated on closure of operations	Activity 5.1.1 MET, in consultation with MME, develops a mechanism for third party review of EIA reports and EMPs, and for post implementation monitoring	MET supported by MME		Costs should be borne by the proponent – will differ on a case-by-case basis.
		Activity 5.2.2. As projects emerge, the two ministries decide on what to outsource, and what to do themselves	MET supported by MME		As above

Table 9.2: Outputs, output indicators, activities, responsibilities and annual targets for North-East zone

Outputs	Output Indicator	Activities	Responsibilities	Annual Targets	Budget Description
Output 1 – Partnership agreements					
Output 1.1 Partnership agreements between MET and conservancies, specifically for the co-management of the Greater Kwando-Linyanti area	Signed agreements with each of the conservancies in the north east	Activity 1.1.1 Meeting with all the conservancies to discuss the vision and workshop the elements that will be in the agreement. Issues that will need to be addressed include decision making procedures, dispute resolution, reporting mechanisms, wildlife management & monitoring, dealing with problem animals, infrastructure maintenance, tourism (access) control, zonation, revenue and cost sharing, etc.	MET, supported by the conservancies		N\$25000 transport and accommodation N\$8000 workshop facilitator and rapporteur
		Activity 1.1.2. Draft the agreement	MET		N\$ 4 days x 1 Consultant @ N\$3500 per day = N\$14000
		Activity 1.1.3. Distribute the agreement amongst all key stakeholders and request their comments	MET, supported by the conservancies		None
		Activity 1.1.4. Sign contracts – needs to be a high-profile signing ceremony – maybe conducted somewhere in the region (e.g. Katima Mulilo)	MET		N\$10000 for transport and accommodation
Output 1.2 Communication forum established between MET and conservancies	MET and conservancies meet regularly and discuss issues of mutual concern	Activity 1.2.1. Hold regular (3 times per year) meetings with the conservancies and other stakeholders	MET		Recurrent budget – all stakeholders to cover their own costs
Output 1.3 Partnership agreements between MET and tourism operators (lodge owners) operating in the Greater Kwando-Linyanti area	Signed agreements with tourism operators	Activity 1.3.1 Meeting with all the tourism operators to discuss the vision and workshop the elements that will be in the agreements. Issues that will need to be addressed include reducing environmental impacts from tourism, access control of tourists, human carrying capacity, assistance to BBEE projects, codes of conduct, decision making and communication procedures, dispute resolution, reporting mechanisms, assistance with wildlife management & monitoring, infrastructure maintenance, assistance with tourist control, etc.	MET, supported by the operators		N\$10000 transport and accommodation N\$8000 workshop facilitator and rapporteur

Outputs	Output Indicator	Activities	Responsibilities	Annual Targets	Budget Description
		Activity 1.3.2. Draft the agreement	MET		N\$ 4 days x 1 Consultant @ N\$3500 per day = N\$14000
		Activity 1.3.3. Distribute the agreement amongst operators and request their comments	MET		None
		Activity 1.3.4. Sign contracts – needs to be a high-profile signing ceremony – maybe conducted somewhere in the region (e.g. Katima Mulilo)	MET		N\$10000 for transport and accommodation
Output 1.4 Communication forum established between MET and tour operators	MET and tour operators meet regularly and discuss issues of mutual concern	Activity 1.4.1. Hold regular (3 times per year) meetings with the operators and other stakeholders	MET		Recurrent budget – all stakeholders to cover their own costs
Output 1.5 Partnership agreements between MET and the Namibia Defense Force operating at Kwando and Divundu	Signed agreements with NDF	Activity 1.5.1 Meeting with senior NDF officers to discuss the vision and workshop the elements that will be in the agreement. Issues that will need to be addressed include reducing environmental impacts from NDF activities, access to prime conservation and tourism areas, codes of conduct of soldiers, assistance with law enforcement, decision making and communication procedures, dispute resolution, reporting mechanisms, assistance with wildlife management & monitoring, etc.	MET, supported by the NDF		N\$8000 workshop facilitator and rapporteur
		Activity 1.5.2. Draft the agreement	MET		N\$ 4 days x 1 Consultant @ N\$3500 per day = N\$14000
		Activity 1.5.3. Distribute the agreement and request comments	MET		None
		Activity 1.5.4. Sign contracts – needs to be a high-profile signing ceremony – maybe conducted somewhere in the region (e.g. Katima Mulilo or Rundu or both)	MET		N\$10000 for transport and accommodation
Output 1.6 Communication forum established between MET and NDF	MET and NDF meet regularly and discuss issues of mutual concern	Activity 1.6.1. Hold regular (3 times per year) meetings with the NDF	MET		Recurrent budget – all stakeholders to cover their own costs

Outputs	Output Indicator	Activities	Responsibilities	Annual Targets	Budget Description
Output 1.7 Partnership agreements between MET and Botswana, Angolan and Zambian counterparts	Signed trans-boundary agreements that commit neighbouring countries to collaborate in terms of habitat and wildlife conservation. The agreement could be based on the SADC protocol on shared wildlife management	Activity 1.7.1 Meeting with senior officers from the respective countries to discuss the vision and workshop the elements that will be in the agreement. Issues that will need to be addressed include reducing environmental impacts tourism, facilitating trans-boundary tourism, collaboration regarding law enforcement, decision making and communication procedures, dispute resolution, reporting mechanisms, wildlife monitoring, etc.	MET, supported by the other countries. There will need to be a high-level meeting at first, followed by technical level workshop at senior level		N\$ 20000 for accommodation and transport, N\$8000 workshop facilitator and rapporteur
		Activity 1.7.2. Draft the agreement	MET		N\$ 4 days x 1 Consultant @ N\$3500 per day = N\$14000
		Activity 1.7.3. Distribute the agreement and request comments	MET		None
		Activity 1.7.4. Sign contracts – needs to be a high-profile signing ceremony – maybe conducted somewhere in the region (e.g. Katima Mulilo)	MET		N\$10000 for transport and accommodation
Output 1.8 Communication forum established between MET and neighbouring country counterparts	MET and counterparts meet regularly and discuss issues of mutual concern	Activity 1.8.1. Hold regular (2 times per year) meetings	MET		Recurrent budget – all stakeholders to cover their own costs
Output 2 – Appointment of Honorary Nature Conservators					
Output 2.1 Appointment of Honorary Nature Conservators	At least 10 honorary nature conservators are appointed by MET for the north east	Activity 2.1.1. Consult with the conservancy committees, regional and local authorities, local MET offices and tour operators in the area in order to obtain nominations of good candidates	MET		Recurrent MET budget
		Activity 2.1.2. Make final selection and write letters to each person, inviting them to be Honorary Nature Conservators	MET		Recurrent MET budget
		Activity 2.1.3. Appoint as soon as confirmation of willingness has been obtained, making sure to inform the new appointees of their rights and responsibilities	MET		Recurrent MET budget

Outputs	Output Indicator	Activities	Responsibilities	Annual Targets	Budget Description
		Activity 2.1.4. Inform all the stakeholders in region, notably the conservancy committees, local MET offices, NGOs, tour operators, local and regional authorities	MET		Recurrent MET budget
Output 2.2 Communication forum established between MET and Honorary Nature Conservators	MET and Honorary Nature Conservators meet regularly in a formal setting and discuss issues of mutual concern	Activity 2.2.1 Hold regular meeting with the Honorary Nature Conservators and other stakeholders.	MET		Recurrent budget – all stakeholders to cover their own costs
Output 3 – Revitalization of output oriented ecological research in the north east					
Output 3.1 MET conducts and/or facilitates management-oriented research that is needed for management of the north east parks and surrounding areas.	Research conducted according to needs identified, and findings are published in accessible format	Activity 3.1.1. Review previous research needs-assessments to establish past thinking on what work is required	MET		Routine MET task (DSS)
		Activity 3.1.2. Hold a workshop attended by MET, Fisheries, Agriculture and Water Affairs scientists, park managers, conservancy representatives, representatives and selected NGOs (e.g. NNF, IRDNC, CRIAA) in order to prioritize research needs, based partly on previous assessments, current thinking, management plan priorities and practical considerations	MET		N\$10 000 for transport and accommodation N\$5000 for facilitation
		Activity 3.1.3. Develop a list of incentives that will attract visiting researchers who would be prepared to work alongside MET scientists	MET		1 consultant x 5 days @ N\$3500 pd = N\$17,500
		Activity 3.1.4. Develop a full set of procedures/guidelines for transparency, safeguards and accountability for visiting researchers. Use existing MET policy for visiting researchers as a starting point. Make it clear what MET will provide (e.g. office space, housing) and what the researchers will have to provide (e.g. transport, computer, food, etc.).	MET		1 consultant x 5 days @ N\$3500 pd = N\$17,500

Outputs	Output Indicator	Activities	Responsibilities	Annual Targets	Budget Description
		Activity 3.1.5. Negotiate with MFMR to use the facilities at the envisaged Okavango Research Institute (near Mahango). Also negotiate with the lodges in the Caprivi and Kavango Regions (including NWR) for complimentary accommodation for bona fide researchers, and for assistance with transport (air, car and boat).	MET		Routine MET
		Activity 3.1.6. Advertise in local, regional and foreign media – a call for expressions of interest from institutions and/or individuals	MET		N\$10,000 for placing adverts
		Activity 3.1.7. Establish a mechanism for receiving the researchers and for providing the necessary guidance and, where appropriate, supervision	MET		MET to do this themselves
Output 4: Manage tourism in the north east					
Output 4.1 Tourism impacts in Caprivi and Kavango are minimised	The number of visitors, and the activities they are permitted to engage in, are carefully controlled so that tourist experiences are enhanced, negative impacts are reduced and sense of place is maintained.	Activity 4.1.1. Reflect on previous MET reports on diversifying and controlling tourism in the Kwando Triangle and the Buffalo area along the Okavango River. The main aim is to reduce the effects of a linear product in both cases, by opening roads and waterholes in the woodland areas and promoting walking in the bush. Boating should be restricted. The north east parks management plans should also be examined. Based on these, and interviews with key stakeholders in the industry, develop an North East Tourism Strategy. This must include a strategic assessment of environmental impacts	MET		40 consultant days @ N\$3500 = N\$140,000
		Activity 4.1.2. Develop a set of conditions for new products (lodges). Only two more should be developed in the Caprivi – namely in Mamili NP and the other at Buffalo. No others should be allowed. At least two lodges could be accommodated in Kaudum.	MET		5 consultant days @ N\$3500 = N\$17,500
		Activity 4.1.3 Advertise the packages and allocate according to pre-determined criteria. Be sure to be totally transparent in this. The criteria must be made known ahead of time	MET		MET recurrent budget

Table 9.3: Outputs, output indicators, activities, responsibilities and annual targets for Central-South zone

Outputs	Output Indicator	Activities	Responsibilities	Annual Targets	Budget Description
Output 1 –					
Output 1.1		Activity 1.1.1			
		Activity 1.1.2.			
		Activity 1.1.3.			
		Activity 1.1.4.			

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